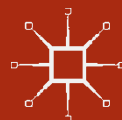


RETAIL CRIME

International Evidence
and Prevention

EDITED BY
VANIA CECCATO
AND RACHEL ARMITAGE



Crime Prevention and Security Management

Series Editor

Martin Gill

Perpetuity Research

Tunbridge Wells, Kent, UK

It is widely recognized that we live in an increasingly unsafe society, but the study of security and crime prevention has lagged behind in its importance on the political agenda and has not matched the level of public concern. This exciting new series aims to address these issues looking at topics such as crime control, policing, security, theft, workplace violence and crime, fear of crime, civil disorder, white collar crime and anti-social behaviour. International in perspective, providing critically and theoretically-informed work, and edited by a leading scholar in the field, this series will advance new understandings of crime prevention and security management.

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Editors

Retail Crime

International Evidence
and Prevention

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This book is dedicated to all those working to reduce crime in retail environments.

Preface

The idea for this book was born at the 2016 autumn seminar on ‘Retail crime: international evidence and prevention’, that took place at the School of Architecture and the Built Environment, KTH Royal Institute of Technology in Stockholm, Sweden. Almost all authors of this book were present in that meeting that was funded by The Swedish Retail and Wholesale Council and British Society of Criminology; a gathering that brought together scholars and practitioners to discuss issues of retail crime and its prevention. There is no doubt that the seminar was fundamental to stress the need for more research in this field in Scandinavia but also to make the current experiences from elsewhere available to a wider audience. Speakers and participants of the seminar all shared the same interest, namely the nature of crimes that happen in retail environments and developing innovative and multi-disciplinary methods of preventing those crimes.

Several contributors to this book point out how dynamic the modern retail sector has become. They illustrate how changes in society create new opportunities for crime as well as new challenges to combat them. The most evident change seen is the amount of time people spend shopping and enjoying retail environments. This development has demanded not only more stores with safe and pleasant environments (in particular street segments or shopping malls) but has also imposed transformations in the fabric of the cities. These include new parking lots, roads and

additional services, particularly public transportation. Whilst these environments serve a variety of social functions, the majority of them share common vulnerabilities as crime attractors and/or generators, with effects that often go beyond those particular environments.

Equally important are the more recent changes in retail triggered by technology. New crime opportunities are generated by this digital retail landscape composed of, for instance, self-scan checkouts, mobile scanning and the buy-online-pick-up-in-store-system. In order to combat these threats, novel technological remedies (electronic surveillance, tagging of all sorts) are sold in the market as commodities, often at a similar pace to the products and systems that they intended to protect.

Finally, as several chapters of this book show, the formation of criminal organizations devoted to retail and cargo crime are also taking place. Some of these criminal organizations act beyond national borders and even continents. These illegal activities take a variety of forms including thefts from stores, armed robbery, fraud, cargo thefts, cybercrime and corruption—in other words, a plethora of organized criminal activities that may be intertwined with legal ones and therefore difficult to combat at a local level.

By incorporating these previously mentioned complexities, this book offers a new take on retail crime by illustrating the interplay between individuals, products and more importantly, the characteristics of crime settings—whatever the scale concerned. By appraising diverse aspects of retail crime from different perspectives, the authors of this book provide much to think about, as they also reflect upon ways to better plan retail environments. Undoubtedly, planning for a safe retail environment is an essential part of creating an enjoyable shopping experience.

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Rachel Armitage

Acknowledgements

First, this book would not have been possible without the 2016s autumn seminar on ‘Retail crime: international evidence and prevention’, that took place in Stockholm, Sweden, at the School of Architecture and the Built Environment, KTH Royal Institute of Technology. This international seminar was organized by *Safeplaces* network and funded entirely by Swedish Retail and Wholesale Council and British Society of Criminology. Almost all presentations in that seminar were turned into chapters of this book. Big thanks go to all involved in this event: speakers, discussants and all participants who directly and indirectly contributed to the chapters that are an integral part of this book.

We are particularly grateful for the time and trouble many researchers took to read the chapters and provide us comments to the chapters published in this book. They are listed here in alphabetical order: Adrian Beck, André Zanetic, Chris Herrman, Daniel Ekwil, Friedrich Schneider, Guerino Ardizzi, Kajalo Sami, Leanne Monchuk, Lucia Summers, Marcelo Justus, Matt Ashby, Matt Hopkins, Nick Tilley, Paul Ekblom, Per Geijer, Peter Vankoppen, Robert DiLonardo, Robyn Lincoln, Tim Hart, Silas Melo, Tim Lukas, Wim Bernasco. We would also like to thank colleagues at our respective universities for supporting our work during the process of editing this book, in particular Lisandra Vazquez and Anna Yates for their support with article formatting. Thanks to Jana Sochor who contributed to this edited volume by proofreading three

x Acknowledgements

chapters of this book. Remaining shortcomings are, of course, entirely these editors' responsibility. We would also like to thank the publisher, Palgrave, for their support. We particularly wish to acknowledge Stephanie Carey for her stewardship of this project. Finally, thanks for all the love and support we received from our families when putting together this edited volume.

Vania Ceccato and Rachel Armitage

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Series Editor's Introduction

Vania Ceccato and Rachel Armitage have brought together a range of papers that concern crime in one specific environment, retailing. Their own academic specialism has driven the overarching framework: namely approaches grounded in environmental criminology and situational crime prevention. As is noted, the use of theory to develop good crime prevention practice is wanting, a point made in a chapter by Sidebottom and Tilley who offer guidance for future researchers. But the book draws on a broader focus than just criminology, it incorporates inputs from such varied disciplines as architecture, geography, engineering, sociology, economics and political science.

Retail crime is notoriously difficult to define—although the editors provide a helpful discussion—and the chapters cover a wide territory from cargo theft in Brazil; theft of medicines in hospital settings; and a range of offences including thefts and violence in small retailers, large retailers and shopping centres. Some key themes emerge.

For example, the weight of evidence suggests much retail crime is concentrated, ably illustrated for example in chapters by Ceccato et al. and Weisburd et al. Indeed, the latter finds that shopping crime concentration is higher than is the case with crime generally. This provides good crime prevention opportunities by focussing on 'hotspots'. That said the

information base on which retailers make decisions is often limited in coverage and depth, as Armitage et al. show for example most shop theft is never detected.

Moreover, while the authors show support for a range of approaches, including the effective design of the environment (see, Cozens for example), and the effective deployment of people (see, Taylor for example), there are notes of caution. Smith and Clarke for example suggest a rethink of the value and purposes of different models, they focus on the approach taken to identify goods at risk of theft. It is part of at least two broader points that emanate from the studies contained in this book. The first is that there is need to ensure that the response is flexible and adaptable and moves in tune with the threat (see, for example Hunter et al.), and the second is that in store measures need to be supported by appropriate loss management structures and approaches. Moreover, there is much that happens outside retail which impacts on what happens inside retail (see, Ceccato and Tcacencu for example) requiring a broader focus for prevention (see, Savona et al. for example).

This reflects the changing dynamic in how loss is perceived and the role of those charged with managing it. As Bamfield alludes to, security management in corporations generally, and loss prevention departments within retailers specifically, has often focussed on the rather narrow area of making arrests. In recent years there has been a transition to see its more important role in contributing to broader business aims not least in reducing risks, threats and a range of different losses (not just crime losses, but other types too such as those relating to damage, wastage, error for example) and working through other parts of the organisation.

The chapters in the book contribute new insights and empirical evidence on the nature of risks and the potential for mitigating them more effectively. There is relatively little work on crime prevention in the business environment, and given that the security of both workers and the public is in the hands of the commercial sector in a retailing a book such as this is both timely and important.

Notes on Editors and Contributors

Editors

Rachel Armitage is a Professor of Criminology and Director of the multi-disciplinary Secure Societies Institute at the University of Huddersfield. She specializes in crime prevention, in particular, the innovative use of design and technology to prevent and reduce the impact of crime. Professor Armitage's research has focused predominantly upon the subject of Crime Prevention through Environmental Design (CPTED). More recently, she has conducted several projects exploring counterterrorism at critical infrastructure sites, in particular, multi-modal passenger terminals, and exploring the role of design and layout in facilitating and inhibiting terrorist threats. She has published extensively on the subject of designing out crime, including a sole authored book: *Crime Prevention through Housing Design (2013) published by Palgrave Macmillan*. As Director of the Secure Societies Institute, she co-ordinates the development of multi-disciplinary, innovative solutions to global crime and security challenges.

Vania Ceccato is a Professor at the Department of Urban Planning and Environment, School of Architecture and the Built Environment, KTH Royal Institute of Technology, Stockholm, Sweden. She coordinates the national network *Safeplaces* (Säkraplats) funded by The Swedish National Crime Prevention Council (BRÅ). Her research is on the situational conditions of crime and crime prevention in urban and rural environments. Ceccato is interested in the relationship between the built environment and safety, in particular,

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Ronald V. Clarke is University Professor at the School of Criminal Justice, Rutgers University. Under the general framework of situational crime prevention, he has published numerous studies of shoplifting, including those with Brian T. Smith. He is the author with Gohar Petrossian of *Shoplifting* (2nd Edition). *Problem-Oriented Guides For Police*, No 11. Office of Community Oriented Policing Services. Washington, DC: US Department of Justice. 2013.

Paul Cozens is an environmental criminologist at Curtin University's Department of Planning and Geography in Perth, Western Australia. His applied research focuses on creating safer, more sustainable, healthy cities using Crime Prevention Through Environmental Design (CPTED). He is a Director of the Design Out Crime Research Centre (www.designoutcrime.org) and an internationally accredited Advanced CPTED Practitioner. He has applied CPTED in residential, retail, transport and community settings. Recent projects focus on crime and licensed premises within the night-time economy and on retail crime in business districts. He recently published the 2nd edition of his book entitled; *Think Crime! Using Evidence, Theory and Crime Prevention Through Environmental Design (CPTED) for Planning Safer Cities* (Praxis Education).

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Chris Joyce is the Force Crime Prevention Officer for West Yorkshire Police and has over 20 years' experience in the crime prevention business area. Chris received a prestigious Winston Churchill Fellowship Award in 2003, travelling to the USA and Canada to research diversionary activity steering young people away from crime. He was instrumental in proactively addressing the vulnerabilities associated with euro-cylinder locks in conjunction with Secures by Design, the MLA, BSI, other industry authorities and manufacturers. The collaborative

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Part I

An Introduction to Retail Crime



1

Retail Crime: Aim, Scope, Theoretical Framework and Definitions

Vania Ceccato and Rachel Armitage

Introduction

Shoplifting is the major cause of retail loss in 18 of the 24 countries surveyed in the Global Retail Theft Barometer in 2014–2015 (GRTB, 2016). In Sweden, stores experience two million shoplifting cases each year (Swedish Trade Federation, 2015). This pattern is also evident in countries like the UK and the US (Bamfield, 2012). Many of the targeted stores are on particular streets while others are part of shopping centres or outlets on the outskirts of the cities, and these stores and centres can become foci of crime. Not all of them though constitute crime attractors or generators (Brantingham & Brantingham, 1995; Franka et al., 2011), but some concentrate crime so badly (Eck, Clarke, & Guerette, 2007;

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Rengert et al., 2010) that they are thought to radiate crime to their vicinities, while others absorb it (Bowers, 2014). The stores' interiors and design as well as the way products are displayed influence motivated individuals' decision to offend or not (Cardone & Hayes, 2012), while new technologies designed to enable customer convenience are also generating new opportunities for crime (Beck & Hopkins, 2017; Taylor, 2016).

Retail crime is more than shoplifting. Employees in retail declare being 46% more likely to suffer workplace violence than the average employee in the US (Harrell, 2011). They may steal, as there is actually more theft by employees than by customers in some countries (GRTB, 2016; Hollinger & Adams, 2010). Motivation for employee theft varies (Clarke & Petrossian, 2013), but it can be linked to criminal organisations, some with connections beyond national borders (Burges, 2013), and can take a variety of forms (fraud, cargo thefts, cybercrime, corruption and lethal violence), not rarely intertwined with legal ones. Such operations 'involves a vast array of small fish' (Felson, 2006, p. 8). This complexity makes retail crime an issue worthy of attention by researchers, retailers, police and other professionals interested in the interplay between targets, settings and criminals.

Aim and Scope of the Book

This book contributes to this knowledge base by characterising the dynamics of retail crime from an international perspective. Special focus is given to the settings and the environments where retail crimes take place. Retail crime encompasses any criminal act against a store, a company or a conglomerate of companies, their properties as well as their employees and customers. Some of these crimes are composed of multiple events; some taking place far beyond the boundary of the store, affecting stakeholders along the product supply chain, such as Organised Retail Crime (ORC). The book also explores the use technology along the product supply chain; how it can affect crime opportunities and to some extent prevent crime.

The book is grounded in environmental criminological theory and the principles of situational crime prevention, but approaches this crime

problem from a multidisciplinary perspective. The book also offers both theoretical and practical perspectives on current crime prevention activities directed to crimes that most affect stores, retailers, shopping malls and commercial conglomerations located both within the inner cities and on the outskirts of towns and cities. The book offers state-of-the-art research on retail crime from Europe, the US, Middle East, South America and Australia. As such, its appeal lies with both academics and practitioners from a variety of disciplines and backgrounds.

A decision has been made to exclude from the scope of the book the following issues: cybercrime, online theft, fraud, online loss—topics covered within other key texts. In addition, this book does not include the politics of retail crime and crime prevention. Although the book touches upon issues of crime by employees, terrorism, riots/looting/activism in retail environments, and managerial and organisational issues related to crime and crime prevention in retail environments, these topics have not been the focus of this book. Some of these issues have already been presented elsewhere (for instance, Bamfield, 2012, 2014; Beck, 2016a, 2016b; Beck & Peacock, 2009; Gill, 1994 (2005); Gill, Bilby, & Turbin, 1999; Hayes, 2007; Wiefel & Gregus, 2016).

Book Structure

The book is divided into 6 parts and 16 chapters. Part I establishes the purpose and scope of the book. In Chap. 1, the structure and the contents of the book are outlined. The chapter includes an introduction to the theme, the book scope and delimitations, key definitions and theoretical principles used to structure this edited volume and support the reading of the chapters. Chapter 2, by Joshua Bamfield, presents the international trends in retail crime. The chapter also introduces to the topic of retail prevention practices that we revisit at the end of the book.

Part II focuses on the types of products that are most stolen as well as on the interplay between the product, settings and offenders in retail environments. This is the *micro* scale of retail crime that focuses on products, settings and to some extent, store environmental features. Brian Smith and Ron Clarke, using the CRAVED approach, focus on shoplifted,

fast-moving goods to illustrate offenders' decision-making. These authors are particularly interested in finding out the types of goods most stolen by offenders. In the same vein of thought, James Hunter, Laura Garius, Paul Hamilton and Azrini Wahidin study prolific theft offenders to understand who these offenders are and the reasons they steal from shops. The case study is based on evidence from the United Kingdom. Emmeline Taylor takes a step ahead by looking at the influence of new technology on offender's behaviour in retail environments and in particular, customer-operated payment systems, self-service checkouts and their impacts on retail crime.

Part III of this book is devoted to crime and perceived safety in retail environments, also on the *micro* scale. In particular, the focus shifts towards the importance of the settings and retail environments on offenders' decision-making and on customers' perceptions of safety and risk. The chapter written by Rachel Armitage, Chris Joyce and Leanne Monchuk captures offenders' perceptions of risk and protective factors in the design and layout of retail environments in the UK. A study from Australia on the nature of shoplifting in small stores, presented by Paul Cozens, is followed by two pieces from Sweden that analyse crime and customers' perceived safety in a shopping mall. The first, by Vania Ceccato, Örjan Falk, Pouriya Parsanezhad and Väino Tarandi, explores Building Information Modelling (BIM) to visualise crime levels of shopping establishments, while the second, by Vania Ceccato and Sanda Tcacencu, focuses on a small-sample survey to analyse how shopping centre visitors evaluate their safety in the shopping centre.

The *meso* and *macro* scales of the analysis of retail crime are exemplified in Part IV of this book. The *meso* scale deals with retail crime in a wider context beyond the stores themselves, namely the street segments, corners, railway stations and neighbourhood and city contexts. The first contribution looks at shopping crime in Israel and is written by David Weisburd, Shai Amram and Maor Shay. The second focuses on theft in stores and other businesses in railway stations in England and Wales and is written by Andrew Newton. Then, turning to the *macro* scale retail crime may be local but is triggered by a demand for products far from where crime is committed. This *macro* perspective of supply and demand mechanisms can be appropriate to understand the links between

organised crime and thefts of cargo or medicines, for example. With a case study from a country of the Global South, Marcelo Justus, Vania Ceccato, Gustavo Moreira and Tulio Kahn assess the problem of cargo theft in São Paulo, Brazil. Also Ernesto Savona, Marco Dugato and Michele Riccardi focus on ORC to discuss the importance of local and regional contexts to explain theft of medicines from hospitals in Italy.

Part V of the book presents theoretical and practical examples of dealing with retail crime prevention. Martin Gill's chapter discusses the challenges of preventing retail losses according to retail loss prevention managers and directors in the UK, followed by a chapter by Aiden Sidebottom and Nick Tilley on tagging in retail environments.

Finally, Part VI draws together the volume's empirical findings, discussions, and theoretical approaches adopted by contributors coming from a varied of backgrounds. It synthesises and critically reviews the key findings, identifying some of the most important lessons learnt and as well as the relevant challenges. Moreover, it outlines future research as well as policy recommendations and practical lessons that have been demonstrated in this book.

The Theoretical Framework of the Book

The focus of this book is on crime in retail environments and the interplay between products, criminals and settings. Although Criminology and criminologists have been devoted to better understanding retail crime and its prevention (Clarke, 1999; Clarke & Petrossian, 2013; Gill, 2000, 2007), retail crime research is far from an exclusive area of Criminology. First because retail crime is dependent on models and theories stemming from other disciplines, such as Economics, Management and Business, Psychology, Engineering and Innovation Technology, Police and Policing, just to name a few. Most chapters of this book are written by professionals other than criminologists, which we hope has helped to bring a wide array of theoretical approaches into the subject area. Second, 'crime against business is an attack on the economics of the businesses', therefore, retail crime is a business problem and preventing it demands knowledge on both opportunity and financial costs (Bamfield,

2012, p. 7). Third, knowledge about retail crime and the settings in which it takes place are as important to business as is the perception of safety. Businesses need clients but if people feel unsafe while there, they may not return, thus both crime and the perception of safety in retail environments are crucial for businesses. The retail environment has an important role to play in making shopping an enjoyable and pleasant activity. However, too many people may attract pickpockets and thieves, so a key challenge for retailers is to provide a balance between attractiveness and safety in retail environments.

Due to the range of theoretical approaches in the retail literature, this section now provides a brief overview of most salient to the major components of retail crime (as approached in this book), namely the theories that support the understanding of the three analytical scales in this book: *micro* (the interplay between products, settings and offenders); *meso* (the effect that settings and places have on retail crime); and *macro* (local criminal events interpreted as part of a wider context). As this chapter aims to provide an overview rather than an extensive review, the reader is guided to access each individual chapter to find more details about the theoretical backgrounds used.

The theories used in the *micro*-scale analysis of retail crime in this book rely on two strands of theory that share a number of commonalities but are discussed here separately. The first strand of theory relates to the work of Cornish and Clarke and others (Clarke, 1997, 1999; Clarke & Petrossian, 2013; Cornish & Clarke, 1986; Felson & Clarke, 1998) who developed a body of knowledge that provides a theoretical framework for better understanding how offenders think, the way they make decisions to steal and, perhaps more importantly, the factors that can act to deter them (Beck, 2016a). Principles of rational choice theory suggest that offenders assess the risk of being caught before coming to a decision; whether they can commit the offence at the particular time and in the particular setting; the benefit of committing that crime; and the consequences they would have to cope with if they were to be caught. Although it is difficult to try to affect the punishment associated with retail crimes, retail crime prevention practices are nowadays able to capture all these factors, making it more difficult for criminals to commit a crime.

Crime is not a random phenomenon; it follows clear patterns in time and in space. If retailers can identify *when* and *where* they are most targeted by crime, they will be able to more efficiently define strategies to tackle crime in their businesses (see section ‘[Temporal and Spatial Patterns of Retail Crime](#)’ in this chapter). Environmental criminology has long suggested the relationship between crime and rhythmical patterns of human activities. Principles of routine activity (Cohen & Felson, 1979) suggest that for a crime to occur there must be a convergence of a target, a motivated offender and a lack of capable guardians. This might explain peaks of theft in the afternoons instead of early mornings, or fights outside restaurants after they close. Yet, not all stores become crime targets (Bowers, 2014; Brantingham & Brantingham, 1995), and neither are all sections of stores equally vulnerable to crime, nor products equally targeted (Armitage, 2013; Cardone & Hayes, 2012; Newman, 1972; Reynald & Elffers, 2009). Crime pattern theory and principles of Crime Prevention Through Environmental Design (CPTED) are helpful in guiding the analysis that links crime and settings in retail environments as illustrated in this book. Crime pattern theory identifies places and settings (as nodes) that by their characteristics attract or generate crime. In a shopping centre, for instance, there is a clear specialisation in places that generate and attract crime. One way to alleviate these crime spots is to plan environments to make crime more difficult to occur at micro-scale. Research on consumer behaviour has long suggested that placing products in particular areas can maximise profit by selling more and avoiding crime. For instance, shoplifters focus their attention on security devices, formal surveillance, product positioning, security tagging, employee positioning, access control, and store layout (Carmel-Gilfilen, 2011). However, not all products are equally targeted. Hot products are those most likely to be stolen by offenders, and according to Clarke (1999), they are easier to Conceal, they are more Removable, widely Available, Valuable, Enjoyable to use or own, and easy trade or sell on, i.e. Disposable (CRAVED).

Routine activity principles and crime pattern theory are also helpful to support the analysis of retail crime at both the *meso* and *macro* scales as illustrated in this book. Crime pattern theory explains why crimes are committed in certain areas, for instance, on street segments with many

stores and restaurants. According to this theory, crime happens when the activity space of a victim or target intersects with the activity space of an offender. Some of these nodes where people converge, such as a store or a set of stores in a railway station may become hot spots of crime. Whether these spots attract more incidents (Brantingham & Brantingham, 1995; Deryol, Wilcox, Logan, & Wooldredge, 2016; Franka et al., 2011) or radiate incidents to the surroundings (Bowers, 2014) highly depends on the nature of these hot spots and their urban contexts. Although levels of crime vary over time, the extent of crime concentrations remains similar in particular parts of the city (Weisburd & Amram, 2014) constituting hot spots of crime. This stability has attracted the attention of many scholars to the point that some provide clear evidence of the so-called “law of crime concentration at places” (e.g. Andresen & Malleon, 2011; Curman, Andresen, & Brantingham, 2014; Weisburd & Amram, 2014), yet, this is a topic not well addressed in retail environments. Although many of the principles of law of crime concentrations at places hold true for street segments, it can be questioned to what extent these ideas can be applied to typical retail environments and shopping centres.

What regulates retail crime is dependent on the supply and demand of specific products. For instance, cargo theft is an attractive activity since it combines a high return with a low risk of failure. Within Economics and Management, there has been a substantial volume of work on retail crime and prevention. The economic theory of crime proposed by Becker (1968) can help in providing some interpretation. According to this theory, this alternative of choosing to commit a crime essentially depends on two factors: monetary return and the probability of failure. Assuming the mobility of criminals and economic rationality, crimes occur where there is a higher expected utility, and the potential offender evaluates his or her own risk before making a decision to commit a crime. The *macro*-scale analysis of retail crime illustrated in this book involves general trends of retail crime but also ORC that can be interpreted via the lens of economic and criminological theories. Situational crime prevention (Clarke, 1983, 1992) is one such theory which has been utilized here to understand the motivations of offenders (to offend) as well as of retailers (to prevent crime). This theory involves crime prevention strategies used to

reduce criminal opportunities, including ‘hardening’ of potential targets, improving surveillance of areas (making more difficult to steal, increasing risks to be caught), and deflecting potential offenders from settings in which crimes might occur. Chapters 15 and 16 of this book directly inform readers about the need to establish theories to better understand the nature of retail crime and its prevention.

Book Definitions

Retail crime is more than ‘just’ shoplifting. Therefore, with the intention to flag and reveal different ways of approaching this subject, the contributors to this book were asked to provide their own definitions of the relevant terms to understand retail crime. The results differ, which is not a surprise since these authors all share a genuine interest in a better understanding of the nature of retail crime, they come from a plethora of disciplines, such as Architecture, Geography, Engineering, Sociology, Criminology, Economics, Policing and Political Science. The result of this inquiry into definitions and terms is expected to support the reading of the chapters.

Hot and Cold Products

Taylor defines ‘hot’ products as those ‘items that are typically targeted by thieves either because they have an inherent desirability (e.g. relatively valuable)’ or, she states, ‘they are relatively easy to steal’. ‘Cold products’ relate to those that are not stolen frequently, typically because they are cumbersome (e.g. a double bed) or have low desirability and value. Hot and cold products are sensitive to time and location, as well as cultural variability. Hunter summarizes hot and cold products as referring to ‘desirability of retail products to offenders to steal based upon perceived value/reduced risk of being apprehended’.

Traditionally, hot products, from the work of Ron Clarke (1999), are those most likely to be stolen by offenders. They are those products that are CRAVED—they are easier to Conceal, they are more Removable,

widely Available, Valuable, Enjoyable to use or own, and easy trade or sell on, i.e. Disposable. Smith and Clarke suggest that 'researchers in this area often cite *Disposable* as being the most important characteristic in determining whether something is a 'hot product'.

It can be questioned how much the CRAVED model can be applied to ORC, as ORC may involve large loads of products or other valuable cargo that do not fit the CRAVED model. Depending on the demand, a cold product in a store can become a hot product in the ORC context. For example, there are hot products that are not easy to conceal or remove, such as computers, printers but also cheaper products in high demand. For highly motivated offenders, in particular those cooperating with specialised criminal organisations, the size and weight of products matters much less since someone else in the organisation is responsible for transporting stolen materials (it can be a cold product here but hot elsewhere). In some cases, they get access to products using, for instance, bulldozers and bombs (to break in and get access to stocks and stores), heavy weapons (to control personnel and defend themselves), or trucks, helicopters, airplanes, or other vehicles (to carry the stolen load and allow easy escape).

Within the context of their research (a store, supermarket) Armitage et al. define hot products as those positioned within the store such that they are concealed from CCTV or security staff; those products that are small enough to conceal in a bag or under clothing; those products that could be sold on easily, quickly and for a good value; and those products that could be used by offenders in their own day-to-day leisure activities. These products include: alcohol, razors, perfume, make-up, baby products and electronic goods. Chris Joyce adds a temporal dimension to the 'demand' or possible offenders' motivations. He states that hot products are 'products that are attractive to an offender due to economic and market' factors. A hot product may be in demand due to personal circumstances of the end user (which could include the offender committing the theft), seasonal needs (i.e. toys at Christmas) or simply due to it being perceived as expensive or unaffordable to individuals or others within the retail sector (i.e. stolen coffee may be bought by cafes as it's cheaper than purchasing from a legitimate source)'.

Retail Crime

Most of the chapters of this book deal with theft—shoplifting or theft by employees, cargo theft, theft of medicines—so retail crime is often a synonym of a property crime against one or more commercial establishments. But Bamfield's definition of retail crime reminds us that this offence includes other activities than theft; it covers a wide range of illegal activities against people and properties in the retail sector. He says: 'Retail crime can be committed by customers, employees, senior officers of the corporation and by others including organised gangs and other motivated individuals. Retail crime includes virtually every form of criminal activity that can be committed against a retail business, its customers, employees and its reputation, including theft, fraud, impersonation/ID fraud, online crime and fraud, corrupt dealings with suppliers, violence, burglary, arson and interception of deliveries. It may be small-scale but frequent, such as shoplifting, refund fraud or payment fraud, or large-scale and infrequent such as hacking, large-scale employee fraud or banking fraud'.

Along the same line, Taylor also adopts the term 'retail crime' as a broad category of crimes encompassing many different types of criminal behaviour against commercial enterprises. But she adds, 'it might include fraud, cyber-attacks, shoplifting'. In her chapter, Taylor is interested in the types of crime opportunities and motivations promoted by the technologies at checkouts. She predicts that even if the traditional store checkout remains as part of the retail environment in the future, other payment methods with new technologies are set to dramatically change the process by which products pass from retailer to customer, and therefore affect the nature of retail crime.

As most contributors to this book, Newton does not define the term 'retail crime' per se, instead his subject of study reflects how retail crime is operationalised in practice. He focuses on 'crime against premises (usually shops) that sell goods to the public (and in terms of rail retail these are therefore premises as found within the boundaries of rail stations) as the main expression of retail crime' in England and Wales. Newton considers these settings as often subjected to shoplifting, defined as 'the theft

of goods from retail establishments carried out by non-employees during an establishment's opening hours' (adapted from Smith, 2013, p. 5). Newton suggests that shoplifting is also referred to as 'shop theft', 'shrinkage' and 'boosting'. In his chapter, the term 'shrinkage' is avoided, because he reasoned that in the transportation literature this term is also used to describe technological approaches to reduce travel time and increase journey efficiency. For consistency, Newton adopts the term shoplifting throughout his chapter.

Similarly, in a US case study, Smith and Clarke define in their chapter retail crime as 'shoplifting, employee theft, robbery, burglary, general theft, fraud and any other crime in which a merchant/retailer is the setting for a crime'. For them shoplifting is 'the 'external' theft of merchandise from a store open for retail business by a non-employee. The suspect removes merchandise from the premises without payment and with the intent of permanently depriving the merchant of the item(s)'.

In a UK study by Armitage et al., retail crime focuses specifically on shoplifting from large supermarket stores that sell a mix of groceries, clothing and electronic goods. The authors are particularly interested in the micro-environments of the stores; the way products are placed and the relationship between the shopping environment and the offender. In this particular case, the stores are generally slightly out of town/city centres, surrounded by large car parks (free for users) and other transport terminals (trains, buses). Whilst the offenders they interviewed were searching for a variety of goods, the most sought after were alcohol, clothing, electronic items and toiletries.

A related definition of retail crime is adopted by Hunter et al. in their analysis of motivations of shop theft offenders in an English city. In their chapter, retail crime is a set of offences committed against retailers by customers, such as shop theft. Cozens also characterizes retail crime as shopping crime using a case study from Perth, Western Australia. He suggests that retail crime 'is all crimes in business, crime against trade, organized retail crime, shoplifting, crime in shopping malls, crime in stores, in other words, the theft of goods from premises which sells the goods'.

For Weisburd et al., retail crime is approached using another scale of analysis, namely 'stores in street segments', in Tel Aviv-Yafo, Israel.

Shopping crime in this particular chapter includes shoplifting, theft by store employees, burglary, robbery and is defined as 'criminal incidents, mainly property offenses that occur in stores that are located in malls or on streets'.

Retail crime and its effect on perceived safety are the focus in chapters by Ceccato et al. and Ceccato and Tcacencu that analysed a shopping centre in Stockholm, Sweden. In this case, retail crime involves a set of offences or incidents that happen in a particular setting. Ceccato (2016) defines two broad categories for crimes taking place in shopping centres: *ordinary crimes* such as shoplifting, thefts, fights, robbery, vandalism, rubbish dumping; and *extraordinary crimes* for their potential impact and organisation, such as drug dealing, cargo theft, theft of equipment, acts of terrorism and crime that uses ICT technology along the product supply chain but that is detected at shopping malls.

Ceccato and Tcacencu investigate crime and perceived safety on the *micro* scale in the shopping centre (the store, the corridor, the bank or the toilet), the *meso* scale (the entire food court, the whole floor of the shopping centre) and the *macro* scale (the shopping centre itself and its surroundings, connected with roads and transportation hubs, hotel and other commercial and leisure areas). This multi-scale, complex retail environment is expected to determine not only the flow of people passing by over time, the types of crime and other incidents occurring there, but also the way people perceive the shopping environment and its security systems. Typically, these micro and meso environments attract shoplifting, burglary, armed robbery, disputes, gang conflicts, intimidation, violence against personnel and/or customers, general fights in restaurants and cafés, property damage (vandalism and arson), theft by store employees, sexual violence and harassment (including rape), hate crime, fraud and other economic crimes. Typical of macro settings involving the surrounding areas of the shopping centre are the misuse of public spaces (e.g. washing clothes in the toilet, smoking in forbidden areas, driving motorcycles or other vehicles inside the shopping centre), quarrels among people hanging around at shopping entrances and in the food court, drinking and drug selling/use in the immediate environment of the shopping centre. Some of these crimes take place in the shopping mall but are triggered

by forces far beyond its walls. Extraordinary crimes would include, for instance, robberies against electronic stores with links between local incidents and ORC.

Also in the book, similar links between local crimes and ORC are illustrated by the Italian case study on theft of medicines in hospitals by Savona et al. and by the Brazilian study on cargo theft by Justus et al. These chapters illustrate that there is an indirect connection between theft, criminal organisations and retail, as stolen goods are often sold on all sorts of black markets. In the context of the Global South, the chapter by Justus et al. points out that retail crime goes beyond property offences. In Brazil, a large proportion of cargo theft is characterised by violent acts (resulting in homicides) against those carrying or guarding goods. Since cargo (whatever its nature) is a product of commercial transaction between two or more economic agents, its theft can be approached as a type of crime against trading and service activities, often orchestrated by more complex criminal organisations. Table 1.1 illustrates the different types of typical retail crimes discussed in this edited volume as well as crime settings at various geographical scales.

Retail crime in this book encompasses a range of criminal activities from shoplifting to ORC (including crimes along the supply chain, such as cargo theft), violence against personnel, customers and property, and other minor damaging incidents that despite not being formally classified as 'crime' have an impact on individuals' safety, damage shopping experience and affect businesses. Retail crime is defined here as any criminal act (intended and unintended) against retail—a store, a company or a conglomerate of companies, their properties as well as their employees and customers. These criminal acts have the potential to affect the overall retail environment (employee and customer safety) and produce damage far beyond the temporal and physical boundaries of stores and establishments where they take place. *Firstly*, because these crimes impact the overall experience of customers and employees, damaging the future reputation of an establishment and/or a business sector, and harming future businesses. *Secondly*, new types of *modi operandi* are facilitated by the use of new technologies with a reach far beyond the crime' location, often a-spatial transactions that harm financial and other private and public institutions. *Thirdly*, retail crime is often not limited to property crime

Table 1.1 Retail crime at various geographical scales and its main stakeholders

Scale and retail crime settings	Typical retail crime	Stakeholders
 	<p>Shoplifting, burglary, theft by store employees, robbery, disputes, intimidation, violence against personnel and/or customers, fraud and other economic crimes. A local criminal incident can be ORC, with 'glocal' impact</p>	<p>Establishment owners, retailers, retail chain managers, security officers, guards, police. In the case of a shopping centre, perhaps managers and owners of other commercial and entertainment establishments</p>
	<p>Micro scale: Retail crime linked to product settings and store environmental features</p> <p>The above plus public disorder, problems with alcohol, drug dealing and consumption, general fights outside restaurants and cafés, property damage (vandalism and arson), weapons, riots, conflicts with the police, typical mixed land use/inner city crime</p>	<p>The above plus neighbourhood and city actors, police, urban planners (municipality), road and transportation authorities and operators, commercial consortiums</p>
	<p>Meso scale: Retail crime in groups of businesses in shopping centres, a neighbourhood and city contexts</p> <p>Any crime against the supply chain, cargo theft, fraud, corruption, counterfeit, any criminal act related to organised retail crime with regional, national and/or international links, such as threats and physical violence, cybercrime. ORC (regional, national, international, global)</p>	<p>Product suppliers, retailers, logistics and transportation companies, storage companies, export/import officers, local, regional and national transportation and security officers</p>
	<p>Macro scale: Retail crime with regional, national, international, global (glocal) links</p>	<p>Public Domain images, 2017</p>

when it involves a chain of organised crime networks with local, national and/or international connections; in some countries, crime against trading involves lethal violence. These ‘indirect costs’ (real or predicted) are rarely taken into account in the current practices of calculating ‘shrinkage’ or ‘total retail loss’.

Retail Environments

A retail crime has a setting or environment in which the offence takes place. As described in the following paragraphs and in Table 1.1, the setting can take different shapes and can involve many types of places and locations, even when cybercrime might be part of the criminal scheme. In this book, retail environments are often places where crimes against retail and trading occur, such as a store, a supermarket, a shopping centre. Note however that in the case of ORC, crimes may involve other settings beyond stores and supermarkets or supply chain environments, such as storage areas for containers and truck parking lots, but for example, here we restrict ourselves to the most common types of settings discussed in this book.

For Hunter et al., commercial/retail environments are ‘retail and wholesale outlets that are open to members of the public’. Cozens defines commercial/retail environments as ‘physical environments, premises where goods are offered for sale’. In general, they comprise, according to Bamfield, ‘a range of spaces from a small isolated store in a rural or suburban location to a large superstore or hypermarket, central business district or shopping mall. Each one is designed, not necessarily optimally, to attract customers and hold inventory. As such it is an attractive prospect for retail crime. Although stockrooms, warehouses and physical distribution centres do not deal directly with customers, they hold high levels of inventory and are attractive prospects for crime’. The latter is the subject of interest in the chapter by Justus et al., who focus on cargo theft as a criminal activity against trading. For them, a commercial environment ‘is where the stolen goods are sold to consumers in legitimate stores or on the black market’. And more specifically to retail in transit environments, Newton observes that these settings may involve ‘the premises as found within the boundaries of rail stations’, such as stores, small businesses, and restaurants in rail stations.

The complexity of environments involving retail crime is illustrated by the chapters by Armitage et al., Ceccato et al. and Ceccato and Tcacencu. Commercial/retail environments represent individual stores, small groups of businesses up to shopping centres/malls and outlets. Shopping centres and outlets are often out of town/city centres with a mix of retail stores, leisure activities (cinema, bowling, go kart) and restaurants and bars. Crime prevention in these environments may require tailored measures to attend specific demands from each setting. Finally, in the context of ORC, the chapters of Savona et al. and Justus et al. suggest that retail crime prevention has to go beyond the stores and supermarkets and have strategies that focus on other supply chain settings and a variety of stakeholders affected by ORC.

Retail Crime Prevention/Retail Loss Prevention

Crime or loss prevention is, according to Bamfield, about 'avoiding crime and loss by preventing crime, using methods in stores such as notices, display methods, display cabinets, technologies and 'loss prevention employees' to deter crime from occurring by making it difficult/more time-consuming, bringing an increased likelihood of detection and apprehension'. Since retail is also vulnerable to economic crimes, Bamfield indicates that 'similar methods have been developed to inhibit payment fraud, returns-desk fraud, online fraud and other methods of crime'. In summary, 'loss prevention involves the use of selected techniques to combat or inhibit every form of crime and each method has to be proportional to the actual or potential losses suffered'.

Bamfield also reflects upon the types of retail prevention stating that 'retail crime prevention and retail loss prevention are only equivalent in a general sense'. The current trend towards asking the Security/Crime Prevention/Loss Prevention/Risk Management department to combat losses from business operations (e.g. waste or damage) as well as losses from crime makes some retailers prefer to use the term 'Loss Prevention' or 'Risk Management'. Trends and training also play a part; for example, criminologists generally might usually be expected to refer to 'crime prevention' rather than 'loss prevention' because of the way the discipline

approaches crime problems. There are also national differences: until about 2002, UK retail loss prevention was mainly run by a 'Security Department', but in the US it would have been called 'Loss Prevention'. UK retailers have since largely adopted the US approach but there now exists a multiplicity of designations, including Loss Prevention, Profit Protection, Security, and Risk Management.

In most of the chapters in this book, retail crime prevention is about methods to prevent crime that occurs in stores and supermarkets, as discussed below. Cozens states that it involves 'methods used to prevent the theft of goods from premises which sell goods'. According to Hunter et al., it may also involve 'any form of action including installation of physical security, alteration of the physical layout of retail premises, employment of security staff, or awareness training of retail employees designed to reduce risk of victimization by employees or customers'. Smith and Clarke state that 'loss prevention's focus is on preventing losses of all types, including theft and liability due to accidents', they add: 'to prevent theft, a wide range of methods to deter, detect and apprehend suspected shoplifters are applied'. CCTV and floor surveillance are according to Smith and Clarke, 'heavily relied upon by loss prevention associates, sometimes known as 'store detectives'.

Retail crime prevention may relate also to 'different measures implemented in stores and in the vicinity of stores'. According to Armitage et al., the concept of prevention should focus upon attempting 'to deter the offender before the crime takes place, rather than (although the two are not mutually exclusive) catching offenders after the event'. They add: 'crime prevention measures within the retail environment include CCTV, tagging, security staff, store detectives (plain clothes), mirrors as well as the design and layout of stores including lighting, shelf design, etc.'.

Shrinkage and Total Retail Loss

Shrinkage is unanimously defined by contributors to this book as the total loss of products/goods that can be attributed to shoplifting but also to employee theft, error, loss and damage. They also agree that the way that stores or establishments collect information on loss/shrinkage makes

it difficult to distinguish between theft and other contributory factors that reduce their profits. According to Bamfield (in this book), 'shrinkage, both as a value and as a percentage of total sales, is used as a proxy measure of retail crime, acknowledging that shrinkage is difficult to measure'. More formally, Bamfield (2012) states that shrinkage is the difference between the retail revenue expected from deliveries or sales of merchandise and the actual revenue taken by the retailer. In other words, shrinkage (or shortage) is often used to describe 'the difference between the stock a retailer thought they had and what they actually counted or valued in their physical locations' (Beck, 2016b, p. 14).

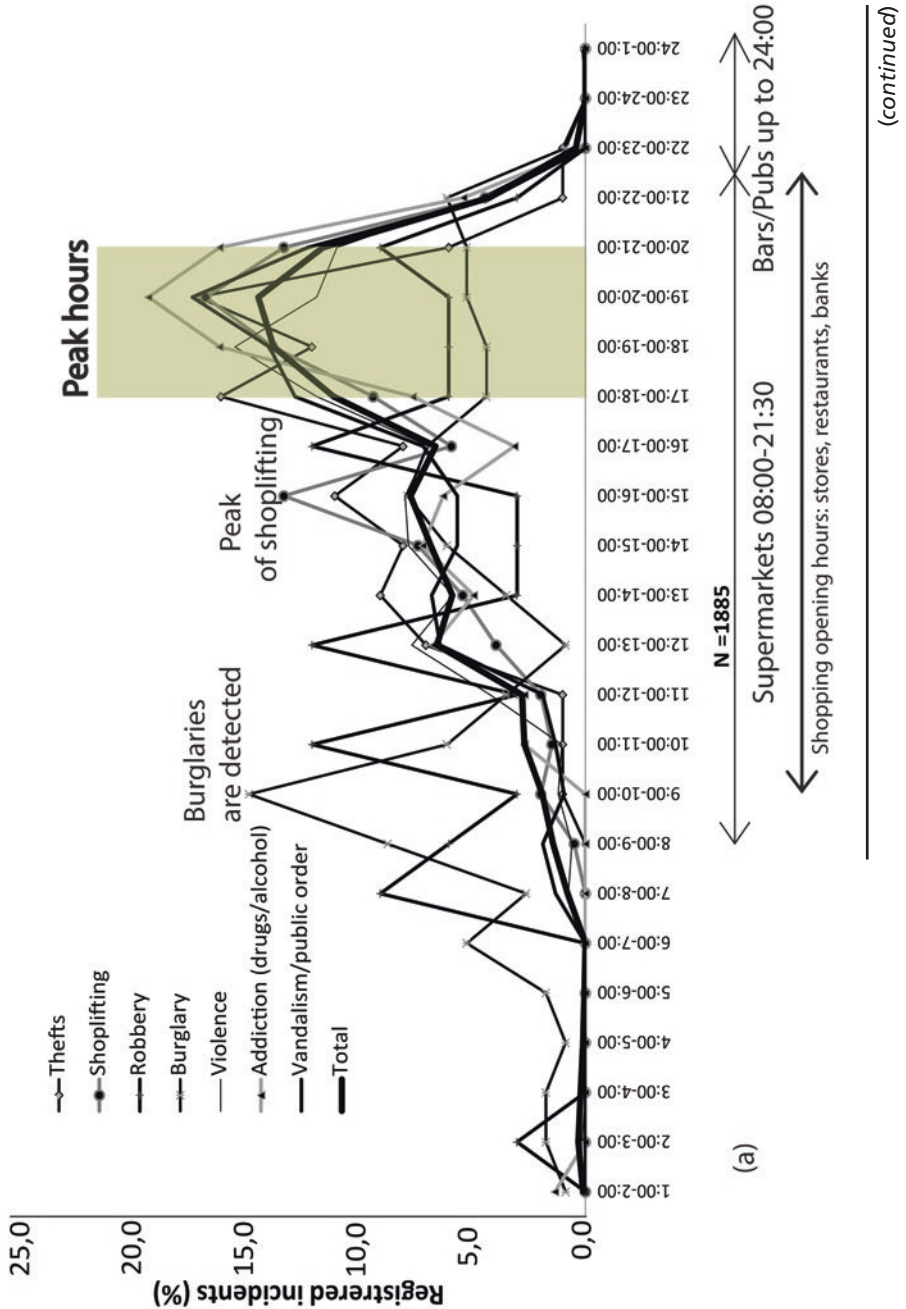
Bamfield (2017) states that 'the shrinkage value is determined by losses from crime and losses from non-crime. The losses from crime include thefts of property and payment theft as they affect retail revenues. Non-crime losses include: errors in pricing (the wrong price will reduce the store's takings); waste and deterioration (such as product thrown away because unsaleable; lengths of material or carpet too short to be sold; or goods that are damaged in the warehouse or on display); and price markdowns (both seasonal and because inventory is too high). Shrinkage can of course be negative for customers, for example where goods are sold at prices higher than originally planned, payment errors by customers or staff and where staff expertise may ensure that a higher proportion of inventory is actually saleable (for instance, more expensive cuts are produced from a side of beef) or wastage or deterioration is minimized'.

Beck (2016b) suggests that using the term shrinkage (or shortage), as has been done in the past, is problematic since it is difficult to ascertain what categories of 'loss' are included in these calculations. Drawing from his empirical analysis, he states that many companies adopt the concept of 'shrinkage' only for the value of their unknown losses while others incorporate losses from damage, wastage, spoilage, price markdowns, costs of burglaries, robberies and predicted losses, and organised retail crime. There are suggestions in the literature to abandon the term 'shrinkage' in favour of the broader concept of 'Total Retail Loss' (Beck, 2016b). In summary, despite the current debate around the use of the terms 'shrinkage' and 'total retail loss', all chapters of this book deal with crime, which means that regardless of the type, crime lies comfortably within

the range of costs classified as 'shrinkage' and/or 'total retail loss or shrinkage' as typically used in the current literature in this area (e.g. Bamfield, 2004, 2012; Beck, 2016b; Gill, 2000).

Temporal and Spatial Patterns of Retail Crime

Previous research has shown evidence that crime varies in and around retail and commercial environments following patterns of opening hours, often showing different weekly and seasonal variations. For commercial robbery, in particular, the literature shows that there is a potential relationship between temporal variations and the opportunity structure of the environment (Tompson & Bowers, 2013; Van Patten et al., 2009). Dark hours of the day create advantageous conditions for anonymity, which can be a decisive factor for the decision-making of offenders. Tompson and Bowers (2013) found that darkness is a key factor related to robbery events in both study areas in London and Glasgow. These authors suggest that poor lighting conditions, whether they are due to weather conditions or the absence of sunlight, can be a significant obstacle to surveillance and thus have an effect on guardianship, and therefore promote crime. When assessing patterns of residential burglary, Coupe and Blake (2006) demonstrated that the night-time availability of guardians did not deter some burglars, as the darkness prevented the guardians from being capable of monitoring their surroundings (Gill, 2000; Pettway, 1982; Smith, 2003). Previous research on the seasonality of robbery indicates that street and commercial robbery peak in the winter months, often associated with the Christmas holiday period but also with the darkness (Van Koppen & Jansen, 1999). Cargo theft, considered in this book as a crime against retail and trading, also shows peaks during winter months of the year in Europe, the Middle East and Africa, but after Christmas, it falls (Ekwall, 2009). Ceccato (2015) indicates that in Sweden, a peak was observed in autumn, while in Brazil, cargo theft increases in the spring and autumn but it also decreases after Christmas, reflecting the lower demand for goods (see the chapter by Justus et al. in this book).



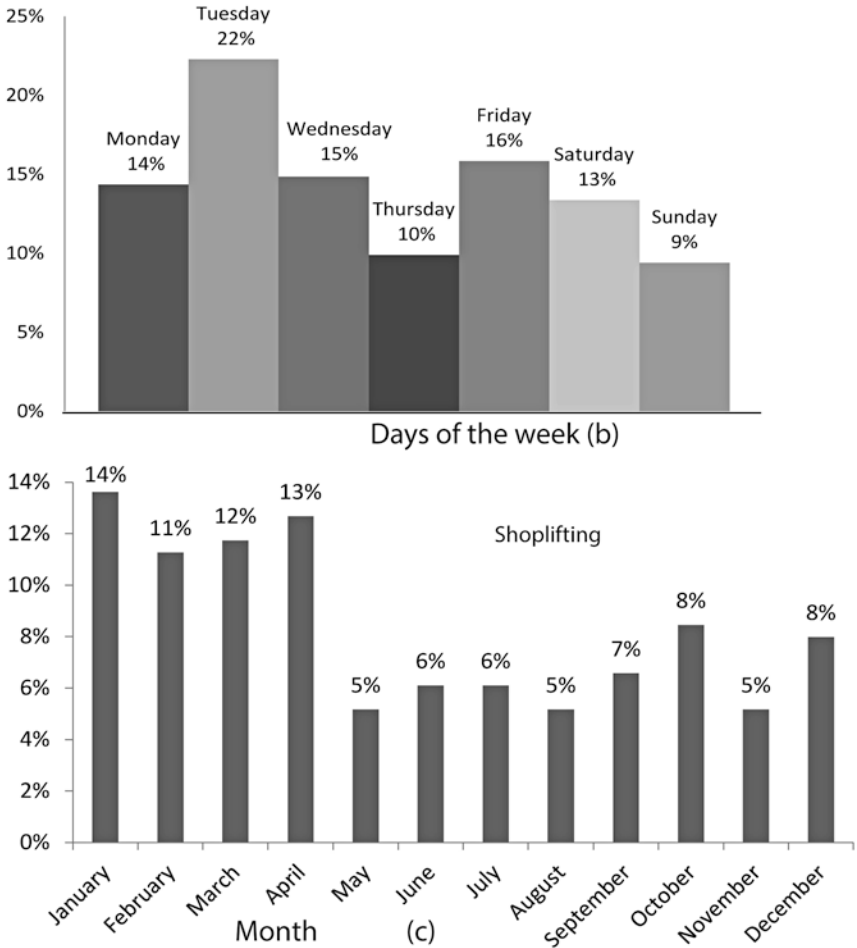


Fig. 1.1 Temporal trends of crimes in a shopping centre: (a) daily, (b) weekly and (c) monthly patterns

Research has long shown that robberies and other types of property crimes are concentrated in space, and commercial crime follows particular mixed land use areas, often in city centres (Baumer, Lauritsen, Rosenfeld, & Wright, 1998; Cohn & Rotton, 2000; Gill, 2000; Hendricks, Landsittel, Amandus, Malcan, & Bell, 1999; Pettitway, 1982). A reason

for this pattern is that city centres also concentrate premises that sell alcohol, bowling, cinemas, etc., which generate activities that reproduce problems beyond typical commercial offences, such as violence. The link between violence and the opening hours of restaurants and bars is widely recognised in studies in the US, Sweden, Norway and Australia (Burgason, Drawve, Brown, & Eassey, 2017; Menéndez, Tusell, & Weatherburn, 2017; Rossow & Norström, 2012; Wingren, 2014).

No evidence was found for the effect of opening hours on violence at a Swedish shopping centre despite the fact that it was expected that violent encounters would peak after the bars would close (Fig. 1.1a). The daily peak for all incidents, including violence, actually occurs between 17:00 and 21:00. Note that after school hours, the shopping centre attracts youngsters to particular settings, often with no guardians around (e.g., bowling, parking lots, libraries and game facilities). Since most burglaries take place overnight, most cases are registered at the shopping centre opens its doors (Fig. 1.1a). In a shopping centre in Stockholm, Sweden, shoplifting and thefts show peaks in the afternoons and evenings, Tuesdays, and from winter to early spring (Fig. 1.1a–c) (Ceccato 2016).

It comes as no surprise that crimes show clear patterns in space, in street segments in particular. For instance in Boston from 1980 to 2008, Rengert et al., (2010) show that robberies are highly concentrated on a small number of street segments and intersections rather than spread evenly across the urban landscape. At the scale of the store, research indicates links between the layout of the stores, offenders' decision-making and levels of property crimes, in particular shoplifting and robberies (Cardone & Hayes, 2012; Ekblom, 1986; Gill, 2007; Kajalo & Lindblom, 2011). In a Swedish shopping centre, Ceccato (2016) show that crime of all sorts tends to be concentrated in space. They also indicate patterns of concentration in certain facilities: 64% of all incidents happen in 10% of micro places in the shopping centre, in particular the food court followed by two fast food restaurants, close to the entrances. As regards to thefts and pickpocketing, Poyner and Webb (1995) have suggested that small distances between tables would facilitate the ability for thieves to pass, grab a bag and leave.

In summary, the result of this inquiry into definitions and terms has indicated a clear multidisciplinary take on the subjects in question. The scale of analysis (micro, meso, macro), the nature of the subject of study (offender, settings, networks, technology) and country contexts (Australia, Brazil, England, Israel, Italy, the UK and the US) impose a plurality to these definitions that is worth summarising, as it is done in this section, to support the reading of the chapters.

Final Summary

The book is composed of 6 parts and 16 chapters; it offers a new take on retail crime and its prevention by bringing international evidence and a multidisciplinary perspective to a subject that is of high relevance to both researchers and practitioners. The focus of the book is on crime in retail environments, and the interplay between products, criminals and settings. Examples include stores, commercial streets and shopping malls but also the wider context of situational conditions of the supply chain in which crime occurs. Instead of trying to compress the richness of the common terms used by different scholars into a homogenized standard, neglecting the existence of multiple concepts coming from a multidisciplinary field of research, this chapter reveals some of the differences among authors' basic definitions in retail crime and prevention, as revealed in the book chapters. Retail crime is defined here as any criminal act against a store, an establishment or a conglomerate of companies, their properties as well as their employees and customers. Some of these crimes are composed of multiple events, some taking place far beyond the boundaries of the store, affecting stakeholders along the product supply chain, as illustrated by Organised Retail Crime (ORC). Although this book is grounded in environmental criminological theory and principles of situational crime prevention, it approaches retail crime from a multidisciplinary perspective, with contributors coming from other related disciplines, such as Economics, Political Science, Engineering and Urban Planning. The book also offers state-of-the-art research on

retail crime with lessons from Australia, Brazil, Israel, Italy, Sweden, the UK and the US and puts forward a number of new directions in retail crime research and prevention practices.

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2

International Trends in Retail Crime and Prevention Practices

Joshua Bamfield

Loss Prevention Purpose

At one time retail security or ‘loss prevention’ was seen as a retail form of private police being mainly concerned with arresting offenders, reducing crime losses and protecting the retailer’s assets (Button, 2002). Loss prevention is now treated by retailers as a more important element in corporate performance. Unfortunately this has come at a time when resources are tightly stretched. There is emphasis upon reducing total losses, rather than maximising arrests, although it is still difficult to measure the output of loss prevention department or to measure accurately the true total of crime losses as opposed to losses caused by waste or error. The chapter considers how technology and processes have been changed in order to control the risks of loss and to appeal to senior officers in retail corporations. In addition to long-established problems such as customer theft and employee deviance, retailers face growing problems from organised crime, cybercrime and the growth of e-commerce. A new

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institutional loss prevention approach is being developed, emphasising risk management and curbing total losses as a result of a combination of risk-management approaches and higher cost and resource pressures.

Retail Crime

Retailing meets the requirements of the crime triangle of Cohen and Felson's (1980) environmental criminology. A motivated or likely offender comes together with a suitable target at a particular time and place without a capable or effective guardian being present (Clarke, 2002). Employees know the company systems and procedures and have access to merchandise and money. Customers of retail businesses, unlike most other businesses, have ready access to retail stores and merchandise which they can use to steal merchandise or create some other pecuniary advantage. These are not recent phenomena. Retail crime is probably as old as the retail industry itself. Indeed in 1722 Daniel Defoe discussed dealing with shoplifting and employee crime as a long-established practice in *The Tradesman's Handbook* (Defoe, 1987). Becker's (1968) economic theory of crime suggests that the reason why retail crime is so prevalent is: there are so many opportunities and the criminal's cost of crime is quite cheap. Retail loss prevention practice not only involves inserting a guardian (however staff are expensive), but reducing opportunities and increasing the likelihood for a criminal of being detected.

Measurement of Retail Crime

Any means of measuring of retail crime attempts to determine the number and type of crime incidents and the total value of losses caused to retailers from crime. But crime incidents are hard to detect as they occur and they are equally hard to determine at a later stage (Hayes, 2007). Only a small proportion of retail crime is identified at the time it is committed. Deciding which proportion of loss has been caused by customers, employees, the supply chain or simple error is problematic (Hayes, 2007; Hollinger and Davies, 2006). This attribution problem makes *true*

comparisons of comparative losses very difficult, although indirect evidence such as discarded EAS tags or packaging may be found in customer areas that help decide whether certain inventory discrepancies are crime or error. Stores with several store detectives are likely to produce more detections than stores with few or none. In at least some cases the number of apprehended criminals and the scale of loss can be a measure of staff loss prevention activity rather than the underlying pattern of offences.

There are two main methods of estimating totals of retail crime. One is a *micro* approach, collecting data from retailers about the number of thieves apprehended and the value stolen. The second is a *macro* approach which involves estimating total losses by calculating revenue shrinkage from company accounts. Revenue shrinkage is defined as the difference between sales that *should* have been achieved given the amount of inventory purchased by the retail business and the actual sales revenue (Bamfield, 2012). A proportion of shrinkage is deducted to cover waste and accounting errors, and what remains is construed as losses from crime. Waste is defined as product that is damaged or is otherwise unsaleable (e.g. food past its sell-by date) and error is defined as accounting or price mistakes that reduce actual sales revenue (Beck & Peacock, 2009).

Both methods of estimating retail crime may involve considerable error, the micro approach effectively ignoring the large number of crimes that are not detected or observed at the time and the macro approach being dependent on both an accurate estimate of loss and accuracy (and honesty) in valuing the non-crime element (Beck & Peacock, 2009).

Police statistics of retail crime offences naturally throw some light on the extent of retail crime, but in many countries there is thought to be widespread underreporting of retail crime which will naturally affect police and official statistics. Only a proportion of retail criminals are apprehended. In the UK, the British Retail Consortium (BRC) argued that retailers ration their use of the police, with only a minority being handed to the police because of concerns about lengthy legal processes, lack of official action, and the perceived likelihood of no or limited sanctions being imposed on offenders (BRC, 2015). In Germany, the EHI Retail Institute estimated that although the recorded (official) number of retail crimes in Germany in 2015 was 365,373, the total number of crime

committed was as many as 26 m (EHI, 2016) and in the UK total shoplifting incidents using a different methodology were estimated to be 3.4 m in 2014–2015, almost eight times greater than the number of police arrests for shop theft and fraud (BRC, 2016a). Hence trends in crime reports from retailers or arrests may not only fail to reflect the actual crime trends within stores, but may not even have the same sign.

Therefore, as police statistics are unreliable as a means of valuing retail crime values or trends over time, retail crime estimates need to be based on information gathered from retailers. This is not a novel issue: similar views are made about many police crime statistics. The Smith (2006) report for the British Home Secretary found official crime statistics lacked credibility, and mostly acted as indicators of police activity rather than actual levels of victimisation (Maguire, 2007; van Dijk, 2015).

International Trends in Total Retail Crime Losses

National or sectoral surveys of retail crime, both micro and macro, suffer from the common problems of industrial market research: obtaining representative samples, continuity in corporate responses and differences in methodology (Neter, Wasserman, & Whitmore, 1978). Retailers may have different methods of calculating loss and the survey either has to correct for this by adjusting that data before it is entered or accepting that the results are subject to a wide margin of error. However if surveys using the same methodologies and similar samples are carried out over time, the inter-temporal trends may be estimated with some degree of accuracy even though total crime losses may be under- or over-estimated.

The BRC is one organisation that estimates losses at a micro level. Its *BRC Retail Crime Survey* reports the numbers and cost of incidents and grosses up the figures to produce national results. Whilst the results they publish reflect the data gathered, compared to macro estimates, BRC figures produce lower total losses and employee theft (which is usually difficult to detect) and often large variation in individual totals. For example, the average loss per dishonest employee was given as £872 in 2008–2009, £342 in 2010–2011 and rose to £1114 in 2014–2015.

The macro approaches usually collect what is termed ‘shrinkage’ data from retailers, which is then adjusted to indicate crime losses. Global estimates may be legitimately contested by other researchers, although the Global Retail Theft Barometer (GRTB) figures seem internally consistent. GRTB figures are the only ones that at present use the same methodology for all countries, thus enabling inter-country differences to be demonstrated. The results however should be treated as approximations. I must declare an interest in that I originally developed the GRTB although I have not been involved in it in any way or benefit financially since 2011. The alternative is to use results from a range of sources, which can produce results that lack coherence and use inconsistent methodologies and coverage (Bamfield, 2012; Beck & Peacock, 2009). Crime losses calculated using shrinkage are considerable. The GRTB estimated 2014–2015 losses in North America at US\$36.79 bn (1.11% of retail sales) and that of ten European countries as being \$40.88 bn (0.96% of retail sales) (TSC, 2015).

Large as these absolute totals are, the general trend has been downwards compared to the 2011 survey by Bamfield (2011) that used the same methodology. North America’s shrinkage losses in 2011 were \$45.32 bn and in the same ten European countries \$43.15 bn (Bamfield, 2011), which means that by 2014–2015 losses were reduced by –18.8% and –5.3% respectively. In Europe, error and waste was estimated to be 24% of total shrinkage losses.

In the U.S, the well-established NRSS survey of retailers gave average shrinkage in 2010 as 1.49% of sales: this had fallen by 2015 to a low of 1.38% (Hollinger, 2016). Not every country has achieved a reduction in crime losses: in the UK and Germany, shrinkage losses may have risen in 2015 (BRC, 2016a; EHI, 2016), and the GRTB itself estimated that average shrinkage increased in ten countries and fell in six compared to the previous year (TSC, 2015).

The reduction in shrinkage in many countries and markets in the period 2011 to 2015 may well be consistent with the decline in many other forms of crime in the developed world. The survey by van Dijk, Tseloni, and Farrell (2012) attributes this to several possible factors including fewer opportunities (technological security, better crime prevention and a fall in price of many targeted consumer goods) and

demographic changes (such as a greying population and a fall in the numbers of younger people). Similar factors may have played some part in the decline in shrinkage in retail.

Several authors have pointed to a crime cycle in loss prevention. An increase in crime is met with higher budgets and additional resources resulting in a fall in crime: the fall in crime ultimately leads to budgets and personnel being cut. After some time, crime may then start to rise (Bamfield, 2012; Beck & Peacock, 2009; Button, 2002). This is not to suggest that high loss-prevention spending is always optimal, but although sharp cuts in budgets and activity may have little apparent medium-term effect, in the longer term crime may rise once more. This may partly explain the increase in both customer theft and employee theft in the UK in 2015 (BRC, 2016a), in Germany (EHI, 2016) and in the U.S. (Hollinger, 2017) although it remains to be seen whether this adverse trend will continue.

Emerging Trends in Retail Losses

Smaller loss prevention budgets. Established retailing in many countries has been greatly affected by changes in the retail environment in the past ten to 15 years. In many countries, slower growth, price competition, cost pressures and the rapid growth of ecommerce have affected sales and profitability, cutting stores, jobs, and businesses (BRC, 2016b; Lierow, Janssen, & D’Inca, 2014; Rigby, 2015). Department spending, including loss prevention, has been cut by retailers (BRC, 2016a; Hollinger, 2017). The NRSS report (Hollinger, 2017) report on U.S. retailing found that two-thirds of respondents had flat or declining loss-prevention budgets and one half expect staff numbers to remain unchanged. The industry has pruned its management structures. There are fewer management tiers, greater responsibilities for managers and more delegation and this has also been applied to loss prevention (Bamfield, 2014).

Growth in customer theft. In the U.S. for many years American studies have normally shown employee theft as being the largest element of U.S. retail crime (Bamfield & Hollinger, 1996; Hayes, 2007; Hollinger,

2016). However two most recent NRSS studies have shown customer theft in the U.S. now to be slightly larger than employee theft and by the 2017 study, customer theft was reported to be an average of 36.5% and employee theft 30.0% of inventory shrinkage (Hollinger, 2017). The author explained the rapid growth in customer theft as resulting primarily from the growth in organised retail crime (Hollinger, 2016). The level of employee theft as a percentage of inventory loss in most European countries is normally reported as being lower than the U.S. The GRTB estimated the average for ten countries in 2014–2015 as 25.0%, a fall from 30.2% in the same study in 2011. However Beck and Peacock (2009) argue that employee theft is often underreported in European studies.

Growth in organised retail crime. A developing crime trend affecting the retail industry concerns crimes committed by organised groups or criminal mafia (termed organised retail crime [ORC] in the U.S.), affecting both customer theft and employee theft. Levi (2014) has argued that the term ‘organised crime’ covers so many forms of crime (including groups of professionals, gangs, large-scale thefts, robberies, thefts of merchandise for resale, international groups as well as groups of only local or temporary significance) that it lacks meaning. Organised crime has been a significant problem for many years for retailers in countries such as Italy, South Africa, Brazil and Croatia, but is thought to have little impact on retailing until recently. In 2016 the BRC (2016a) estimated that 40% of theft from stores in 2015 was ORC-related. In Germany the police (BKA, 2016; Burger, Vesper, Wehner, & Wyssuwa, 2016) estimated that 25% of shoplifting was gang-linked and that ORC-linked retail crime losses amounted to €0.5 bn in 2015. The Netherlands has also been badly affected by ORC (Ferberda & Unger, 2016) and by itinerant groups (Detailhandel, 2013). The U.S. experience (NRF, 2015) is that 97% of U.S. retailers surveyed in 2015 had been a victim of ORC in 2014–2015, 48.5% had experienced significant increases in ORC in 2015, and ORC losses were equivalent to 0.45% of retail sales (or \$20 bn). The NRF study showed that ORC crime was prevalent in gift card, refund fraud and cargo theft, although it is difficult to assess the accuracy of these figures.

Growth in Cybercrime. A third trend concerns the growth of cybercrime, both in the form of transactions frauds, such as payment fraud, fraudulent orders and false refunds and cyberattacks against retailers to disrupt their operations, such as denial of service or website attacks, or to collect sensitive data such as passwords, bank and card details and customer information. With more than 15% of retail business conducted online, Britain has the largest e-commerce sector in Europe (Rigby, 2015) based on pure-play online traders as well as multichannel retailers, many of whom have significant cross-border trade. The UK experience may be indicative of what may become increasingly common in Europe.

No official figures are published at a European level or globally relating to the impact of retail cybercrime, so we take British figures as representative of much else. The BRC (2016a) estimated that UK retail fraud incidents cost a total of £222 m (equivalent to €263 m in January 2016) in 2014–2015: payment card fraud was 57% of the total, refund fraud (36%), account credit fraud (5%) and voucher/gift card fraud (2%). Of these, 79% of payment card fraud was carried out online, as was 64% of account credit fraud and only 8% of refund fraud. Cybercrime affecting the loss of customer personal data or theft from their personal accounts may have a disproportionate effect on the standing of a retail business. An attack on Tesco Bank (part of the largest retail company in the UK) in 2016 affected 9000 customers who had a total of £2.5 m stolen from their accounts over a weekend. Although it was all refunded two days later, there was considerable publicity and criticism at the time that this fairly minor attack had been successful: the reputational effects at this stage are unknown (Shannon, 2016).

The New Institutional Loss Prevention

The changes in the retail environment and reduced budgets have helped the development of what may be termed a *new institutional loss prevention*, NILP, focused on: working with and through others; responsible for systems, procedures and compliance; and adopting a risk management approach. They also try to work in partnership with external organisations. This is not a novel concept, (Beck & Peacock, 2009; Hayes, 2007).

It is helped by the wider business background of many LP executives and their educational qualifications. It means that loss prevention cannot focus on criminals alone (as quasi police), but has to move beyond this to take up roles to identify, monitor and control a range of other business losses, such as wastage, product markdowns, and process failures. Naturally criminals still have to be deterred or apprehended. The approach is: cross-functional; systems, procedures and compliance; risk management; a tiered and focused approach; the use of appropriate technology; and partnership with other retailers and public agencies.

Loss prevention may well take over responsibility for compliance audits, health and safety, and financial audits partly for cost reasons, but also for consistency and the recognition of departmental expertise. Adopting a risk management approach gives loss prevention a very wide area of interest ranging from evaluating/guarding against terrorist threats, extortion and major robberies to compliance with procedures for opening and closing stores. All risks are recognised, evaluated and a tiered response is adopted so that normally stores facing the greatest issues have more resources than those with the least issues (Bamfield, 2014; PWC, 2016). The loss manager has to work with other departments, helping to resolve shrinkage, wastage, cost and delivery issues, and develop better systems and procedures, ensuring compliance with best practice (e.g. FMI, 2013). In the U.S., the Retail Industry Leaders' Association (RILA) argues that the concept of shrinkage itself is outdated: what firms need to analyse, monitor and control are *total losses*, whether from poorly planned processes, customer theft, payment discrepancies through to data loss from hackers and cybercrime rather than focusing on shrinkage alone (Beck, 2016).

One approach has been described by the director of Risk Operations at the UK's Co-operative Group. Risk management now comprises a single team, covering health and safety, loss prevention, compliance, audit and asset protection in stores (Rowe, 2016). These were all formerly separate departments operating in distinct silos: now there is a common focus in ensuring store compliance and support managers in helping to curb their losses whether crime-based or operations-based. The company ensures that stores comply with national regulations and codes of conduct. In health and safety and trading standards, for example, a 'primary authority' relationship has been agreed with a single local authority

(which sets regulations) that has the power to bind all other authorities, thus eliminating differences in the interpretation of statutes (BRDO, 2016). For crime issues, The Co-operative has established a looser primary authority relationship with Nottinghamshire Police under which they negotiate agreement with all other police forces about good-practice security standards in store, a standard method of reporting offenders, dealing with small-scale crimes and agreeing police service standards (Bamfield, 2016).

Innovation: Retail Crime Prevention Partnerships

Partnerships are developed with other retailers (particularly in the same vertical market) that are most likely to suffer from the same criminals and similar crimes. They provide a means of liaison with police and government departments (BRC, 2016a). Local retail crime initiatives operate in many countries including the UK, Sweden (e.g. Västerås), France and the Netherlands, bringing together local commerce, police, commercial landlords, shopping centres, business improvement districts (BIDS) and local government to deal with individual issues as well as strategic approaches (ATCM, 2016; van Steden, Wood, Shearing, & Boutellier, 2016). Areas with BIDS usually provide additional funding for crime-prevention activities using local property taxes: Cook and MacDonald (2011) argue from U.S. examples that BIDS are valuable in dealing strategically with local crime. The collaboration in the U.S. between large retailers and government agencies to deal with ORC has had some successes (Minnick, 2014; Police Executive Research Forum, 2014). In England and Wales, retailers in conjunction with an external organisation have established a *National Business Crime Solution* (NBCS), with a single crime database, close links with the police (the National Police Chiefs' Council is a member) and specialist interest groups (Bowen, 2014). This not only centralises information on offences and offenders, previously held separately around the country, but expects to eliminate the widespread duplication of information and individual reporting required by government agencies

and partnerships. However, as Katz and Shapiro (1985) have pointed out large-scale programmes require a high level of adoption before the benefits (or externalities in this case) apply: these have to compete with other programmes and other agents in the market which may mean that large-scale programmes may never reach their critical mass.

Retailers have to deal with a large number of low value, high volume offenders who may be occasional offenders or only commit a single crime. There are too many of these to be dealt with by court appearances or police action, and there is evidence in several countries that police are seeking to reduce their involvement with day-to-day theft in stores (BRC, 2016a). One role of crime prevention partnerships is to ensure a good understanding by police and retailers about what can be expected. The primary authority approach in England and Wales being pioneered in Nottinghamshire may regularise this even more by encouraging the adoption of common standards.

Innovation: Retail Technology

Innovation is of course much more than technology, but it involves the application of new methods (whether embodied in technology or not), human skills, and capital to improve output, or to open new markets, improve sources of supply, change work patterns and improve material handling (Loveridge & Pitt, 1990; Schumpeter, 1950). The organisation changes involved in in-house NILP and the crime-reduction partnerships are also true innovations in Schumpeter's sense of the term. For loss prevention, important technical innovations have included electronic article surveillance (EAS) and CCTV in the period 1980s–2000s, which has been followed by the more recent adoption of digital CCTV systems and storage, often using high definition and IP protocol, providing greater accuracy, storage capacity, added flexibility and a range of applications that can be used by other functional areas of the business. EAS is not simply an objective technology covering patents for electronic tags fixed to merchandise: Bamfield (1994) argues that effective deployment of EAS requires considerable trial and error, management learning and new human skills to achieve the best results at the lowest cost.

The growing use of analytics and artificial intelligence (AI) against employee theft at checkouts is important: AI software, CCTV and checkout audit trail are used to identify potentially criminal actions and errors that indicate crime or poor checkout practice (Adams & Ferryman, 2015). An earlier GRTB estimate (Bamfield, 2011) was that 30% of in-store losses occurred at the checkout, so this trend towards focusing on employee theft at the checkout and on potential collusion may be especially significant in curbing losses. We carried out interviews with eight early-adopter large UK retailers in 2016 (using the technology in 635 stores): almost one-half of the losses (an average of 44.3%) were procedural errors or the result of poor training rather than malevolence. Naturally these issues need addressing as they lead to inventory losses. But the systems also indicate significant patterns of fraud.

In relation to online security, retailers often find that additional security systems tend to lead to more online shopping baskets being abandoned (Graf & Schneider, 2016). Thus retailers have to achieve a balance between the costs of potential frauds and the costs of lost sales. Stores may attempt to give frequent customers lower levels of security or intermittent security so they can buy with greater ease. Online retailers also use analytics to determine the demographics, search behaviour, and intended purchases of potential criminals in order to refuse orders or identify orders where higher levels of security are needed, computer device fingerprint (ie is a different device being used?) and IP address and analytical tools to flag up abnormal behaviour that requires intervention. In most countries, much of the work against cybercrime is carried out currently by finance and IT departments and not by loss prevention, loss prevention provides expertise in preparing evidence and apprehending thieves (Cybersource, 2016; Risley, 2013).

Loss prevention departments increasingly use data analysis including analytics to manage risks. PWC (2016) showed that retailers which did this focused on safety: (86% of respondents), crisis management (82%), business continuity planning (81%), the supply chain (67%), and omnichannel challenges (73%). Ninety-seven per cent of respondents used loss prevention technology to monitor and investigate crimes and significant incidents, but only 48% used data dynamically to detect and

predict losses including shoplifting (PWC, 2016). Data analysis is also used to allocate loss prevention resources in relation to trends in risk, in order to ensure that resources were allocated more accurately.

As well as new CCTV systems and analytics, innovations in practice have included smartphones, wi-fi and laptops (running software ranging from simple spreadsheets to datamining) which have increased the productivity of loss prevention staff through improved processes and faster, cheaper and more reliable information. They no longer need to visit a site to conduct an interview or see the tape of an incident or go to a remote office to process data. They can readily provide police with full evidence of a crime including photographs and CCTV footage, as part of their report. At store level, smartphones, tablets, wi-fi and analytics enable loss prevention staff to keep in touch with managers and CCTV operators without loss of time. It must be admitted that a great deal of bad practice remains. Although loss prevention budgets have been reduced in recent years, loss prevention departments have continued purchasing new equipment, although retailers have become more austere in their capital expenditure evaluations (Hollinger, 2016).

As well as the work directly carried out by loss prevention, there have been new trends in retail that may have helped to reduce shrinkage and losses. The closure by large chains of many of their worst-performing stores will have reduced shrinkage losses as such stores are likely to suffer multiple trading issues including above-average levels of shrinkage and crime. The roll out of Chip and PIN and the spread of contactless payment cards has reduced retailers' in-store payment losses and encouraged the use of cards instead of cash and cheques. This potentially reduces the cost of receiving, handling and counting cash and cheques (Pymnts.com, 2016). Tamper-evident and tamper-proof packaging may have reduced losses from wastage as well as extortion or tampering attempts. Self-scan checkouts or self-service checkouts are intended to increase customer service by reducing waiting, cut operating costs and reduce some of the risks of employee deviance (Beck, 2011). But if inadequately monitored they also increase the number of theft opportunities open to customers and may encourage theft by stimulating the neutralisation excuses that individuals may use (see Taylor, Chap. 5 in this book).

Other trends that have cut costs and enabled better monitoring of inventory include item bar codes, electronic point of sale (epos) scanning, electronic price files, digital payment and change giving systems.

Innovation: Major Crime-Prevention Devices

Table 2.1 indicates the main methods used to protect products in 2014–2015 in six major countries (France, Germany, UK, Italy, The Netherlands and the U.S) as reported by the GRTB (TSC, 2015). The four most-used systems were EAS, CCTV, security guards, and alarm monitoring. On average, 43% of retailers by country used EAS on 50% or more of their products. Other security was provided on logistics, although of course these statistics do not include the prevention methods used on third-party badged vehicles, which are likely to be higher. Analytics were used by 51% of retailers by country and exception reporting on high-risk products by 41%.

Table 2.1 Main loss prevention/protection methods 2014–2015, selected countries

	France	Germany ^a	UK	USA	Italy	Netherlands	Average
EAS systems	88%	67%	67%	68%	83%	76%	75%
<i>EAS > 50% of goods^b</i>	59%	38%	50%	33%	49%	32%	43%
CCTV	63%	70%	75%	83%	67%	88%	74%
Guards	75%	53%	75%	63%	75%	53%	66%
Alarm monitoring	50%	63%	75%	75%	17%	76%	59%
Doorseals	88%	67%	50%	46%	33%	47%	55%
GPS/electronic logistics	75%	63%	38%	59%	50%	29%	52%
Analytics	63%	57%	63%	68%	25%	29%	51%
Exception reports	50%	63%	50%	46%	21%	18%	41%
Advanced access control	50%	60%	25%	29%	17%	53%	39%
Motion detectors	25%	33%	25%	27%	4%	24%	23%

Source: Adapted from TSC (2015) GRTB 2014–2015 with supplementary data

^aData collected by CRR in 2015, 30 respondents

^bAs a proportion of all respondents

Although these are broad-brush results, they are consistent with country-specific figures such as the UK's BRC (2016a), the U.S. (Hollinger, 2016) and Germany (EHI, 2016). Loss prevention investment is not, of course, primarily computer software and digital devices. There is continued target hardening using locks and cables, alarms, cabinets, uniformed security, window shutters, physical equipment, defended cash offices, bollards, armoured car pickups, deterrent signage, and dummy CCTV (BRC, 2016a; Hollinger, 2016).

Capital Investment

Although some authors have rightly criticised the quality of retailer investment analysis (Beck & Peacock, 2009; Hayes & Blackwood, 2006), retail investment in security equipment relates to saving labour costs and supporting increased sales, not simply shrinkage reduction. Retailers face the issue of information asymmetry (Arrow, 1962): the results of any one device are difficult to identify in an environment where retailers are attempting a range of loss prevention methods to curb crime and deter and apprehend offenders. To overcome information asymmetries in loss prevention retailers may join clusters of similar retailers at national, international and local level: clusters are identified by Porter (1998) as a major means of exchanging information about methods, technologies and other forms of innovation. At national level this may be the NRF, RILA or BRC, retailers organised in vertical markets such as fashion, DIY/hardware, department stores or interest groups organised by equipment suppliers. Informal groups like the UK's *Fashion Forum* shares information about crime and loss trends, software, processes, equipment suppliers, ORC and 'ideas that work'. Conferences and seminars are also ways of exchanging information and alerting others to innovations. Unlike some other areas of retail development, the 2016 survey of European loss prevention managers showed that they normally welcome visits from competitors to exchange war stories, and show their new processes, technologies and methods of combating newer modes of crime, and expect reciprocation from the people they show around.

Table 2.2 Regression of loss prevention spending and equipment against shrinkage 2001–2012

Dependent variable	Constant	LP spending	LP equipment	F	Durbin Watson	$R^2_{\text{Predicted}}$ (%)
Shrinkage	31,962 (2189)	-3.65 (1.26)	-	3.5	1.89	51.2
Shrinkage	35,638 (10,887)	-	-6.67 (2.535)	1.7	1.55	30.3
Shrinkage	44,683 (3698)	-2.677 (1.083)	-1.083 (0.67)	2.9	1.79	54.8

Note: $n = 2966$; Figures in brackets are SEE

Table 2.2 relates the capital security spending of Western European retailers to shrinkage levels in 2000–2012, the only period for which there is consistent and detailed information. To preserve confidentiality, the actual figures have been replaced with proxies (see also Bamfield, 2011).

The table shows that average shrinkage levels as a percentage of sales decline in companies with high security spending ($R^2 = 51.2\%$), although this is rather less true if the value only of security equipment is modelled ($R^2 = 30.3\%$). The coefficient for security equipment is significant, but it may be affected by different methods of financing and depreciating equipment which may mean that one is not comparing like with like. What the equations show is that levels of security spending are correlated with shrinkage reduction and the results are significant, but of course this only shows an association and not cause and effect. This does not show that *technological change* by itself is the answer to retail crime, indeed we have argued earlier that innovation and technology are not the same things, but that innovation of all kinds (including technology) is an essential element of loss prevention management as it is to retailing in general.

Conclusions

The aim of retail loss prevention is to minimise crime and loss, subject to the constraints of disproportionate spending on security or excessive sacrifice of sales and profits. However monitoring the work of loss

prevention is problematic: security outputs are hard to evaluate and the actual measurement of crime (and crime trends) either directly by crime detections and apprehensions or indirectly via shrinkage may be inaccurate. It is hard to determine, therefore, what should be the optimal level of loss prevention spending for a business and how this budget should be divided between different projects.

There is some evidence from national surveys of retail crime that crime losses suffered by retailers have been falling in the current decade, although recent figures indicate that the downward trend in losses may have reversed. Loss prevention, like other functional departments in retailing, have suffered reductions in budgets resulting from the aftermath of the 2007–2008 recession and by increased competition and lower margins of the industry in many countries. This has produced two main effects. Loss prevention has retained its focus on crime, but taken responsibility for other areas of loss such as waste and administrative error, become more involved in audit and operational compliance (including fire, health and safety) and developed competence in risk management. This new institutional loss prevention as it is called here is applied in different ways in each large retailer, but loss prevention has come a long way from its original concern primarily with arrests and asset protection. To work well it requires cooperation with other operational and functional areas in the business, shared responsibility and expertise in developing new systems and procedures. Retailers work closely with other retailers and share information about crime trends. They are normally keen to develop links with national bodies, and police and law-enforcement agencies in order to create partnerships some of which deal with effective handling of low-value high-volume crime and others dealing with patterns of high-value crime that may involve organised crime, violent gangs, attacks on distribution and other concerns where retailers may have more up-to-date information about patterns than the police.

Retailers have continued to make capital spending for loss prevention systems, and artificial intelligence that can show patterns in fraud and crime and support risk management approaches. Asset protection approaches using tagging remain important, and heavy investment has been made in CCTV. CCTV is not only being used to combat theft and provide evidence of crime, but has become a risk-management tool in a

time of concerns about terrorism and increasing violence as well as a technology supporting retail marketing through store counts and merchandising display analysis. The intention is to create resilience to protect staff and customers and company assets both against significant events as well as the continual losses through frequent small-scale theft.

Disclaimer The author is Director of the Centre for Retail Research, Nottingham. The Royal Statistical Society recommends that members should indicate any financial or other *interest* that may affect the objectivity of their results. Neither he nor CRR owns shares in, or receives financial support from, or has any contractual relationship with, any security supplier or benefits from any technology mentioned.

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Part II

**Products, Settings and Offenders
in Retail**



3

Can We Ever Know Which Objects Thieves Most Desire? Lessons from Studying Shoplifted Fast-Moving Consumer Goods

Brian T. Smith and Ron V. Clarke

Introduction

From a basis of crime opportunity theory, Clarke (1999) proposed a general model of goods CRAVED by thieves, which he argued should be some combination of Concealable, Removable, Available, Valuable, Enjoyable and Disposable. This model has helped to explain the products favored by thieves for many different kinds of theft. These include: timber theft (Baker, 2003); domestic burglaries (Wellsmith & Burrell, 2005); theft of bags in licensed premises (Smith, Bowers, & Johnson, 2006); cell phone theft (Whitehead et al., 2008); theft of metals (Sidebottom, Belur, Bowers, Tompson, & Johnson, 2011); internationally

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trafficked goods (Natarajan, 2012), non-prescription drugs and grocery items having illicit drug uses (Smith & Clarke, 2015) and pawn shop theft (Fass & Francis, 2004). CRAVED has also been used to explain wildlife crime including: poaching of parrots (Pires, 2015; Pires & Clarke, 2011, 2012; Pires & Petrossian, 2016); theft of livestock (Sidebottom, 2013); and illegal fishing (Petrossian & Clarke, 2014; Petrossian, Weis, & Pires, 2015).

However, the proportion of variance explained has not always been high, which suggests that it might be possible to improve CRAVED as a measure of target choice. The work reported in this chapter was initially intended to serve this purpose. As explained below, it sought to improve the variance explained in a study of shoplifting undertaken by Smith (2017). The attempt was not successful and while disappointing, it led the present authors to explore why it had failed and whether it would ever be possible to significantly improve upon CRAVED. These issues are explored in the concluding sections of the paper, but first it is necessary to give an account of the empirical work that builds upon Smith's (2017) study.

Smith's Study of Shoplifting

Smith (2017) developed measures for five CRAVED elements to ascertain how well they might explain the variation in theft rates of fast-moving consumer goods (FMCGs), "low-cost products that are sold quickly, replaced, or fully-used within a year, usually in a matter of days, weeks, or months" (Cushman and Wakefield, 2016). While relatively inexpensive, these products are constantly in demand, which results in worldwide annual losses of more than \$56 billion—higher than the combined losses of all other types of retail goods (Bamfield, 2012; GRTB, 2015). Furthermore, stolen-goods markets thrive on the constant demand for FMCGs (Gill et al., 2004; Gill & Clarke, 2012; Schneider, 2003; Schneider, 2005; Stevenson & Forsythe, 1998; Stevenson, Forsythe, & Weatherburn, 2001; Sutton, 1998).

For his study, Smith used a large sample of FMCGs ($N = 7468$) supplied by a supermarket chain in the United States and a detailed measure of theft rates developed by the chain.¹ The products were offered for sale

during the 2011 calendar year, in 204 supermarkets, in various locations in the U.S. All products were non-food items sold by most supermarket stores. He measured five of the six CRAVED attributes: (1) Concealable; (2) Available; (3) Valuable; (4) Enjoyable; and (5) Disposable. Since all the products he studied were Accessible to shoplifters, he used an alternative measure of *Available*, Abundance, as proposed by Pires and Clarke (2012). He did not attempt to measure *Removable* as nearly all these FMCGs could easily have been taken by thieves. As was the case in previous applications of CRAVED, Smith developed measures of its elements to best capture the attributes specific to the form of theft he was studying.

Smith (2017) was able to avoid many of the usual problems of measuring shoplifting because the retailer provided access to its “likely-theft” database that is the result of several steps taken to measure shoplifting separately from shrinkage. Only products on the sales floor are included in the database, which allows the retailer to assume that they were lost to shoplifting not to supplier fraud or non-crime administrative losses. Smith’s regression model found that the CRAVED elements he measured explained approximately 30% of the observed variance in theft rates. The present study, which utilizes Smith’s sample and dependent variable, sought to improve upon the variance explained by the inclusion of additional independent variables.

The Present Study

Three new independent variables were added to Smith’s (2017) CRAVED model, to see if their inclusion led to an increased proportion of explained variance in product theft rates. Drawn principally from Gill and Clarke’s (2012) analysis of the shoplifting of FMCGs, they focus on the disposability of products, which is of considerable importance to the kind of “volume” thieves who are most likely responsible for a large proportion of FMCG shoplifting. They were developed from data provided by the supermarket chain, but were not included in Smith’s measures of CRAVED. The variables measured whether or not: (1) the products needed regular replenishment by consumers; (2) were brand-name; and

(3) have a known role in illicit drug use. All three variables were developed using information available only from the “likely-theft” database and all three were operationalized as binary (i.e. yes/no) measures. Each measure is briefly described below.

Products Needing Regular Replenishment

This variable identifies products that need to be regularly replaced by consumers, one well-known example of which would be the Gillette MACH 3 razor (Gill & Clarke, 2012). Once purchased, the handle of the razor may last several years, but the cartridges with the blades require regular replacement. These are widely-recognized as some of the most shoplifted consumer goods in the sector. Although many stores now use plastic “keepers” or locked boxes to display these kinds of products, the sample from 2011 pre-dated such wide situational measures and only products that were accessible and removable were included in the sample. It was expected that products like razor cartridges—those goods requiring regular replenishment—would have higher theft rates. Just over 70% of the products were identified as requiring regular replenishment. Products were coded as (0 = requires less replenishment) and (1 = requiring more replenishment). Some examples coded ‘0’ include electric toothbrushes, hairbrushes, shoe cushion inserts, electric outlet adapters and can openers. Examples that were coded as being most likely to require more replenishment by *most* consumers include bars of soap, tampons, hair dye, Tylenol tablets and hand sanitizers. While it proved relatively easy to assign most products to either category, the coding of a small proportion of them (4.4%) involved greater subjectivity and therefore constitutes a limitation of this variable. Among this group of products, 1.8% were coded as requiring less replenishment and 2.6% more replenishment.

Brand Name Products

In common with most large supermarkets, the chain supplying the data sells many generic products. Some of these were provided by two clearly labelled generic brands, but the chain offered its own store-name brand

for a large proportion of products. These latter were readily identifiable on the sales floor because the packaging carried the store's name and generally lacked an elaborate design. Generic products were expected to be stolen at a lower rate than well-known brand name products, which would be more attractive to volume thieves, who sell the goods they steal. Products were easily coded as either (0 = no) or (1 = yes, store-brand) thanks to a manufacturer metric in the retailer's database. Approximately 63% of the products were brand-name products.

Products with Roles in Illicit Drug Use

Drawing on the unique dataset used by Smith (2017), Smith and Clarke (2015) found a relationship between theft rates and products with roles in illicit drug use. Products were identified as having four roles in drug use: (1) directly produces a "high," (2) enhances the effects of an illicit drug, (3) reduces the ill effects of illicit drug use, and (4) serves as an ingredient for making illicit drugs. Specifically, 551 products (roughly 7% of the sample) were identified as having roles in illicit drug use and had significantly higher theft rates than all other products in the sample. Consequently, a role in illicit drug use was included as an additional dependent variable for the present analyses.

Analysis

A Kolmogorov-Smirnov test showed that the dependent variable, theft rate, was normally-distributed—permitting the use of parametric procedures for the analysis (see [Appendix](#) for Details of the Analysis). Two ordinary least squares (OLS) regression models were constructed to compare the variation in theft rates explained by the CRAVED model vs. the CRAVED model with additional measures. Table 3.1 presents a comparison of the OLS regression results for both models. Model 1 uses only the five CRAVED variables, as in Smith's (2017) original analysis. Model 2 adds the three newly-introduced independent variables to those of Model 1 to form an equation with eight predictor variables. Collinearity

Table 3.1 OLS regression: models 1 & 2 predicting theft rate ($N = 7468$)

Variable	Model 1		Model 2		
	B (SE)	Sig.	B (SE)	Sig.	
Concealable	-0.24 (0.01)	0.000	-0.29 (0.01)	0.000	
Available	-0.13 (0.04)	0.000	-0.23 (0.02)	0.000	
Valuable	0.07 (0.02)	0.000	0.06 (0.03)	0.004	
Enjoyable	3.31 (0.13)	0.000	1.08 (0.25)	0.000	
Disposable	0.47 (0.06)	0.000	0.71 (0.09)	0.000	
Brand-name	-	-	0.02 (0.01)	0.000	
Needing replenishment	-	-	1.90 (0.25)	0.000	
Illicit drug role	-	-	0.10 (0.05)	0.000	
Constant	9.93 (0.17)	0.000	8.50 (0.41)	0.000	
		$F_{(5, 7462)} = 629.40$ ($p < 0.001$)		$F_{(8, 7459)} = 305.80$ ($p < 0.001$)	
		Adj. $R^2 = 0.296$		Adj. $R^2 = 0.246$	

Note: Unstandardized coefficients reported

diagnostics showed no evidence of multicollinearity between the independent variables (Variance Inflation Factor (VIF) scores ranged from 1.04 to 1.51). Model 1 was statistically significant, and all variables were significant predictors ($p < 0.001$) of theft rate. Taken together, these predictors accounted for 29.6% of the observed variance in theft rate. Model 2 was also statistically significant, with all CRAVED variables remaining significant. Among the three newly-introduced variables, each was significant and in the expected direction of relationship with theft rate. However, the model had a lower adjusted R^2 value of 0.246 (i.e. R^2 change of -0.05 from Model 1). This result suggests that the CRAVED model explains shoplifting of FMCGs somewhat better on its own than when it is supplemented by the three independent variables (brand name, requires replenishment, and a role in drug use) newly-introduced in the present analysis.

Discussion

At first sight, these findings were disappointing. The three new independent variables used in Model 2 were well grounded in the existing literature, they had high face validity, and there was good reason to expect that

they might enhance the predictive power of CRAVED. It is of course possible that some other, as yet unidentified, independent variables might perform better than the variables we chose. However, a more likely possibility is that CRAVED may have reached the limits of its predictive power, because the preferences of thieves, which it is intended to measure, are not the sole determinants of which objects are shoplifted. At least of equal importance are the measures that stores (including those in the present sample) employ to protect the goods that they know are vulnerable to theft (for example through the use of CCTV cameras, EAS tags and RFID tags). Furthermore, certain products could not be stolen by shoplifters from the stores in the present sample because they had been made inaccessible to customers. Federal policies to prevent underage smoking and drinking have led to regulations on how these products are handled and sold by retailers and the stores in the present sample held all tobacco products behind the customer service counter, while the pharmacy counter held OTC drugs containing pseudoephedrine and nicotine. Note that the last notable example of federal regulation in 2005 affected OTC drugs containing pseudoephedrine—the primary precursor for “cooking” methamphetamine in the U.S. (U.S. Congress, 2005). These products were required to be removed from the sales floor, and held behind customer service and pharmacy counters. Once these changes were implemented, these drugs were no longer shoplifted.

In addition, some products known to be especially vulnerable to shoplifting were kept in locked cases on the sales floor—for example, specific brands of infant formula and razor cartridges. Equally problematic from the perspectives of the present study, the sampled stores provided varying but unknown levels of natural surveillance to other products, based on their placement in the stores. For example, some small expensive products (e.g. batteries, USB flash drives) were often kept close to customer service counters. Additionally, the stores’ pharmacies typically kept the newest OTC drugs and “private” products in close proximity, so as to facilitate natural surveillance by employees. Some customers shoplift products that they feel too embarrassed to buy in front of others (e.g. condoms, pregnancy tests, drug-testing kits).

If valid, these speculations suggest that little might be gained through further efforts to improve CRAVED’s ability to predict the goods most

vulnerable to shoplifting. CRAVED will continue to serve a valuable purpose in alerting retailers to systematic variations in the risks of theft of the goods they sell. Beyond that, it is doubtful that research into thieves' preferences—as provided for example by detailed interviews with apprehended shoplifters—would be of much use to stores, many of which already have a practical store of knowledge about which of their products need special protection. Of considerably greater use to stores would be an altogether different research strategy, consisting of evaluations of the routine precautions they take to prevent theft. Whether or not this is the case, the essential point remains—what is stolen depends not just on what shoplifters would like to steal, but what they are able to steal, which depends to some extent on the anti-theft policies pursued by the stores.

If what is stolen depends to a certain (but unknown) extent on the actions of store managers, an even more speculative argument that follows from the results of our attempt to improve CRAVED is that victimization theory (e.g. Hindelang, Gottfredson, & Garofalo, 1978) might need to be re-formulated. Instead of treating those who lose their property to thieves as hapless victims of selfish predators, perhaps we should begin to think of theft as the outcome of an interaction between the behaviors of owners and thieves. In fact, Fattah (1991) explored this idea in the concluding chapter of his classic book, *Understanding Criminal Victimization*. Support can also be found for it in everyday speech in the use of such terms as “willing” or “careless” victims.

We are not suggesting here a revival of Von Hentig's (1948) or Messerschmidt's (1993) theories which held that for a variety of psychological reasons people open themselves to victimization. But we are looking for support from environmental criminology and crime science where an interactionist perspective in explaining crime events is gaining strength (Clarke, 2016; Pease & Laycock, 2012). Under this perspective, crime cannot be explained simply by examining the motives of offenders; these motives must be understood in the context of the wider opportunity structures for specific crimes. The actions taken by the owners of “hot” property constitute an important element of these opportunity structures, actions that might be called routine precautions (Felson & Clarke,

2010) practiced by those fearing theft. For example, there are many well-known ways to reduce the chances of being burgled, but people also invent their own special precautions to thwart burglars. We know little about these precautions because our studies only ask victims what property they lost. We do not ask victims what valuable items they did not lose and how they protected them. Do they have a secret, very difficult place to find in their homes where they hide their most valuable belongings, or do they keep these in bank deposit boxes?

One approach to research of this kind has been proposed by Smith (2009), Leclerc (2014), and Leberatto (2015). It involves extending the concept of crime scripts, initially developed to study offender decision making (Cornish, 1994), to the study of victim decision making. In his pioneering doctoral research, Leberatto (2015) develops what he calls “safety scripts” and “survivor scripts” for a variety of crimes experienced by citizens of Lima, Peru.

Returning to shoplifting, Walmart has attracted much media criticism (e.g. Sampson, Morel, & Murray, 2016) for its heavy reliance on summoning the police to deal with shoplifters apprehended by its staff, instead of employing standard loss prevention measures. “Blaming the victim” seems to have been acceptable in this case perhaps because the victim is the largest company in the world according to the Fortune 500’s Top-10 Companies for 2016. More vigorous accusations of victim-blaming would undoubtedly follow any attempt to extend the interactionist explanation of victimization to realms other than theft—say, sexual assault. However, without studying victim’s behavior and their possible roles in increasing their own risks of victimization, it is very difficult to identify and promulgate effective precautions (Felson & Clarke, 2010). This fact does not of course reduce the culpability of offenders; whatever the opportunities and temptations encountered, offenders seek personal benefit by committing crimes and should always be held responsible for them.

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Appendix: Details of the Analysis

Table 3.2 Descriptive statistics: sample of shoplifted FMCGs ($N = 7468$)

Variable	Type	% Mean	SD	Min.	Max.
<i>Dependent</i>					
Theft rate	Continuous	4.5	3.1	0.04	48.20
<i>Independent</i>					
Existing (Smith, 2017)					
Concealable	Continuous	11.2	3.6	1.30	51.20
Available	Continuous	21.6	13.4	3.00	50.00
Valuable	Continuous	6.8	4.1	0.29	47.99
Enjoyable	Binary (1 = yes)	24.1		0.00	1.00
Disposable	Continuous	4.5	0.1	0.18	2.47
Newly-developed					
Brand name	Binary (1 = yes)	63.2		0.00	1.00
Needing replenishment	Binary (1 = yes)	71.8		0.00	1.00
Illicit drug role	Binary (1 = yes)	7.0		0.00	1.00

Table 3.3 Correlations between independent variables & theft rate ($N = 7468$)

	Pearson's r
Existing variables (Smith, 2017)	
Concealable	-0.482*
Available	-0.188*
Valuable	0.147*
Enjoyable	0.122*
Disposable	0.276*
Newly-developed variables	
Brand name	0.354*
Needing replenishment	-0.041*
Illicit drug role	0.046*

* $p < 0.001$ level (two-tailed)

Note

1. Access to the unique and extraordinarily complete database used in both Smith's (2017) study and the present analysis was provided by a Fortune-500 retail corporation that operates one of the largest supermarket chains in the U.S. Pursuant to a confidentiality agreement, the retailer's name and store locations are not disclosed herein.

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4

Who Steals from Shops, and Why? A Case Study of Prolific Shop Theft Offenders

James Hunter, Laura Garius, Paul Hamilton,
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Introduction

The United Kingdom retail sector spends around £2bn attempting to reduce the loss of stock arising from retail crime and administrative errors (Arora, Khan, & Deyle, 2014). Whilst retail crime in the UK has enjoyed a ‘crime drop’ since 1993 (Hopkins, 2016), 22% of (predominantly larger) retail premises in the UK reported experiencing shoplifting during 2014–2015, with theft by customers accounting for 72% of all crime suffered by the retail and wholesale sector (Home Office¹, 2016). There is, however, little data to reliably determine the characteristics of

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the perpetrators, and the circumstances, of this crime (Dabney, Hollinger, & Dugan, 2004). Despite a growing body of literature (Cardone & Hayes, 2012; Gill, 2017; Lasky, Fisher, & Jacques, 2015) criminological research has under-explored opportunity reduction from the shop theft offender perspective. This chapter addresses an identified literature gap by exploring the characteristics and motivations of shop theft offenders in an English Core City² between 2004–2014. The empirical analysis draws upon police recorded crime data to identify the characteristics of shop theft offenders, and compare these to the perpetrators of other crime types. The narrative then utilises interviews with prolific shop theft offenders in the Core City to explore their motivations, and their perceptions of retail security. The insights provided by these interviews reveal a group of individuals who perceive their crimes as ‘justified’, and where the actions of the retailers in terms of the placement of products and layout of stores makes shoplifting ‘an unbelievably easy’ offence to commit. The chapter concludes with a discussion of how the findings from the empirical analysis can inform the policies and strategies adopted by retailers and crime reduction agencies in order to reduce the threat of shop theft.

Literature Review

Shop Theft Offender Socio-Demographics

Shop theft is described as a ‘hidden crime’ and knowledge about who shoplifts and how they execute their crimes remains limited (Dabney et al., 2004; Gill, 2007; Lasky et al., 2015). As few thefts draw the attention of either store authorities or criminal justice officials, a confusing demographic picture of the typical shoplifter has emerged (ibid.). Farrington (1999) agrees that no single definitive demographic profile of shoplifters emerges from existing research. However, a pervasive sentiment nonetheless exists amongst retailers that shoplifters are disproportionately minority ethnicity males from lower socio-economic backgrounds (Dabney et al., 2004, p. 698).

Shoplifting is broadly understood as an adolescent phenomenon (Grant, Chamberlain, Schreiber, & Odlaug, 2012; Hayes & Blackwood, 2006). In their analysis of shrinkage data from a large UK retail chain, Howell and Proudlove (2007) identified that an increase in average customer-age is significantly associated with a reduction in shrinkage. Further analysis of catchment area demographics and shrinkage data highlighted that stores located in areas with a higher percentage of individuals aged 65 and over experience significantly reduced levels of shrinkage (Howell & Proudlove, 2007). However, Dabney et al.'s (2004) covert research of 1243 pharmacy customers identified customer-age as a significant predictor of customer theft, with individuals perceived to be aged 35 to 54 significantly more likely to offend than other (younger or older) age groups.

Existing literature surrounding gender and shoplifting is also mixed: with self-report studies showing higher offending in males (Soothill, 2007; Tonglet, 2002) but with the Home Office's Young People and Crime study finding higher offending rates amongst females (Roe & Ashe, 2008). A shoplifting database across 14 national retail stores in the UK captured the demographic details of 39,568 theft offenders apprehended by security staff between January, 2008 and December, 2010 (Bamfield, 2012). In this instance, the division of offending by gender was almost equal (54% male, 46% female). When examining the division of the total value of goods stolen, the gender gap narrows further, with male offences accounting for 51% of the total value stolen and female offending accounting for 49%. Studies examining the relationship between ethnicity and shoplifting suggest that ethnic minority individuals are less likely to shoplift than White individuals (Dabney, Dugan, Topalli, & Hollinger, 2006). Sharp and Budd (2005) confirm that proportionately, White individuals offend more frequently than other ethnic groups in England and Wales.

Offender Motivation

The choice to offend is often not governed by one solitary goal, but instead an offender may enter a criminogenic situation with a combination

of goals (Indermaur & Ferrante, 1993). Shoplifting can be motivated by theft for personal use, cash conversion, embarrassment or prohibition (including tobacco, alcohol, contraceptives, pornography, and certain medications). Shoplifting contraband may also result from young people's lack of financial resources (Tonglet, 2002), and increased social pressure from peers (Cox, Cox, & Moschis, 1990). In this way, the motivation to steal may certainly include, but is not limited to, acquisitive gain. Motivations to steal can also encompass a number of non-monetary, *psychological* rewards; including gaining power over others, kudos amongst peers, and the pursuit of excitement (Bamfield, 2012; Cromwell, Parker, & Mobley, 2010; Farrell, 2010; Katz, 1988). These motives are viewed as proximal (immediate) and are distinguished from distal motives (Bamfield, 2012) which include broader social factors such as drug addiction (Clarke & Petrossian, 2013), economic deprivation (Klemke, 1992), social factors (Cox et al., 1990), and mental illness (Grant, Odlaug, & Kim, 2010).

The act of shoplifting occurs within a specific *context*: namely, the retail store interior. In their seminal paper 'Opportunity Makes the Thief', Felson and Clarke (1998) argue that contrary to the traditional focus on the distal drivers of theft, the presence of an *opportunity* to commit theft is the primary cause of crime: with retail locations seen to operate as generators/attractors of criminogenic opportunities (Smith & Clarke, 2015). The 'crime as opportunity' paradigm generates criticism for ignoring the 'root causes' of crime (Clarke, 2005). However, Felson (2002, p. 35) maintains that "opportunity *is* the root cause of crime". Opportunity theory *does* also allow room for sociological factors to play a role in offenders' assessment of criminal opportunities (Van Dijk, 1994). An offender may feel a compulsion to offend in order to avoid missing an opportunity "in the same way that a shopper may buy a 'bargain' at a store that they don't really need rather than pass up a 'steal'" (Indermaur, 1999, p. 74). It is in this way that *prolific* and predatory shoplifting can also be understood through a 'crime as opportunity' perspective.

Who Are the Shop Theft Offenders? A Case Study of a Core City

Methodological Approach

The empirical analysis presented here draws upon 860,565 police recorded crimes of all offence types occurring within an English Core City between January 2004 and December 2014. Of these, 106,390 resulted in a sanctioned detection where the police charged an individual, and for which the relevant home address postcode was available. Shop theft offences accounted for 18.9% (20,201) of these crimes. A key problem in profiling offenders concerns the extent to which police recorded crime statistics provide an accurate picture of the scale of offences, and the nature of the individuals who commit these crimes. Across England and Wales, only 26.2% of all offences were detected in 2013–2014 (HMIC, 2017). The corresponding detection rate for shop theft was 50%—although this varied from 41.4% in Sussex to 79.0% in Dyfed-Powys (HMIC, 2017). Failure to report crimes to the police (especially by certain types of victim or community), alongside discrepancies surrounding the recording and counting of criminal offences by individual police officers and forces have been consistently highlighted as a problem in the empirical analysis of offending and victimisation rates (Coleman & Moynihan, 1996; UK Statistics Authority, 2010).

In relation to shop theft offences, the CVS (2015), has identified the low value of goods taken, the time and cost involved in reporting offenders, absence of the required standard of security and surveillance mechanisms (especially CCTV) required to secure a prosecution, negative prior experience of the response of the police to reported offences, lenient sentences handed out to convicted offenders, and a desire not to identify their store as an easy target for would-be offenders as reasons given by retailers for not reporting incidents of shop theft as reasons for non-reporting. Unpublished research by the authors suggests that while police recorded crime statistics accurately reflect the distribution of shop theft across different retail sectors within the Core Cities in England, as little

as seven per cent of shop theft occurrences may actually find their way into the police recorded crime statistics. Furthermore, if the under-reporting of shop theft is spatially concentrated, and offenders of a specific age, gender or ethnicity are equally spatially concentrated in terms of where they live or the type of retailer they choose to target, then offenders with certain socio-demographic characteristics are potentially likely to be missing within the offender population represented by police recorded crime statistics. Unfortunately, whilst potentially providing a more accurate picture of retail victimisation levels, the relatively small sample size underpinning the CVS prevents the development of meaningful estimates of shop theft levels at the local level. In this context, police recorded crime statistics currently provides the only available statistical source of evidence on the scale and nature of shop theft at the local authority level in England.

Who Commits Shop Theft in the Core City?

Our empirical analysis focuses upon three of the key socio-demographic characteristics identified within the existing literature: age, gender, ethnicity (as volunteered to police officers at the point of arrest). Missing data is not a significant issue in respect of either age or gender (0.3% and 3.3% of cases respectively). In relation to the self-determined ethnicity of the offender, data is missing for 18.1% of cases. Figure 4.1 provides a breakdown of the combined age, gender and ethnic characteristics for all offences, and for shop theft offences, in the Core City between 2004 and 2014 (note that ethnic characteristics are defined simply in terms of 'White' and 'Non-White' due to relatively small numbers of cases within certain ethnic sub-categories). The majority of shop theft offences are committed by White males aged 25–44 (28.1% of offences), followed by White females in the same age group (10.3% of all offences) and Non-White males also aged 25–44 (8.9% of offences). White females are present in significantly greater numbers within the shop theft offender population when compared to all offenders for all age groups under 45. This is equally the case for Non-White females aged 16–24 and 25–44. The ratio of male to female offenders (of all

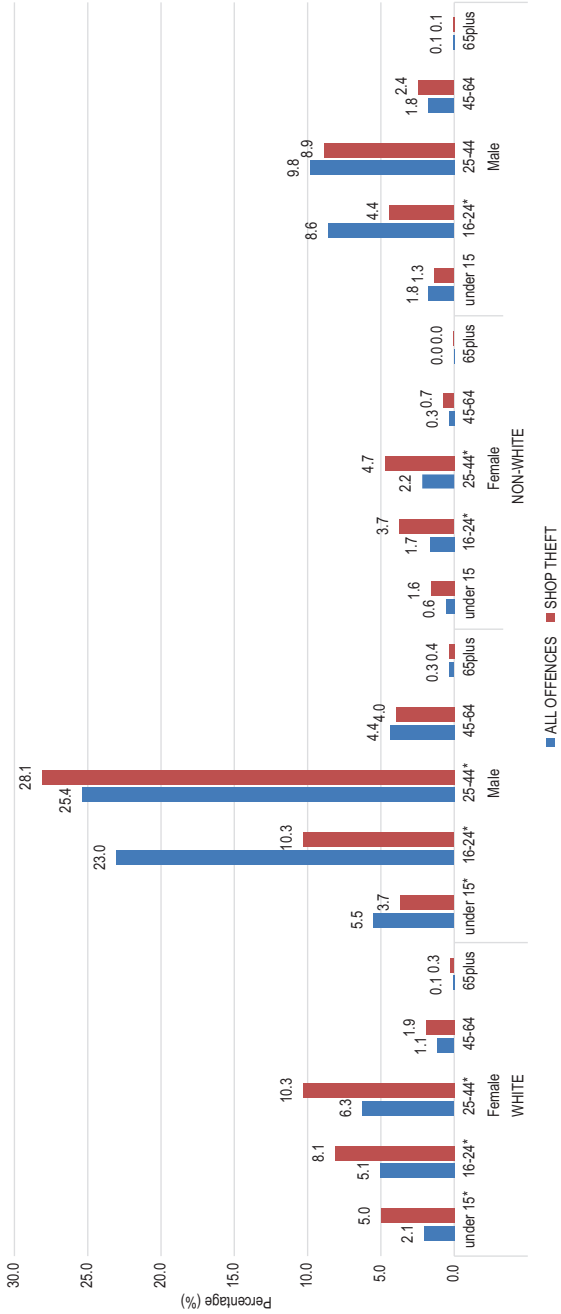


Fig. 4.1 Socio-demographic characteristics of all offenders and shop theft offenders in an English Core City, 2004–2014. (*) Statistically significant difference between percentage of all offences and shop theft offences where $p \leq 0.05$

ethnic origins) for shop theft offences (1.64) contrasts dramatically with the corresponding ratios for sex offences (56.9 to 1), domestic and non-domestic burglary (21.0 to 1), and robbery (8.2 to 1) during the same time period.

A more detailed breakdown of the ethnic characteristics of the Core City shop theft offenders is provided in Table 4.1. The evidence here identifies the similarity in distribution of different ethnic groups within the respective 'shop theft' and 'all offender' populations. The exception to this concerns 'White Other' and 'Other Ethnic Group' (which are significantly over-represented), and 'Mixed White and Black', 'Mixed Other' and 'Asian' (which are significantly over-represented). Relative to the overall population of England, all ethnic groups are significantly over-represented within the shop theft offender population (with the exception of 'White British', 'Mixed White and Asian' and 'Asian'). Despite the over-representation of certain ethnic groups within the shop theft offender population, in terms of *volume*, offenders of 'White' origin

Table 4.1 Ethnic characteristics of individuals charged with shop theft offences in an English Core City, 2004–2014

Ethnic origin	Presence within shop theft offender population in Core City (%)	Presence within all offences offender population in Core City (%)	Presence within overall population of England (%)
White British	71.9 ^{a,b}	73.2	79.8
White Other	7.7 ^{a,b}	3.7	5.7
Mixed White and Asian	0.2 ^{a,b}	0.3	0.6
Mixed White and Black	2.7 ^{a,b}	4.1	1.1
Mixed Other	1.5 ^{a,b}	1.8	0.5
Asian	4.4 ^{a,b}	5.3	7.7
Black	10.0 ^{a,b}	10.6	3.4
Other ethnic group	1.5 ^{a,b}	0.9	1

Source of population data: 2011 Census (Office for National Statistics)

^aStatistically significant difference relative to Core City offender population where $p \leq 0.05$

^bStatistically significant difference relative to England population where $p \leq 0.05$

account for 72.1% of all shop theft offences in the Core City (Fig. 4.1). These findings confirm those obtained by previous studies identified in the literature review above.

Why Do Shoplifters Steal? A Case Study of Prolific Shop Theft Offenders

Methodological Approach

Thirty-two face-to-face, semi-structured, interviews were conducted with prolific shop theft offenders assigned to a bespoke integrated offender management (IOM) scheme (designed for prolific and priority (PPO) offenders) at a regional Adult Offender Unit. Although respondents had typically committed a variety of offences, they were recruited specifically because of their prior experience with shop theft. Participant recruitment involved purposive and convenience sampling. ‘Expert’ shop theft offenders were requested via advertisements to participate in the study based on recommendations from probation gate keepers. The literature indicates that novices represent 90% of the offending population, with 10% of shop theft offenders described as ‘expert’ (Cameron, 1964). ‘Experts’ are characterised as subjects with extensive self-reported shop theft offending histories (Carroll & Weaver, 1986).

Participation was voluntarily, and participants were offered a supplementary £10 voucher for their time. Payment as an incentive is a controversial, yet widespread, practice within health and social research (Copes & Hochstetler, 2014; Seddon, 2005). When examining this issue in the context of offender research, Hanson, Letourneau, Olver, Wilson, and Miner (2012, p. 1402) concluded that providing incentives was “an effective means of communicating respect for participants, regardless of their legal status”. The authors continue, however, that the magnitude of incentives should be modest and “not be so large as to undermine the goals of punishment and deterrence”.

The average number of self-reported convictions for shop theft amongst the sample was 47. However, the vast majority of participants stated that their convictions reflected only a small fraction of their completed thefts.

For example, one participant states “I can honestly say, I have got away with thousands and thousands of shoplifts, thousands” (Interview 1). Participants in the sample were aged between 22 and 56 years old (with an average age of 37); 16% were female and 84% male; and the majority (88%) identified themselves as White British. A large majority of participants (88%) had experienced current or historic illicit-drug misuse.

Armitage (2017, p. 8) highlights some of the *limitations* associated with collecting and analysing offender responses, whilst acknowledging that the “accounts of active offenders can provide details *not* captured through other research methods”. Risks associated with active offender-interviews include the potential for false narratives and drug use as an influence on offender decision-making—as well as the additional limitations associated with drawing on a sample of offenders who have been *detected* and sentenced (Armitage, 2017). Access to offenders was negotiated through offender managers and interviews were held on probation premises to dovetail where possible with existing appointments. Whilst no probation personnel were present during the interviews, specific measures were adopted to minimise the impact of the location and to enhance data validity, which Jacobs (2010) identifies as being problematic in offender-based studies. Individual anonymity was guaranteed with the assurance that all data would be presented in a way that would not identify participants, cases or specific targets. Permission to record the interviews was obtained for the participants. The interviews were digitally audio-recorded and were subsequently transcribed verbatim—with the names of the participants and places changed to code numbers to protect participant anonymity. Respondents were also informed of the academic nature of the research, which has been found by previous research to encourage participants to view the research process as a platform with which to impart knowledge (Jacobs, 2010).

Transcribed scripts were used for line by line thematic analysis: “a method for identifying, analysing and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). The present study followed guidance provided by Braun and Clarke (2006); whereby authors first reviewed all interview transcripts to ensure familiarity with the data. Second, major topics of interest were identified and coded within the narratives and then grouped thematically. Following the authors’ review

and definition of such themes, the final stage of analysis involved the selection of specific excerpts from the transcripts in order to *illustrate* the presented themes.

Why Do Shoplifters Steal?

Pertinent to acquisitive crime is the presumption that the motivation to offend is exclusively monetary (Farrell, 2010). The present research identifies a variety of motivations *beyond* financial gains, and identifies four distinct categories of motivation: economic, psychological, moral and social. The broad consensus was that supermarkets were the most consistent source of *economic* rewards, with meats, cheese, washing powder, alcohol, deodorants, cosmetics, disposable razors and CDs/DVDs and other fast moving consumer goods most commonly cited as ‘hot products’ (Clarke, 1999)—driven by offenders’ recognition that such goods have an intrinsic value across diverse communities of buyers. The product selection of offenders participating in the present research closely aligned with national trends in product theft (ECR, 2010):

Things like electrical items or things like DVD’s or Blu-Rays ... you know they can be sold at numerous other different shops and [are] always easy to get rid of. Occasionally I might get things to either give or sell cheaply to family members, but the majority of the time I’ll be choosing things which I know there will be specific buyers for. Sometimes it’s even stuff which I know ... the drug dealer/runners will want. Things like these North Face gloves, these were a big hit with the drug dealers last year. So I’d be getting things like that and swapping them for a bag of heroin per pair (Interviewee 10)

Problematic drug use and the need to cyclically *fund* addiction routinely proceeds prolific shop theft offending (Smith & Clarke, 2015). This finding is reflected in the present research; with an inter-dependency between illicit drug taking and shoplifting identified amongst 88% of interviewees and with the certainty and speed of product-disposability identified as a key driver in these offenders’ decision-making processes.

In addition to economic drivers, a recurring theme amongst a large minority of respondents were the *psychological* benefits associated with the act of shop theft (Bamfield, 2012; Katz, 1988):

Sometimes I go to a shop and I just nick it just for the sake of it because I enjoy it. (Interviewee 22)

A number of respondents explained the thrill of shoplifting and described this as a continuum of addiction. Research by Grant et al. (2012) indicates that shoplifting indeed shares phenomenological similarities and comorbid overlap with impulse control disorders such as substance addiction:

I suppose it's quite addictive in itself, like the adrenalin. The buzz of getting away with it afterwards ... there's something quite satisfying about that (Interviewee 10)

People who go shoplifting [have] got an addiction to shoplifting because it just gives them that action in their life, or something interesting, something daring. Shoplifters and shopaholics, it's different sides of the same coin. Addiction (Interviewee 25)

For a large minority of respondents, the act of stealing from shops (specifically large, national chains) has been *morally* re-configured as an egalitarian, anti-austerity and anti-capitalistic endeavour; utilising traditional techniques of offender guilt-neutralisation (Sykes & Matza, 1957):

When you say you're stealing from ... a large supermarket chain, you're stealing off them but they're a big company, they're a multi-million-pound company, they can afford a bit of shoplifting here and there (Interviewee 8)

I guess you could say I was a modern-day Robin Hood (Interviewee 16)

The role of *social* bonds (Hirschi, 1969) and kudos amongst peers were also found to be instrumental in driving shoplifting behaviour:

I didn't shoplift at all before and they [friends] was shoplifting and I used to go with them ... they used to say to me "look how easy it is, you don't have to pay for it" and before you know it you start doing it yourself. You kind of follow your friends, don't you, at that age (Interviewee 14)

Perceptions of Risk and Security

Retail loss prevention techniques directly correspond to the risks and opportunities perceived by shoplifters (Clarke & Eck, 2003). Carroll and Weaver's (1986) landmark process tracing study asked shoplifters to walk through a retail setting and think aloud about deterrents and facilitators, with the authors finding that (a) perceptions of risk *differed* between novice and expert shoplifters; and that (b) 'expert' offenders were more proficient and calculated in their shoplifting considerations. Experienced shoplifters are seen to focus on the presence of security devices and their own proficiency in being able to *overcome* such devices, whilst novice shoplifters are instead deterred by visible security devices (Carmel-Gilfilen, 2013). Whilst existing offender-research informs us that *weaknesses* in crime prevention measures are often identified, and subsequently exploited, by offenders (Gill, 2017)—to date “little is known about shoplifters’ perceptions of anti-shoplifting security measures or shoplifters’ techniques for outmanoeuvring them” (Lasky et al., 2015, p. 1). The prolific offenders participating in the present research identified *three key areas* associated with the immediate store context as being pivotal in determining criminogenic opportunities and indicating level of risk.

Formal Surveillance: Appraisal of Security Measures

In combatting shop theft, retailers and crime reduction agencies are increasingly employing *formal* security measures such as product tagging, CCTV, and implementation of security personnel (Lasky et al., 2015). However, as retailers examine the cost-benefit paradigm of expensive security investments, further research is needed into the efficacy of such measures in the retail store environment (Hayes, Johns, Scicchitano, Downs, & Pietrawska, 2011; Wakefield & Gill, 2009). A large majority of respondents in the present study cited the presence of *uniformed security guards* as a palpable risk indicator and strong deterrent.

If there's a security guard on you've got to plan it more by getting someone to distract them ... sometimes we'd be clever and I'd send a couple of lads in to act all dodgy, like make out they're shoplifting so the security are too busy watching them and I'm just filling my bag and walking out (Interviewee 29)

A minority of respondents identified perceived security guard *attitude* as a more accurate indicator of risk—and detailed how security staff apathy, as well as familiarity with store-staffing schedules, can circumvent an otherwise high risk of apprehension presented by the employment of uniformed guards:

Certainly the level of security a shop's got will be a big thing. You can sometimes tell some security are quite, you know lackadaisical. With some shops it's almost like a game of cat and mouse. You know you'll get some security which you know will never give you any sort of leeway or any sort of blithe they'll always phone the police every time—so those sort of places might be like a last resort (Interviewee 10)

There are certain shops that will only have one security guard ... he's not going to work 7 days a week. You know there will be days when he's not on. Sometimes you'll see him in town you know, I mean at half 3, 4 o'clock and that's a green light for the next hour and a half (Interviewee 10)

Most stores the security doesn't come on until 10am so it's pretty plain sailing unless the staff are stacking the shelves—but if they're stacking the meat [aisle] you just go round the coffee aisle (Interviewee 21)

The employment of non-uniformed *store detectives* is an additional mechanism of increasing formal surveillance (Hayes, 2000). Hayes (2006, p. 417) argues that the biggest question for loss prevention policy makers remains “whether having detectives stand at the store entrance/exit overtly identified as a member of loss prevention staff prevents more theft attempts than apprehending shop thieves after covertly observing their theft activities”. A large majority of respondents articulated their ability to readily *identify* covert store detectives through irregular behavioural patterns/product-selections:

You can tell a store detective like a store detective can tell a shoplifter (Interviewee 9)

When I was caught a long time ago I was doing this sort of fraud thing at (a department store) in town and I was looking around and I thought this doesn't seem right, there's this massive bloke and he was looking at a kid's paddling pool and he was on his own—and then there was another bloke and he was looking at something equally strange and I thought ... this isn't good at all (Interviewee 9)

Normally people just look at a thing and if they don't want it they put it straight down, don't they? Whereas a store detective will take longer looking at that one item and start reading the label and that. Not many read a label when you go into a shop (Interviewee 2)

Despite accounting for a large proportion of total security spend, there is mixed evidence about the deterrent effect of CCTV (Spriggs & Gill, 2006). In their analysis of shrinkage across a UK retail chain, Howell and Proudlove (2007) found the presence of CCTV to be positively correlated with *increased* shrinkage rates. However, the possibility exists that store staff become *less* security-conscious when cameras are present (Beck & Willis, 1999). The majority of our participants did identify the presence of CCTV (particularly dome cameras) as a risk:

You know what direction cameras are pointing. Sometimes you can't always tell where blind spots are going to be. Certainly like with the dome ones, you don't really know where they're pointing (Interviewee 10)

Multiple respondents highlighted a mechanism *unique* to the experiences of repeat (prolific) shoplifters to circumvent CCTV risks:

I mean sometimes it takes being nicked somewhere and then watching the CCTV back to get an idea of like "oh right so the cameras are pointing there and there". And you know people—shoplifters—do share that information with other shoplifters afterwards (Interviewee 10)

Viewing CCTV footage of an original offence equips offenders with detailed information in terms of blind spots and camera positioning within a store, enables repeat targeting of said store, and facilitates information sharing amongst shop theft offenders.

Electronic article surveillance [EAS] is the most commonly used loss prevention measure (Beck & Palmer, 2011) and involves fixing activated tags to merchandise—with their subsequent illegitimate removal sounding audible alarms at store exits (triggering a staff response). EAS has been found by a number of studies to supersede security staff in theft reduction (Hayes, Downs, & Blackwood, 2012). Howell and Proudlove (2007) found product tagging to be the *only* formal security measure to have had a significant depressive effect on store shrinkage rates. However, as Carroll and Weaver's (1986) landmark study first indicated, 'expert' shoplifters demonstrate abilities to circumvent such security measures by exploiting weaknesses with the equipment:

Meat tends to be tagged a lot. Because it's cold the tags don't work when they're a certain temperature. I don't know whether they know in the shops, but it's true (Interviewee 30)

I mean all alarms can be bypassed like with a foil bag or wrapping tin foil around an alarm, but then taking an alarm off afterwards—there are certain alarms which are really easy to take off and others which are more of a pain. Certain alarms you know are literally just stickers that you can just peel off it in a shop (Interviewee 22)

One time me and my [co-defendant] took 80 bottles. There were alarms on the bottles but no alarms on the doors. I made £800 in one day from that one shop, between us. We went in and out three or four times. It's pointless to pay a lot of money for alarms to be put on your bottles and you're not putting alarms on your doors. I think they should all use—I might regret this in years to come—the little black ones with the metal wire that go round the neck [spider tags]. The plastic ones are pointless; they are a waste of money; you might as well put them in the bin (Interviewee 1)

Some people when they go and get a pot of cream, say it's £60, they won't put it in their pocket because obviously the alarm will go off so what they would do is when they walk past the alarm thing [detectors at store exit] they'll just go like that, put their hand over the top of the [detector] and walk out ... pretend that you're scratching your head (Interviewee 14)

A large majority of respondents reported having previously used specialised equipment—such as aluminium foil-lined ‘booster’ bags (designed to inhibit radio waves of EAS devices (Beck & Palmer, 2011)), magnets, tag removers, and razor blades—as methods to overcome product tagging and aid product procurement. However, respondents cited amendments to the Theft Act 1968 which introduced the specific crime of ‘going equipped for stealing’ (under the Fraud Act, 2006) as having increased the risk associated with using such equipment:

Taking a silver bag out isn’t ideal, you know you can get nicked in a shop just for having it. It was what put me on remand last month, going equipped. In fact, I walked into [the shop] and then walked out thinking “no, I’m not going to hit this shop” and then the security came out (Interviewee 10)

Respondents regularly credited *human* error associated with unsuccessful EAS tag placement on items, as well as staff apathy to EAS alarm activation, with facilitating opportunities for shop theft:

Sometimes it’s not planned so there’s a £200 raise and it’s not tagged up and it’s gone, do you know what I mean? (Interviewee 21)

I was in a supermarket and the alarm was going off and this shopper was going in/out, in/out and the security was sat there at the desk just looking at the screen, not paying any mind to it at all, the alarms are just going off like [crazy] ... in the end I was like “they’re not bothered love, just go” (Interviewee 12)

Staff apathy to alarm activation has been previously linked to high rates of false activations (Beck & Palmer, 2011). Existing research suggests that 96% of alarms are non-theft related (Beck & Willis, 1995): generating a “crying wolf syndrome” (Beck & Palmer, 2011, p. 120). Research by Blackwood and Hayes (2007) found that staff responded to 9% of all activations, and checked receipts for valid purchases in only 5% of activations; highlighting the role of EAS tagging as a visible *deterrent* as opposed to an offender *detection* mechanism (Beck & Palmer, 2011).

Utilising Place Managers: Appraisal of Retail Staff

As opposed to more *formal* measures of security, Hayes and Blackwood (2006) argue store employees to be the first and best line of defence against shoplifting. Consensus exists amongst our respondents that the presence and perceived attitudes of retail staff are significant indicators of risk. A large number of respondents highlight the potential deterrent effect of a visible retail staff presence, particularly at the store entrance:

The entrance [is important], if there's someone stood on the door, or even if there's a member of staff on the aisle where the door is. You don't want to be seen going in (Interviewee 30)

I would really like to be able to tell some of these shops, core blimey, you're doing that so wrong. So many shops—all they need is just a member of staff by the door to greet people as they come in and that would put people off but they don't (Interviewee 9)

By the time I've gone in there, there's one person behind the till and then there's one doing the stock. They only seem to have two or three members of staff on. Yeah that's enough but be out on the shop *floor*, those stock people are always in the bloody back so once they've gone you're gone (Interviewee 10)

A small number of respondents reported incidents of employee 'collusion' (A practice referred in the literature as 'sweet hearting') (Bamfield, 2012); supporting research which identifies that a significant minority of customer thefts involve retail-staff collusion (Bamfield, 2004).

Some of the staff in some of the shops that I went into just let me do it. Some of them were actually were my customers ... about 25% (Interviewee 3)

However, a much larger majority of respondents cited the *presence* and *attitudes* of retail staff as instrumental in their decision-making in terms of perceived risk of detection.

I used to try and hit shops first thing in the morning. You go in, they're all standing there, juke woke up, can't be bothered, their brain's not really functioning properly, you walk in, in the bag, gone. They're still trying to wake up. They're not paying attention because they're tired. It's 9 o'clock in the morning, they don't want to be at work. So that's why shoplifters tend to go in the morning (Interviewee 31)

If it's totally dead then the staff will just be milling around by the tills you know. Maybe tidying up other shelves and that and you know they won't be around the high value items (Interviewee 10)

I would never ever go to [a certain] department store because they employ the best quality staff (Interviewee 25)

Appraisal of Store Layout

Whilst loss prevention techniques such as security personnel and CCTV have been seen to increase hostility within the store environment, and cause insecurity amongst legitimate consumers (Kajalo & Lindblom, 2012), techniques for prevention can arise from the promotion of *natural* surveillance such as signalling territoriality, natural product and customer visibility, and access-control owing to store design. Store layout and design can encourage legitimate shopping activity by narrowing potential exits from the store (Atlas, 2004), as well as by increasing surveillance through eliminating badly lit corners with no supervision lines and by lowering shelf heights in areas offenders are likely to store goods (Poyser, 2005). Respondents in the present research stated that the retail design and layout is often the *primary* indicator of risk, and many elaborate on the significance of shelving height (and proximity/positioning of exits [as highlighted by Gill, 2007]):

I suppose the first concern really would be the layout. A lot of the shops have got glass fronts so you can walk pass them and have a look in just to see what the initial sort of layout is, they might have high shelves, they might have expensive stuff at the front (Interviewee 9)

Because the shelves are quite high, you can sort of like duck down and do you know what I mean? There's no view between you and the staff then so you literally you can fill up bags and go (Interviewee 10)

The rows are dead high, so when I'm behind that row ... members of staff couldn't see me. My aunt used to have a shop ... I used to say to her have your shelves really low so that you can see at least from [the waist] upwards (Interviewee 14)

I prefer to go in a shop where the tills are nowhere near the door that you come out of, and preferably they don't see you come in (Interviewee 30)

If I had a shop, there would be a till here [in the centre of the store], there would be no aisles where you can hide; they'd all be ... facing the till, where you can see every aisle. A (pharmacy) in town, have you seen how cluttered that is? Lower the shelves and have them in one direction, so you can see them from the till. Or have them spread out like a fan (Interviewee 22)

Participants' also identified the management and maintenance of retail environments as an important risk indicator. Decay within a retail store (such as visible litter or unkempt displays) is a visual indication that stores are out of control or unguarded (Poole & Donovan, 1991)—with continuously maintained and clean premises successfully signalling capable guardianship (Parker, 2000).

Another indicator of risk embedded in the layout of the store is the placement of valuable goods in non-vulnerable places. A sales-security paradox *unique* to the retail environment exists: whereby tension emerges between commercial interests and the reduction of crime (Carmel-Gilfilen, 2013). Increasing customer access to goods is confirmed to increase customer purchasing (Beck & Willis, 1998). However, participants in the current research—supported by the existing literature (Bamfield, 2012)—posit that the placement of 'hot' products near store exits increases their vulnerability to theft and increases opportunities to steal.

Shops might have the new stuff [at the front] ... "come into our shop and buy this new stuff", sort of thing but at the same time, if you're of that persuasion you might think "core blimey, that's well close to the front, I could zip in there and fill my bags" (Interviewee 9)

Some shops are easy, where they put things, and you think 'f**k me, why are you putting them things there?' You go up the first isle they've put all your wines, and they're putting the spirits on top of the first isle (Interviewee 1)

Conclusion

Existing crime prevention efforts require assessment, and improvement, to build upon existing theory and to equip practitioners “with better decision-making data as they consider what and how to implement crime control mechanisms in future” (Hayes et al., 2012, p. 4). The empirical analysis presented above has sought to utilise a case study of the generic and prolific shop theft offender population in an English Core City between 2004–2014 to further advance the limited knowledge around the nature and drivers of shop theft. Whilst caveats concerning the validity and reliability of police recorded crime data apply—and further confirmatory research in other urban settings is required—the findings presented here do have some clear implications for crime reduction agencies and retailers.

The evaluation of the socio-demographic characteristics of the overall shop theft offender population has confirmed the findings of existing studies: that the majority of shop theft offenders are White males aged between 25–44. However, female offenders are found in greater prevalence across most age groups relative to their presence within the overall offender population; and certain ethnic minorities are over represented relative to their presence within the overall population.

Despite the rapid expansion in security consumption across the UK retail sector (Gill, Howell, Mawby, & Pease, 2012), knowledge around effectiveness remains “piecemeal” (Wakefield & Gill, 2009, p. 9). Our findings from interviews with prolific shop theft offenders challenge the existing strategy of loss prevention managers and retail chains investing heavily in formal security devices such as EAS and CCTV. Whilst existing research has pointed to the successful impact of this target hardening approach in deterring ‘novice’ shop theft offenders, our interviews with prolific shop theft offenders have highlighted the limited impact these types of formal security measures exert on perceived opportunity structures and risks. A crime prevention through environmental design approach which focuses upon store design and layout, and which creates opportunities for natural surveillance, is a better strategy in terms of increasing failed attempts and the risk of apprehension, and reducing the

threat of victimisation by prolific shop theft offenders. Crime reduction measures which focus upon the interior layout of stores, the height of shelves, the location of tills and exit points, offer up a more viable approach for small to medium sized retailers relative to the costs of formal security measures such as CCTV.

For prolific shop theft offenders, formal security measures can be overcome in many instances, and may actually take the form of a challenge which may heighten the *thrill* of shop theft described by a number of our respondents. The flaws in formal security such as the blind spots of CCTV cameras, alongside the unintentional human errors in the behaviour of security/retail staff and the location of desirable products are, on the basis of our interviews, easily discerned and negated/exploited by 'expert' shop theft offenders. There is also clearly a role for retail employees to also participate in enhancing the level of capable guardianship operating within their immediate retail environment. Developing greater awareness through on the job training of the nature of the threat posed by prolific shop theft offenders, alongside changes in practices and behaviour that can both reduce opportunities and heighten the awareness of risk amongst potential offenders, also has a crucial role to play. Ultimately, the present study demonstrates that the presence of enticing opportunities (where security risk is perceived to be minimal) triggered shoplifting behaviour for many respondents—just as the 'bargain shopper' avoids 'passing up on a steal' (Indermaur, 1999, p. 74).

Notes

1. The Commercial Victimization Survey is a victimisation survey conducted by the Home Office which is designed to identify the extent and nature of crimes against businesses derived from interviews with a sample of organisations of different sizes based upon number of employees operating within different commercial sectors (including Wholesale and Retail) in England and Wales.
2. Anonymising the identity of the city in question was a condition of data access.

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5

COPS and Robbers: Customer Operated Payment Systems, Self-Service Checkout and the Impact on Retail Crime

Emmeline Taylor

Introduction

'It's still stealing. It's still a crime and if we catch you, or you get caught, you will be charged' asserts an Australian police officer (cited in Hunjan, 2016: n.p.). The admonition came as part of a police crackdown on people who behave dishonestly when using the self-service checkout in Australia. The police made the announcement in response to revelations that customers were routinely using the self-service checkout (SCO) to underpay, or not pay at all, for goods, to the extent that it was becoming normalised (Taylor, 2016a). While the traditional staffed checkout will in all likelihood continue for the foreseeable future, other payment methods are becoming increasingly popular and it is predicted that the use of emerging technologies in the supply chain and at the point of sale (POS) are set to dramatically change the process by which products pass from retailer

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to customer. Drawing on international examples and secondary data, this chapter examines the impact that customer operated payment systems (COPS) are having on the retail industry, and in particular on crime. Organised broadly into four parts, it first provides an overview of new developments in COPS and maps their future trajectory, exploring the emergence of SCO, scan-as-you-go, and mobile payment systems. It then turns to mapping the known impact on customer theft before outlining some of the key concerns and vulnerabilities about their implementation, drawing upon the emergence of the 'SWIPERS'. The final section considers the future of point of sale (POS) technology, including sensor-based retailing, and the impact on retail crime, providing recommendations to the industry on how to embrace customer autonomy in the age of automation and deliver retail solutions that are cognisant of potential vulnerabilities and risks.

Background: New Developments in POS

A range of new sophisticated technologies hold promises of more efficient and speedier payment processes, as well as facilitating add-on services such as 'endless aisle', enabling the integration of e-tailing with physical stores. Such 'clicks and mortar' models have been asserted by some to not only be beneficial for retail, but to be 'a strategic necessity' (Bernstein, Song, & Zheng, 2008, p. 671). One of the key drivers of customer operated payment systems (COPS) and automated POS, however, is the prospect of significantly reducing the expense associated with employees, reputedly the most costly disbursement for the majority of retailers (Orel & Kara, 2013). For example, Wal-Mart has estimated that it could save \$12 million for every second it can reduce from the duration of the staffed checkout process (White, 2013). In addition to financial and efficiency savings, it has been claimed that customers are now demanding that 'the speed and personalization they receive online is delivered in an increasingly self-service manner in the store' (Cisco Systems, 2013). In recognition of this, and in conjunction with significant technological innovations, it is little wonder that there has been a shift

towards customer-operated systems and a growing use of automation in the retail sector.

Self-service check out (SCO) terminals were first introduced in 1992, in the U.S. They have since become a familiar part of retailing, particularly in supermarkets, across the globe. In essence, SCO refers to a machine, or cluster of machines, with a scanner and digital interface that allows customers to pay for services or goods without direct employee assistance (unless required). The onus is on the customer for scanning items they wish to purchase and then paying for them using an interactive operating system. SCO machines typically have a barcode reader, a weighing scale for loose purchases such as fruit and vegetables, a 'bagging area' (often also utilising scales to verify that the correct item and quantity was placed in the bags after scanning) and a payment system, usually accepting cash, cards and vouchers, and increasingly also payments via mobile phone (Taylor, 2016b). In many ways the introduction of SCO significantly altered the relationship between retailer and customer—no longer was the customer a passive recipient of a service, but was now relatively autonomous in the picking, payment and packaging of the goods they wished to purchase. It is not insignificant, however, that the transferral of responsibility for the checkout process to the customer relinquishes control at the most crucial point of the shopping experience: point of sale. Entrusting customers with the responsibility for processing an honest and correct transaction not surprisingly resulted in considerable scepticism and concern that huge losses, both deliberate and accidental, would transpire. However, despite early reservations, SCO has become an increasingly common feature of retailing; some stores have even become fully self-service.¹ The number of SCO terminals installed globally has been predicted to increase from 191,000 in 2013 to reach nearly 325,000 by 2019 (Retail Banking Research, 2015). It has become evident that self-service payment solutions are an enduring feature of the contemporary shopping experience, and one that looks set to further push the boundaries of technological sophistication, particularly in terms of automation.

Although SCO began to diversify payment options, they didn't alleviate queues in supermarkets to the extent that many had hoped, arguably due in part to the simultaneous reduction in staffed checkout lanes. The checkout process was still often beset by long queues and some customers reported irritation with the interface. Triggering the dreaded 'unexpected item in bagging area' or requiring a harried staff member to authorise the purchase of alcohol or validate that you have indeed brought your own bags were vexatious for customers who were seeking a smooth flowing checkout process. So much so, that some argued that such frustrations were potentially a crime precipitator, justifying criminal behaviour amongst otherwise honest customers (Taylor, 2016a). In a bid to streamline the process of self-checkout, 'scan as you go' approaches began to emerge in 2011. In the USA, many stores, including *Walmart*, *Kroger* and *Stop & Shop* have been trialling mobile scanning technology. The UK's largest retailer, *Tesco*, is investing in the rollout of its 'scan-as-you-go' system which at the time of writing was available in nearly 350 stores across the UK, representing one of the largest investments in this approach to COPS. In addition to large companies developing their own self-scan technologies, there are numerous start-ups that are now emerging to sell apps to smaller retailers such as the *Selfycart* app which allows customers to use their own mobile device to scan items, pay and then leave the store without needing to wait in a line or interact with staff. In essence, the premise of 'scan-as-you-go' is that shoppers use their mobile device or a store provided portable device to scan items as they are selected off the shelves. Customers can pack the produce directly into their bags as they move around the aisles, thus preventing shoppers congregating at designated checkouts at the end of their shopping trip to unload their goods, scan them, pack them in grocery bags and then pay for them. There are significant benefits to the customer journey relating to such a streamlined process, but also considerable risk to the retailer.

In order to retain some control over the customer journey and build-in payment checks, currently, scan and go requires customers to be channelled through certain points (checkouts or kiosks, for example) in order to process payment thus providing a common 'touch point' to validate the transaction and ensure an accurate payment. In terms of preventing dishonest behaviour amongst customers, most adopters currently have

randomised checks to verify if a customer has paid for all of the items in their bags. It is perceived by some that the potential for being selected for this check will assuage temptations to steal. For example, Tesco's system is underscored by random checks as outlined on their website: 'the Scan as you Shop system will prompt us to check a few products at random in a customer's trolley' (Tesco, 2017). However, as will be explored later in this chapter, customer operated payment systems can potentially create new opportunities for aberrant consumer behaviours.

Relatedly, and following on from the mainstreaming of SCO and the shift towards hybrid e-commerce, mobile payment has emerged within retail. Encompassing a vast array of nuanced scenarios, terms such as 'mobile payment', 'mobile commerce' and 'contactless payment' are often used interchangeably but have some distinct attributes. A 'mobile payment' refers to any transaction in which a mobile device, such as a mobile phone or tablet is used to initiate, authorise and/or confirm an exchange of financial value in return for goods and services. More specifically, a mobile payment has been defined as:

[A] type of electronic payment transaction procedure in which at least the payer employs mobile communication techniques in conjunction with mobile devices for the initiation, authorization or realization of payment (Au & Koffman, 2008, p. 141)

There are a variety of different types and approaches to mobile payment, but the technology facilitating the transaction can broadly be categorised into two main types; remote cloud based digital payments and proximity payments. Remote payments require customers to register for a service, usually involving the download of an application, and use it on their mobile device to pay for goods and services. Customers may have pre-loaded value stored in an account or draw funds directly from a bank account. Payment service providers (PSPs) such as Google, PayPal, and GoPago use a cloud-based remote approach to in-store mobile payment. Proximity payments require the customer to present a credit card, mobile phone or tablet device at a payment terminal, holding it close to the receiver in order to complete the transaction. The payment is facilitated by Near Field Communication (NFC) and is commonly referred to as a

‘contactless payment’. In attempt to further clarify distinctions within the mobile payments market, the differences between three key approaches—mobile commerce, mobile acceptance and mobile wallets—are outlined below.

The term *mobile commerce* is typically used to describe any form of e-commerce that is carried out using a mobile device, such as a mobile phone or tablet, via digital wireless technology, whereas *mobile payment acceptance* refers to the conversion of a mobile device (e.g. smart phone or tablet) into a POS system by affixing temporary or permanent hardware enabling the retailer to accept card-based payments. For example, a store device, such as a magnetic strip reader, can be connected to a customer’s smartphone, often via the audio jack, to create an external bar code scanner or to process payment from a debit or credit card. The *mobile wallet* can be used to refer to an application hosted by a mobile device, or attaching a sticker containing a microchip, that enables customers to use it for payment instead of a credit or debit card. Many different wallet providers exist and large retailers and banks have been developing different approaches—some using proximity technology such as near-field communication (NFC), either embedded in the device or a sticker, while others are remote or cloud-based.

Available information and research on multichannel retail and mobile payments has largely focused on the positive marketing and sales opportunities they potentially offer to industry and customers. Following a review of the literature, Groß (2015, p. 232) concluded that most research studies ‘suffer from a pro-innovation bias’, and furthermore, in order to ‘overcome that deficit, potential obstacles have to first be identified’. Despite consistent findings ‘that consumers are highly sensitive to issues of [...] risk, privacy, network security, transaction protection, and trust’ (Groß, 2015, p. 226), there exists little available information relating to best practice, and virtually nothing pertaining to the impact on criminal behaviour. There is little understanding of the risks involved with m-shopping, particularly in terms of shrinkage and fraud as very little independent research has been conducted to understand the vulnerabilities of new shopping practices and payment. It has been argued that the use of smartphones as payment devices may actually decrease the risk of customer theft from retailers, since authentication and authorisation pro-

cesses may become more sophisticated than those of existing payment methods (Medich et al., 2011). However, on the other hand, they might present new opportunities for fraudulent behaviour, particularly in the early days of implementation (Taylor, 2016b).

In addition, understanding of customer views and experiences of new payment technologies remain relatively unexplored. While it is believed that some customers enjoy the use of new technologies and welcome the opportunity for greater control over their shopping experience, others report feelings of frustration and resent the replacement of store clerks with automated machines. A survey for computer maker Ordissimo revealed that some customers rank the emergence of SCO as one of the most irritating features of modern life (Simms, 2012), whereas some retail scholars have lamented that it is indicative of a slippery slope towards poorer customer service (Evans & Dayle, 2009). It is clear that the benefits and limitations of SCO, as well as the integration of physical and e-commerce channels, for retailers, customers and thieves are complex; but a key area that requires further exploration, and the focus of the following section, is the impact that new COPS are having on shrinkage and, in particular, shoplifting.

Shrinkage, Retail Theft and Customer Operated Payment Systems

Costing the retail industry an estimated USD \$119 billion each year, shrinkage is typically broken down into four categories: internal theft, external theft, administrative errors, and inter-company fraud. There is little consensus on which of these accounts for the most loss. For example, the most recent Global Retail Theft Barometer (GRTB, 2015) found that shoplifting was the key cause of shrinkage in Europe, the Asia Pacific and Latin America in 2013/14 and 2014/15, while in North America, dishonest employee theft was reported to be the main contributor. Focusing in on external (customer) theft, or 'shoplifting', defined as 'theft from the selling floor while a store is open for business' (Francis, 1979, p. 10), this category is also considerably opaque. The British Retail Consortium's

(BRC) *Retail Crime Survey 2015* (BRC, 2015) indicated that although customer theft in volume terms decreased marginally by 2 percent in 2014–2015 (in part due to the elevated level the previous year²), the financial impact of customer theft increased by 35 per cent in 2014–2015, reaching the highest average value recorded since 2004–2005. The average value of customer theft increased from £241 per incident (\$293 USD) to £325 (\$395 USD) per incident; ‘a record high’ (BRC, 2016, p. 5).

The precise rate of retail theft is actually unknown. Shoplifting is considered to be one of the most abstruse crimes in terms of verifiable knowledge about perpetrators, motivations and *modi operandi*. Quite simply, only a small proportion of shoplifters are apprehended and prosecuted. Griffin (1984) estimated that just 1 in every 20–40 shoplifters are apprehended, whereas according to Williams, Forst, and Hamilton (1987) the typical offender engages in approximately 95 offences prior to apprehension. This makes it difficult to understand the true characteristics of this crime type, as well as the motivations and demographic profile of offenders.

As with the opacity that characterises shrinkage composition, the exact impact of COPS on rates of shoplifting is unclear. There have been anecdotal claims that self-checkout increases theft by up to five times compared to cashier-processed transactions (Krasny, 2012), whereas others have averred that it actually has little ‘discernible impact upon the overall rate of shrinkage’ (Beck, 2011, p. 205). Research findings from one study suggested that, following the introduction of SCO, customers were ‘much more likely to consistently scan items they are presenting for purchase than members of staff operating staffed checkouts’ (Beck, 2011, p. 205). However, it is not known whether this finding is susceptible to changes over time. For example, it is conceivable that initially customers are very careful and precise about scanning their items, perhaps feeling more scrutinised when the SCO machines are first introduced, but as they become more familiar and *au fait* with the technology, the concern for a correct transaction reduces. As will be outlined below, some individuals who habitually steal using self-checkout first did so accidentally, but upon realising how easy it was continued to steal regularly. This would suggest that over time the level of theft at the SCO would increase.

In another study, the UK Home Office's Commercial Victimization Survey (CVS) has found that supermarkets with self-service tills are significantly more likely to experience shoplifting than those without. Including questions specifically relating to SCO for the first time in 2014, the CVS findings reported that 86 per cent of those with self-service tills were victims of shoplifting, compared with 52 per cent of those without (Home Office, 2015). Note that in the 2015 CVS respondents were additionally asked what proportion of shoplifting incidents they thought occurred at a self-service till. However, due to the small sample size, only 35 premises with self-service tills that had experienced theft by customers and were therefore asked the follow-up question. The analysis determined that this base was too low to derive reliable findings, but efforts will be made to report on this data in future years (Home Office, 2016).

The findings from the survey suggest a strong correlation between SCO and higher levels of shoplifting; furthermore it does not appear to represent 'tactical displacement' (Repetto, 1976), whereby those of criminal intent simply steal by a different means, since, if this were the case, there would be no real net change in the amount of store theft. Despite assumed benefits for retailers and shoppers, SCO undoubtedly presents a number of challenges in terms of controlling losses that may arise from its use, both malicious (for example, customers deliberately not scanning items) and non-malicious (for example, incorrect prices accidentally being transacted or aborted sales due to customer frustrations).

COPS and Robbers: Opportunity Makes the Thief?

There are many different techniques used by shoplifters (see Hayes & Cardone, 2006; Gill, 2007 for an overview of commonly used strategies) that are arguably 'limited only by the imagination' (Hayes & Cardone, 2006, p. 305). A rough distinction can be drawn between techniques that attempt to conceal the item to be stolen, and those that do not. Many studies show that concealment usually occurs throughout the store; in

the aisles or in a blind-spot (Gill, 2007), and not at the checkout where security mechanisms such as CCTV are often concentrated. However, with the advent of SCO, a range of different techniques have materialised that are particular to customer operated systems. For example, manipulating the weight scales so that the amount of product registers as less, selecting a different, cheaper item for loose goods such as fruit and vegetables, stacking items so that only the bottom one is scanned, and even bypassing the machine altogether. This raises the question whether the introduction of self-checkout has resulted in a new type of shoplifter that would not steal by any other method. This new type of customer-turned-thief are referred to by the mnemonic 'SWIPERS' being, 'Seemingly Well-Intentioned Patrons Engaging in Routine Shoplifting' (Taylor, 2016a).

SWIPERS

A number of industry studies and market research, typically surveys of customers, have provided some support for the initial findings from the UK Home Office's CVS, revealing that SWIPERS appear to represent a growing cohort of store thieves. Online survey findings suggest that almost a third of customers admit to stealing when using a SCO machine (Harding, 2012), and for some it was a behaviour that they engaged in regularly (Carter, 2014). The average value of goods has been estimated to be £15 (\$18 USD) per month, adding up to £1.6 billion (\$1.95 USD) worth of items every year. Synthesising the findings from different surveys, the main reasons for stealing when using the SCO given by participants can be broadly categorised into three: ease (dishonest behaviour at the SCO requires little effort or skill); low risk (perceived low likelihood of detection and apprehension); and frustration (for example, problems with the system, along wait time, or requiring a staff member to intervene e.g. for age-validation).

The SCO machines can be deliberately manipulated in many different ways. A customer could switch barcode labels or select a less expensive item within a similar grocery category for loose purchases. For example, cooking tomatoes are often much cheaper by weight than those on the

vine, peanuts are cheaper than pine nuts, carrots are cheaper than cherries, and so on. Other techniques include stacking items together so that only the barcode on one unit is scanned, entering the wrong quantity or size of loose items e.g. selecting a small salad bowl instead of a large one, and covering the barcode while imitating the scanning motion so that the item is not registered. It has also been suggested that SCO increases the occurrence of 'walking'. In this scenario the customer deliberately exits the store with goods they have not paid for without any attempt to make payment at a staffed or self-service lane (Bamfield, 2012). This relatively brazen shoplifting technique is aided by the fact that the SCO area is often designed to enable the rapid and free flowing movement of multiple customers simultaneously, prioritising fluidity over security. In addition, reduced staff presence in turn diminishes the number of capable guardians that are able, inclined and willing to intervene in the theft of goods. The self-service area may therefore permit thieves to exit more easily, particularly if employees are occupied with another customer. Research has shown that thieves will deliberately create a disturbance or distract store staff in order to enable an accomplice to steal items unnoticed (for example, see Bamfield, 2012; Gill, 2007). At the SCO this is easily done by requesting assistance from a staff member, thus allowing an accomplice to walk out of the store without being apprehended. Some retailers have attempted to counter this by installing gates that will only open to permit exit if a valid receipt is scanned.

In a previous publication (Taylor, 2016a), I developed a typology of SWIPERS outlining four main groups: the *accidental* thieves, the *switchers* of labels, those *compensating* themselves, and those that steal professionally due to becoming *frustrated* with the process of self-checkout. These categories are synthesised below.

Accidental SWIPERS

It is likely that many SWIPERS originally misappropriated goods by accident, but upon realising how easily they had got away with, they continued to steal regularly. Hechter and Kanazawa (1997) claim that individuals who are not apprehended or punished for stealing are likely

to revise down their risk assessment and continue to commit the crime, thus creating a symbiotic spiral of escalating criminality. Providing some support for this in relation to SCO, an online survey found that 57% of those admitting to theft when using self scan machines, claimed that they first stole goods by accident or because they couldn't get an item to scan. Importantly, these individuals continued to steal regularly following a perception that it was easy and relatively low risk. The small chance of being apprehended alongside the perceived ease of stealing via SCO provides an important insight for understanding the genesis of SWIPERS.

Switching SWIPERS

It has become apparent that some shoppers deliberately switch the labels on products or attempt to transact more expensive, lighter items (such as cherries and grapes) as heavier loose items such as potatoes, onions or carrots. It has been suggested that perpetrators of this kind of 'discount theft' would not ordinarily steal, would not consider shoplifting by any other modus operandi and do not necessarily even view their actions as theft. Rather this behaviour is perceived as 'cheating' the system rather than stealing; 'a means of gamifying an otherwise mundane and pedestrian experience' (Taylor, 2016a, p. 559). Furthermore, since switchers do pay *something* for the goods, they often do not consider it to be 'real' theft, supporting Cameron's assertion that 'pilferers ... generally do not think of themselves as thieves' (1964, p. 159).

Compensating SWIPERS

It costs an estimated USD \$1 to check out a USD \$100 spend (IBM, 2008). Thus losses through customer theft might overall be cheaper than the cost of paying cashiers (particularly since employee theft represents a significant amount of loss). However, since SCO usually results in fewer staff and more profits for the retailer, this could, to some, provide justification for theft. Schwartz and Wood (1991) identified a cohort of shop thieves motivated to steal through a sense of entitlement and the

contention that retail theft was a political act. These shoplifters believe that they have been treated unfairly in some way (perhaps they are unemployed and resent the automation of some jobs, or they have been dismissed from a similar role), or they hold anti-corporation beliefs that in their view justify stealing from large companies. In addition, there is evidence to suggest that some customers believe that they should be 'compensated' for having to process their shopping themselves when hitherto someone would have been employed to do the same task, particularly if they encountered difficulties during the transaction or a long wait in line.

Irritated/Frustrated SWIPERS

As mentioned above, a survey of shoppers in Britain (Simms, 2012) found that SCO was considered to be one of the most irritating features of modern life. Another survey of 1017 adults in the UK identified precisely what was most annoying about SCO machines; the automated voice announcing 'unexpected item in the bagging area' and store assistants being slow to respond to problems topped the poll (Arnfield, 2014). Similar to the Compensators, those who steal through frustration believe it is a justifiable action in response to their experience at the store, and draw upon a range of excuses, or what Sykes and Matza term 'techniques of neutralization' (1957) to defend their behaviour. Such justifications often include: 'the item wouldn't scan', 'the barcode was damaged' and 'I couldn't find the correct fruit/vegetable'. It is difficult to know how far these are genuine difficulties and the customer originally intended to pay for the item or whether SCO has invited this type of post hoc excuse making, also found amongst other property offenders (e.g. Taylor, 2014).

Pleasure-Seeking and Hedonic Shoplifting

It would be imprudent to assert that all crimes are driven by rational motives. Of course, some retail crimes are committed for more 'existential' or visceral reasons, such as the pleasure derived from illicit behaviours or the adrenalin generated by transgression (see Taylor, 2016c). This

cohort is not categorised as SWIPERS since they cannot be considered to enter the store 'well-intentioned'. Customer operated payment systems potentially provide a relatively 'safe' way to derive pleasure from shop theft. Previous research has shown that paying a reduced price for a particular item might lead a consumer to feel proud, smart, or competent and so the experience of paying a lower price through 'discount theft' could be similar to the hedonic reactions that some, such as Holbrook, Chestnut, Oliva, and Greenleaf (1984), found amongst bargain hunters. Others have reported that, if a customer believes they have obtained a bargain, it 'can provide increased sensory involvement and excitement' (Babin, Darden, & Griffin, 1994, p. 647). Furthermore, it has been suggested that this type of deviant customer behaviour is not abnormal, but rather 'an inseparable part of the consumer experience' (Fullerton & Punj, 1993), to the extent that some claim the shoplifter is simply the 'ultimate frugal consumer' (Tuck & Riley, 1986). Seeing theft as pleasurable provides some understanding as to why it is that shoplifting is not solely the preserve of economically and socially disadvantaged groups stealing for subsistence.

Clearly, much more research is required in order to understand who steals using the self-service checkout and what their motivations are for doing so. But the scant evidence available would suggest that as COPS make things easier for legitimate shoppers, they might also be creating opportunities for 'aberrant consumer behaviour' (Bamfield, 2012, p. 39).

Future Directions for COPS and POS Technology

The onus for an accurate and honest transaction rests with the customer in many of the early COPS and POS technologies, and, as has been demonstrated, this potentially provides new opportunities for dishonest behaviour, particularly of concern is that this might be resulting in customer theft being committed by some individuals who claim that they would not steal through any other means. Retailers and law enforcement need to take steps to counter the seeming impunity that those

dishonestly using the self-service checkout appear to have developed. As outlined in the introduction to this chapter, police in Australia are attempting to remedy this through crackdowns and taskforces, recognising that although each theft might be relatively small (although apparently increasing in value), the sheer volume amounts to a huge dent in retailers' bottom line. In a bid to deter this behaviour, one police officer stated: 'You're very vulnerable to being caught for committing this kind of offence no matter how small you think it is' (cited in Hunjan, 2016, n.p.). Such statements from the police can have a deterrent effect on opportunistic individuals who hitherto perceived stealing at SCO to be a relatively risk free pursuit. The support of law enforcement to assist in tackling customer theft is paramount. As the British Retail Consortium has asserted: 'ensuring that theft receives an appropriate response from the police remains an important priority for businesses' (2016, p. 4). However, there is clearly a role for retailers too, in ensuring that the technologies that they develop and implement do not result in increases in criminal behaviour. As Beck and Hopkins (2016, p. 14) have argued, retailers 'should take greater moral and social responsibility to mitigate the wider "criminogenic" impacts of technological innovation through their Corporate Social Responsibility (CSR) strategies'.

In terms of the technology being used to enhance the customer journey and facilitate in store purchasing, there are set to be further revolutionary shifts in the near future. Since customer-owned mobile devices and cloud-based applications have the ability to be processed anywhere that the device has a signal, developing a truly fluid and autonomous shopping experience looks set to be the next step in retail. A fully automated shopping and checkout process could eradicate cumbersome queues and the packing and unpacking of purchases altogether. Pioneering this innovation, in June 2016, Amazon launched its Amazon Go concept store with its 'Just Walk Out' approach to shopping. Using the 'the same types of technologies used in self-driving cars: computer vision, sensor fusion, and deep learning ... Amazon Go is a new kind of store with no checkout required' (Amazon.com, 2017). The concept is explained as follows:

With our Just Walk Out Shopping experience, simply use the Amazon Go app to enter the store, take the products you want, and go! No lines, no checkout ... Our Just Walk Out Technology automatically detects when products are taken from or returned to the shelves and keeps track of them in a virtual cart. When you're done shopping, you can just leave the store. Shortly after, we'll charge your Amazon account and send you a receipt.

Amazon has not released any information about the accuracy of the technology or the volume of incorrect transactions e.g. a customer being charged for an item they did not leave the store with, or vice-versa, not being charged for an item that they did take. Nor do we know how or in what way the technology can be maliciously manipulated. In addition, it is not known how the precision with which the technology can discriminate between similar but different items. But what is interesting is that the 'Just Walk Out' concept potentially eradicates theft. In fact, it encourages the exact behaviour that is associated with shoplifting; an individual picks an item off the shelf, puts it in their bag and leaves the store without visiting a register or POS station. If the technology is a success, stealing from these stores would be made very difficult. Even if possible to circumvent, the likely augmentation with biometrics such as facial recognition and artificial intelligence is likely to assuage even the most discerning thief.

Conclusion

The retail landscape is constantly evolving and the transition to customer operated payment systems has revolutionised the relationship between retailer and customer. The initial shift was to enable customers to scan their own items at self-checkout stations. This was then expanded to 'scan and go' concepts that removed the bottleneck of scanning at these stations, but retained the fixed points for making payment, as well as the somewhat awkward random bag and receipt validation checks, which understandably could irk honest customers by making them 'feel like criminals'. The next phase appears to be smartphone tracking and sensor-based retail as currently being pioneered by Amazon. While this could

raise significant privacy and data protection concerns amongst some customers, as well as generate ideologically-driven resistance from some individuals who lament the replacement of human staff with algorithms and machines, it is likely to be zealously received by technophiles. The key to its success will be in the accuracy of the technology to ensure that transactions are correct. In the meantime, SCO and 'scan and go' customer operated payment systems will continue to evolve. In order to mitigate loss, retailers need to be aware of the techniques used at self-service checkouts, and the range of justifications for dishonest behaviour that have become well-established. Reliable data collection and measurement of retail theft is crucial to tackling it effectively.

Notes

1. In June 2010 a Tesco Express in Northampton became Britain's first self-service only store. It had five self-service checkouts overseen by a single member of staff and no staffed checkouts. Tesco described it as an 'assisted service store' (ASS), designed to increase efficiency.
2. The annual number of customer thefts per 100 stores had increased by 5 per cent from the 2012 rate, and that 2013 had the highest number of shop thefts in the past nine years (BRC, 2014). While some may interpret this as symptomatic of an overall upward trend in the occurrence of customer theft, it could also be read as a growth in the number of offenders being apprehended and prosecuted, and thus simply a greater uncovering of the dark figure.

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Part III

Retail Environments, Crime and Perceived Safety



6

Crime Prevention Through Environmental Design (CPTED) and Retail Crime: Exploring Offender Perspectives on Risk and Protective Factors in the Design and Layout of Retail Environments

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Introduction

Crime Prevention through Environmental Design (CPTED) is a crime reduction intervention that aims to design out crime risk from the built and sometimes natural environment at the planning stage. Research exploring police recorded crime, self-reported crime and offender accounts has demonstrated that CPTED can reduce crimes such as burglary and within settings such as residential housing (Armitage, 2013; Armitage & Monchuk, 2011; Cozens, Saville, & Hillier, 2005). Less is

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known about the potential impact on retail crime. Retail crime represents a costly risk to businesses—both in terms of financial loss and the risk of violence against staff—the British Retail Crime Survey, 2017 identifying violence and abuse against staff as the highest priority facing the retail industry (British Retail Consortium, 2017). This research attempts to ascertain the extent to which CPTED principles—namely surveillance, movement control, defensible space and physical security, can be implemented within supermarkets to reduce the risk of shoplifting. Although the focus of this research is on CPTED and its implementation within a retail setting, other elements of offender decision making considered relevant to retail environments are also explored. The research is inductive in nature, utilising novel techniques to assess shoplifter movements and decision-making as they move through two major supermarket stores.

Literature Review

Offender-based research involves talking to offenders and observing them in their own environment to gain a better understanding around their decision making processes, such as why they select a particular target (Bernasco, 2010). As Bernasco (2010) suggests—‘... if anyone can provide first-hand information on offending, offenders can’ (p. 5). Research exploring offenders’ decision making has been conducted for a range of different crime types such as for example, burglary (Nee & Meenaghan, 2006; Taylor, 2017); shoplifting (Cardone & Hayes, 2012; Carmel-Gilfilen, 2011; Lasky, Fisher, & Jacques, 2017) and robbery (Deakin, Smithson, Spencer, & Medina-Ariza, 2007; Jacobs & Wright, 2008). The focus of this chapter is shoplifting in supermarket stores in England, although the findings are relevant internationally.

CPTED is a crime prevention measure that focuses specifically upon the design and layout of physical environments (Armitage, 2013) and is based upon several key elements or principles—surveillance, movement control, defensible space/territoriality and physical security. CPTED is underpinned by opportunity theories with rational choice perspective (Cornish & Clarke, 1986) and routine activity theory (Cohen & Felson, 1979) perhaps the most pertinent to this chapter. Rational choice perspec-

tive states that crimes are purposive and deliberate acts, committed with the intention of benefitting the offender (Cornish & Clarke, 2008). Cornish and Clarke (1986) suggest that offenders are at least quasi-rational and they use the information presented to them in the immediate environment to assess whether the rewards of committing a crime outweigh the risk of undertaking the crime. Thus, rational choice perspective suggests that the potential offender asks two pertinent questions: (1) will I succeed in carrying out the crime? and (2) if I do succeed, will I get caught? Routine activity theory suggests that for crime to occur a motivated offender, a suitable target and the absence of capable guardians must converge at the same time and in the same space (Cohen & Felson, 1979). By removing any one of these three elements, a crime can be prevented.

A number of characteristics can independently or collectively make a target suitable to a motivated offender, in the case of this chapter—shoplifters. Clarke (1999) states that products are at a higher risk of theft if they are CRAVED: Concealable, Removable, Available, Valuable, Enjoyable and Disposable (Clarke, 1999). Examples of CRAVED products that can be found within the retail environment (specifically supermarkets) include alcohol, cosmetics, CDs, DVDs, computer games and razors, for instance. In an attempt to reduce the theft of CRAVED products, retailers install a range of crime reduction measures that are proportionate to the size and type of retail environment and level of risk (Clarke & Petrossian, 2013). For example, Clarke and Petrossian (2013) state that effective shoplifting prevention should comprise a comprehensive strategy that includes retailing practices (including the effective design and layout of the retail interior), appropriate staffing, shoplifting policies and the use of technology across the store (e.g. CCTV) and for individual products (e.g. Electronic Article Surveillance—EAS). However, such measures are only effective should they be installed and implemented correctly and managed and maintained effectively. If not, the measures designed to prevent crime can actually work to offenders' advantage and help them commit an offence (Gill, 2017).

As stated above, CPTED aims to reduce the opportunity for crime through the effective design and planning of the environment. Research conducted with shoplifters across Brazil, Canada, the UK and USA (Gill, 2007); the USA (Cardone & Hayes, 2012; Carmel-Gilfilen, 2011) and UK (Hunter et al., Chap. 4 in this book) confirms that offenders consider

the design and layout of the retail environment when assessing the opportunity to commit crime. Gill (2007) also found that shoplifters prefer to offend where they are familiar with the interior layout and design, such as national supermarkets that are often designed according to a set style/plan.

Surveillance is one of the key principles of CPTED and refers to the way in which the design of the environment allows the area to be readily observed (Cozens et al., 2005). By increasing opportunities for surveillance, it can deter offenders from committing crime as there is an increased risk that they may be seen and subsequently apprehended (Cozens et al., 2005). The way in which the retail environment is designed and managed can help to facilitate opportunities for surveillance. Research conducted with shoplifters confirms that they are deterred by high levels of surveillance (Cardone & Hayes, 2012; Gill, 2007). As Gill (2007) states: “*The more visible they are the less likely they are to steal. Designing the environment to maximise their visibility is, for them, unwelcome*” (p. 35). Research conducted with a sample of security managers across Finland suggested that increasing levels of surveillance, specifically formal surveillance, can reduce opportunities for crime (Kajalo & Lindblom, 2010). Surveillance can be maximised by creating clear sight lines; reducing the height of displays; lowering shelf heights; reducing the number of blind spots; avoiding poorly lit corners and ensuring the regular presence of retail staff (Clarke & Petrossian, 2013; Hunter et al., Chap. 4 in this book; Kajalo & Lindblom, 2010; Poyser, 2004). Clarke and Petrossian (2013) state that the careful placement of mirrors can also help to facilitate opportunities for surveillance.

Research conducted with shoplifters confirms that products which are positioned in areas with blocked or obstructed lines of sight are vulnerable to theft (Gill, 2007; Hunter et al., Chap. 4 in this book) and this can often be the case near checkouts where retail staff are busy, yet where CRAVED products are often located. Where there is a high level of surveillance, shoplifters will often attempt to identify blind spots to conceal items (Cardone & Hayes, 2012; Gill, 2007; Lasky, Jacques, & Fisher, 2015). The use of CCTV is often used in the retail environment to provide additional surveillance and to deter and detect shoplifters (Gill, Bilby, & Turbin, 1999). However, Gill et al. (1999) interviewed 38

shoplifters, with the majority of these ($n = 32$) stating they would not be deterred by the presence of CCTV, confirming that there are always blind spots not covered by the CCTV. The effectiveness of CCTV can also be impeded by retail furniture such as high shelving and signage. In addition, the effectiveness of CCTV is very much dependent upon the level and quality of monitoring by its operators. Beck and Willis (1999) suggest that store staff become less security conscious where CCTV is present. However, Hunter et al. (Chap. 4 in this book) suggest that the shoplifters they interviewed did consider CCTV to be a risk, particularly dome cameras.

Research regarding the extent to which the presence of security staff deters shoplifters varies. Whilst some state that the presence of uniformed security staff is a deterrent, others focus more upon the activity and attitude of those staff (Hunter et al., Chap. 4 in this book; Kajalo & Lindblom, 2010). This is of particular importance when observing how security staff react to the activation of an alarm for example (Beck & Palmer, 2011; Gill, 2007). As Clarke and Petrossian (2013) state: “*guard characteristics and behaviour are extremely important: poor guards have no effect on shoplifting*” (p. 38). However, often security guards are poorly trained and unmotivated (Dabney, Hollinger, & Dugan, 2004; Gill, 2007).

Another principle of CPTED is *physical security*, or target hardening (Cozens et al., 2005). This refers to the implementation of measures to try to increase the level of effort required by offenders to successfully steal a product, whilst simultaneously increasing the risk of the offender being observed and apprehended whilst trying to overcome that security. Examples of such measures within the retail environment include the use of Electronic Article Surveillance (EAS). EAS, or tagging, is a common method of trying to secure products within the retail environment (Bamfield, 2005; Beck & Palmer, 2011; Sidebottom and Tilley, Chap. 15 in this book). Beck and Palmer (2011) describe how the aim of EAS is to increase the risk of the offender being caught and that this is achieved by: (1) overt tags installed on products; (2) gates installed at the exits of stores; (3) an audible alarm if the system is activated; (4) a staff response to an activated alarm and (5) notices places around the store alerting customers to the use of the system. Gill et al. (1999) found that many of

the shoplifters they interviewed were not deterred by EAS. As Gill states (2017) offenders have now become accustomed to such crime prevention measures and have developed methods to overcome them. For example, shoplifters remove or bend the tags (Beck & Palmer, 2011; Gill, 2007); deactivate the tag (Gill, 2007) or place the tag in an aluminium lined bag (Beck & Palmer, 2011; Gill, 2007). Gill et al. (1999) describe how some of the shoplifters they interviewed would exit the store with the stolen goods and should an alarm be activated, simply act 'normal' so as not to attract attention.

The use of EAS can only be effective if it is correctly installed and managed. Limitations include poor fitting, failure to respond to an alarm and apathy from staff given the regularity of false alarms (Hayes & Blackwood, 2006). This results in what Sidebottom and Tilley (Chap. 15 in this book) refer to as '*alarm apathy*'.

Another principle of CPTED—*Movement control* refers to the way in which offenders access, exit and move through the environment (Armitage, 2013). Prior to considering the way in which offenders move around the interior of the retail environment, it is important to consider the location of the supermarket within the local area. Gill (2007) found that most shoplifters prefer to commit their offence locally, as opposed to travelling a distance, and that stores that are in close proximity to escape routes and publicly accessible buildings were preferable. In terms of movement within the store, Carmel-Gilfilen (2011) states that the entrance and exit points of a store are problematic and this should be where resources are targeted to restrict exits and impede getaways. Gill (2007) reports that upon entering the store, offenders will assess the range of different exit points available to them should they need to make a swift exit. Clarke and Petrossian (2013) suggest that entrance and exit points should be minimised to prevent shoplifters exiting the store. Lasky et al.'s (2015) analysis of interviews conducted with 39 American active shoplifters found that after the concealment of an item they adopted two ways in which to exit the store. They either continued to move around and browse other products, so as not to look suspicious, or exit the store by acting as though they were distracted—for example, using their mobile telephone. Most of the participants in Lasky et al.'s (2015) sample left the store without making a purchase. In addition, the placement of CRAVED

products close to entrance and exit points also facilitate shoplifting. Here, lines of sight can be compromised and staff preoccupied, thus assisting shoplifters in removing items quickly.

Territoriality, or *defensible space*, refers to the clearly defined ownership of space (Cozens et al., 2005). Carmel-Gilfilen (2011) suggests that in the retail environment, territoriality can be achieved through the use of walls, fixtures and lighting as well as clear signage. However, Gill et al. (1999) found that signage such as ‘*shoplifters will be prosecuted*’ would not deter the shoplifters they interviewed from offending. Similarly, Cardone and Hayes (2012) found that few offenders stated that signage was a deterrent. However, they argue that whilst the use of signage might not deter the majority of offenders, it is a low cost initiative when compared to other methods (Cardone & Hayes, 2012).

Methodological Approach

This chapter reports the findings of one element of a wider research project to investigate the impact of the design and layout of retail environments on shoplifter perceptions of risk, and to balance that with the potential trade-offs between designing for security and designing for maximum commercial gain and positive consumer experience. Whilst the focus is on the applicability of CPTED principles to the retail environment, the findings reveal many additional features of offender decision making that are relevant to retail crime reduction.

The retail environment under scrutiny is the supermarket—large stores that sell products including (but not exclusive to) groceries, toiletries, alcohol, clothing, electronics and household cleaning products. Two major supermarket chains were included in the research (the identity of these chains will remain anonymous), thus agreeing to (1) semi-structured interviews with Store Interior Designers (two) and (2) on-site filmed ‘walk rounds’ with ex-offenders (six).

Garnering the views of offenders is a vital element in understanding crime risk and consequently crime prevention. As Nee (2003, p. 37) describes, offenders are “*the expert[s] in the chosen field ... yielding a rich and increasingly focused understanding of the subject.*” Those who have

extensive experience in committing the crime in question (in this case shoplifting) are “*in a unique position of being able to describe, in their own words, the motivations and causes of crime ... and the perceived effectiveness of crime control activities in deterring crime*” (Miethe & McCorkle, 2001, p. 17). Those working in retail loss prevention and policing will have knowledge of security systems, patterns of loss and the effectiveness of crime prevention measures. However, experience does not always equate to understanding, and the vast majority of practitioners tasked with preventing shoplifting will never have committed the crime in question. To truly understand the thought processes of those shoplifters we must access that expertise and use it to target crime prevention activity.

This is not the first study to investigate shoplifter perceptions of risk. Carmel-Gilfilen (2011), Cardone and Hayes (2012), Lasky et al. (2017) and Hunter et al. (Chap. 4 in this book), report on shoplifter perceptions. For example, Lasky et al. (2017) recruited college students who were offered \$75 to participate and a further \$40 to recruit associates. Carmel-Gilfilen (2011) also incentivised participation and recruited participants through the use of an advisement in a newspaper. Hunter et al. (Chap. 4 in this book), also offered a modest £10 voucher although, inline with this research, recruited via the Integrated Offender Management (IOM) team. The sample of offenders within this study were recruited via the District IOM teams and were not offered financial incentives.

As is demonstrated in Table 6.1, the research comprised four phases: Phase One included in-depth semi-structured interviews with the lead Interior Designer for two major supermarket chains. Interviews were fully transcribed and analysed using thematic analysis. Phase Two

Table 6.1 Four research phases

	Methodological approach
Phase One	Interviews with supermarket Interior Designer for two major chains
Phase Two	Semi-structured interviews with six ex-offenders
Phase Three	Store walk rounds with six ex-offenders
Phase Four	Structured ‘signage’ interview with six ex-offenders

included semi-structured interviews with six ex-offenders recruited via IOMs from across West Yorkshire (England). Questions focused upon offending history, drug use, store selection, product selection, crime prevention and desisting from shoplifting. Interviews were fully transcribed and analysed using thematic analysis. Phase Three included walk rounds (across two stores) with the same six ex-offenders. Participants wore police body worn cameras and were asked to move through the store as if committing shoplifting offences. Participants were asked to add commentary to their 'journey', explaining their thought processes and decision-making. Participants were not prompted or asked structured questions. This element of the research was led by their movements and narration. Phase Four included a structured interview specifically focused upon images of crime prevention signage and included the same six ex-offenders. Participants were asked to grade the deterrent impact of 27 signs and to explain their justification verbally. Analysis was both quantitative and qualitative.

Capturing shoplifter perceptions may not be entirely unique, however, the distinctiveness of this research lies in its focus upon CPTED as its relevance to the retail environment (although the findings do reveal many interesting and relevant features of offender decision making that are not specific to CPTED). Recent research (Armitage, 2017; Armitage & Joyce, *in press*; Armitage & Monchuk, *in press*) has reconsidered the principles of CPTED in the words of burglars. This research reports on the applicability of CPTED to the offence of shoplifting and to the context of large supermarket chains. This research is also distinctive in its attempt to balance crime risk with prevention interventions that are both feasible and realistic from a retailer's point of view, balancing loss prevention with income generation—thus calculating risk (of losses through shoplifting) versus monetary reward—in the form of enhanced sales through product positioning and store layout.

This research is also innovative in its methodological approach. Whilst the sample size is small (six) in comparison to other research (say Hunter et al.'s 32 offenders), it utilises novel data collection techniques. Offenders not only narrate their decision making verbally, but body-worn cameras capture their 'view' of the store, their 'journey' through the store and their identification of 'hot' and 'cold' products and spaces around the store.

Unlike both Carmel-Gilfilen (2011) and Lasky et al. (2017) the offending 'status' of participants was not simply accepted as given. Each of the participants were verified as prolific shoplifters via the relevant IOM team, thus their responses represent those of six genuinely prolific shoplifters.

Risks and Limitations

The risks involved in relying upon offender accounts are well documented (Armitage, 2017; Copes & Hochstetler, 2014; Elffers, 2010; Kearns & Fincham, 2005; Shaw & Pease, 2000; van Gelder et al., 2017). These include false narratives from participants—downplaying their offending (for moral or legal reasons) or enhancing their 'story' to overplay their expertise. In addition, genuine narrator inaccuracy can be influenced by factors such as drug use or the simple passing of time.

Other risks include the focus upon prolific offenders—those verified as committing regular, high value offences on a regular basis over a period of years. Might these participants offer a different view of risk to those less experienced offenders? All six participants were also drug users, committing shoplifting offences as a means of supporting their drug use, at times conducting offences under the influence or experiencing withdrawal. Again this might influence perceptions of risk, offenders confirming that shoplifting whilst 'rattling' (withdrawing) added an element of 'desperation' and altered decision-making: "... *it's like if I don't get these drugs the world is going to end*" (Participant Four).

Finally, recruiting participants from those convicted (thus detected) risks reporting on those that have been "*unsuccessful in their crime*" (Cardone & Hayes, 2012, p. 32). The authors would argue that competence cannot be measured on detection. Is a shoplifter who has committed countless offences over a period of ten years classified as 'unsuccessful' as a result of being detected for one crime? All six offenders taking part within this research project demonstrated extensive knowledge of risk factors. Each also committing extensive undetected offences before they were prosecuted. Their knowledge should not be discounted or undervalued.

Offender Background

The focus of this chapter is not on offender profiles or characteristics, but before moving on to discuss the impact of design and layout on shoplifting, a brief overview of drivers and constraints will add some context to the key findings. Participants discussed five key factors that influenced their decision to commence (and continue) shoplifting. These were: the need to fund a *drug addiction*, *shorter sentences* (when compared to crimes that reap similar financial rewards), the need for *money* to pay for day-to-day necessities such as food, clothes and rent, the *ease* with which the offence can be committed (again compared to other crimes) and the *moral acceptability* of this offence.

Participant Two describes shoplifting as a ‘*daily occupation*’ that funds their drug habit: “*Shoplifting came from when I had an addiction to Heroin and Crack Cocaine ... it became a daily occupation*”. Participant Four reiterated this, referring to drugs as “*a big driver*” and Participant One confirming that the money gained from shoplifting funded: “*cigarettes, Cannabis or whatever drugs I was getting into at that time*”.

Several participants discussed the attraction of much shorter sentences if caught and convicted. Rather than viewing this offence as a gateway crime, many had moved onto shoplifting from offences such as burglary as a direct consequence of the shorter sentences for this crime type.

If you got caught shoplifting you went to jail for three weeks. If you got caught for burglary you went to jail for three years. So it definitely came down to consequences. (Participant One)

Participant Two described the same calculation regarding risk versus reward. “*They [offenders] know where they are with the shoplifting, they know what’s coming. You know the maximum sentence you can get so it’s kind of safe to them*”. Participant One suggesting that, should sentences for shoplifting increase, it would deter them from committing this offence.

As well as funding the purchase of drugs, others discussed how they started shoplifting to allow them to have access to products that their parents could not afford to buy: “*I think as a child it’s more about getting things your parents won’t let you have, or like mine couldn’t afford to buy*”

(Participant One). Participant Four provides a similar justification: *“Thank God for Mary who’d sell stolen biscuits or you’d have never had a biscuit. Or if she was selling washing powder, or else you’d never wash your clothes”* (Participant Four).

Shoplifting was also referred to as an *“easy crime”* (Participant One), a crime that takes very little effort for the financial reward. Participant Three explains: *“One day I was out with this kid. They had Hoovers outside a shop and he went: ‘I’m having them’ and I went: ‘How can you have them?’ He just walked into the shop, picked one up and walked out. Sold it, smoked it and I went: ‘F*cking hell that’s easy’ cos prior to that I’d been into all sorts of things. I thought f*cking hell, that’s a piece of p*ss”*. As well as being easy, offenders also described shoplifting as morally acceptable, the loss making very little financial impact on these major supermarket chains: *“A lot of people look at big stores and think they’ve got insurance and a lot might have the misconception that they might not know something has been stolen”* (Participant One).

What Makes a Suitable Target?

The findings from this section of the analysis are taken from the six semi-structured interviews and six walk rounds for which participants wore body-worn cameras and were asked to move through the store as if they were committing a shoplifting offence, and to narrate that journey, justifying their decision-making. Participants were not prompted regarding crime prevention interventions or the design and layout of the store. It should be reiterated at this point that the sample size is small and that whilst these findings are important, they represent the initial conclusions from, what will be, a much larger study.

Suitable Store

The stores targeted by the sample of participants were varied and largely indiscriminate. These included: Boots, Tesco, PC World, Marks and Spencer to name just a few. Boots was referenced on several occasions for

two specific reasons. The first being that CDs and DVDs were left in the case (as opposed to being stored behind the counter) and the store was set out on two levels, the upper level containing, CDs/DVDs, being less surveyed. The different levels also allowed the offenders to select a product on the upper level, move to the lower level as if to pay for the goods and simply walk out of the doors without paying.

Places like Boots, they had different levels, so you could pick stuff up upstairs, take it downstairs, make out like you were gonna pay for it, pick up a few more bits and then walk out of a different door. (Participant One)

Suitable Products

When entering the stores, participants were split regarding the products they targeted first. Half of participants went straight to the CDs/DVDs and gaming products and half went straight to clothing. The second choice was split between: phone accessories, electronics and alcohol and the third: clothing, toiletries (including make up) and household cleaning products. Fourth and fifth included electronics, food, toiletries and medicines (including vitamins and supplements). Participants explained their justification for product selection according to three key themes. These were: products were *low priced*, thus increasing the ease with which they could be sold on (many people cannot afford higher priced products); products were *priced just below the threshold* considered a requirement for EAS (they were priced high enough to make the crime worthwhile but too low to require security measures); products were a day-to-day *necessity* thus in demand, and finally, products were *expensive* and could be sold on at a high price—making the crime financially worthwhile in relation to the risk involved.

Participant One explains the first rationale:

People aren't stealing expensive stuff anymore cos the people they want to sell to can't afford expensive stuff. Shoplifting and selling stuff used to be a way for poorer people to get stuff they couldn't afford—now it's not so much like that. (Participant One)

Participant Three explained how certain desirable and disposable products, such as spirits, would be attractive, but that these are largely all security tagged. However, alcoholic products that are slightly less expensive, yet just as desirable, somehow miss that tagging threshold making them an attractive product to target.

Bottles of Prosecco, no security tags. (Participant Three)

Participant One explained how packs of eight razors would be security tagged, yet packs of four would not. His solution being to simply take twice as many packs of four and leave the tagged eight-packs on the shelves.

You wouldn't bother with the eights, you'd just take the four packs, you'd take the whole rail. There would be no point going for the eights. (Participant One)

Products that were classed as a necessity such as food, batteries or washing powder were also popular targets.

I think food is becoming one of the biggest things that gets stolen. It's becoming one of the products that people can't afford to buy unless they can find it a cheaper way. I know a lot of people that pretty much wouldn't eat meat at all if they didn't buy it from shoplifters. (Participant One)

The final justification for product selection was high value—several participants expressing the view that the reward must be worthy of the risk and that, if you are going to risk getting caught, it needs to be financially worthwhile.

... if I'm going to get caught for summat then I'm going to get caught for summat. I don't see point of doing it for £10 worth, I may as well get £300–400 worth. (Participant Two)

Ineffective Deterrents

The absence of effective security measures, or the presence of, what participants classed as ineffective security measures, also affected target

choice. Security measures classed as largely ineffective included CCTV, EAS and measures to emulate security guard surveillance—for example, cardboard cut-out security guards. Participants were not deterred by CCTV, claiming that the presence of cameras does not equate to actual surveillance—you can have cameras in store, but is anyone actually watching them in real time. As will be discussed below, all participants discussed the deterrent impact of *immediate* detection. Security measures that risked detection post-offence did not deter because the primary priority was getting out of the store, selling the goods and funding their drugs, food or other important requirements.

CCTV wouldn't deter you cos you know someone isn't sat on it all of the time.
(Participant Two)

The use of EAS was viewed as ineffective. Participants described the ease with which these tags could be removed. They also discussed the inconsistency in product tagging—many of the items at the front of the shelves being tagged, yet those behind, or on the higher shelves were not.

Look at these £30 each you'd cut that tag off, it's only a piece of cardboard. You'd just pull that top layer of the wrapping off. (Participant One)

Participant Three demonstrated the inconsistency with which products were tagged:

No point going for any with a tag on when there's so many without em. No consistency is there.

Figures 6.1 and 6.2 demonstrate the extent to which tagging of the same products can be highly inconsistent. Identical face creams were on the same shelf, one with a tag and one without. The same could be seen with bottles of alcohol; the presence of tags varying for the same product.

Finally, cardboard cut-out security guards were viewed with derision: “*Yeah, they do look real though don't they ... after 12 pints! They're a f*cking joke aren't they*” (Participant Three).



Fig. 6.1 Image of inconsistent use of tagging



Fig. 6.2 Image of inconsistent use of tagging

What Makes an Unsuitable Target?

Unsuitable Store

When describing stores that they would avoid, several participants referred to the music store HMV. Their justification appeared to relate largely to the design and layout of the store—with cash desks at the entrance to the shop, requiring you to pass when exiting.

HMV! I think it was how they had their shop set up really ... you had to walk past the desk to get into the shop—whereas most Boots, WH Smiths, the desk is nowhere near the door, so I think it was to do with the shop layout. (Participant One)

Unsuitable Product

Participants made very little reference to products that they would avoid, preferring to focus on what they would steal. Of the few references to unsuitable products, these appeared to fall into two categories—the product is *too big*, making it difficult to carry and conceal: “*I can’t be arsed with meat, because it’s too bulky*” (Participant Four). Or, the product will not reap sufficient *financial rewards*.

You’ve gotta think in terms of like how much am I gonna get for each thing, so you know, I’m not gonna be arsed to take 15 of them [bottles of conditioner], cos I’m only gonna get £1 each for them, so £15 it’s not worth it. (Participant Four)

Effective Deterrent

Participants described several effective deterrents, however, for each measure, participants remained sceptical regarding the effectiveness in practice. Security measures considered to be a deterrent were: store detectives (as long as they are moved around different stores making it difficult for shoplifters to get to know them); CCTV that is constantly monitored;

security guards at the entrance/exit to the store; internal tagging of products at source, and floor to ceiling alarm barriers at all exists.

Store detectives did appear to deter, but participants made clear that once you become aware of who the store detectives are, you can avoid them within the store or avoid the times that they work: “*Store detectives are great, but they also have to hang around a lot and we know that—you can tell who they are straight away*” (Participant One). Participant One described the communication between shoplifters as well as local beggars/homeless people, describing how they would ensure that information regarding store detectives/security guards was shared: “... *the multitude of beggars they have round here, they are perfectly positioned to watch what’s going on. Shoplifters can talk to them—how many security guards have they got on today? The whole criminal fraternity talks to each other*” (Participant One).

CCTV was described as a deterrent, but only if continuously monitored, as opposed to simply recording: “*If you have people monitoring it then CCTV can be a big deterrent*” (Participant One). A common theme running through all interviews and walk rounds was the fear of being apprehended whilst in store, as opposed to days/weeks after. Participants stated clearly that should a security measure risk an immediate detection, they would be deterred from offending in that store.

... the biggest consequence is getting caught isn’t it and not being able to score that day. (Participant One)

A the end of the day, you’re not bothered about getting caught later, you’re just bothered about getting away that day. (Participant Two)

Participants also described methods by which EAS could be improved. These included internally tagging products at source: “... *if the meat is getting tagged at source and it’s inside the meat you’re not gonna want to open meat and take tags out*” (Participant Three). They also described ensuring that alarm barriers at all store exits are floor to ceiling (so that you cannot lift the product above your head), and that the barriers are flush to the side walls—so that you cannot squeeze behind them: “*If they changed it*

all round by the door, floor to ceiling alarm barriers, or at least above average height, cut out that gap where you can get in at the sides and the maybe they might stand a chance” (Participant Three).

Specific Principles of Crime Prevention Through Environmental Design (CPTED)

The effectiveness of CPTED as a burglary prevention measure (within residential housing) is well documented (see Armitage, 2013 for a full overview). Its impact upon retail crime, within environments such as supermarkets is less well known. The remainder of this chapter will focus upon shoplifter perceptions of the design and layout of supermarkets and the extent to which they viewed this as a potential deterrent.

Several participants made clear reference to the design and layout of supermarkets: “*I think this layout makes it very easy for shoplifting*” (Participant One) and the positioning of products within the store: “*I do think sometimes with the layout of a shop—why would you put that there?*” (Participant Two).

Surveillance

The possibility of being seen by staff or legitimate shoppers was a clear deterrent for all participants. Offenders spoke about seeking out blind spots, corners or areas of the store where they would be hidden from view: “*Anywhere there’s a corner it gives you an opportunity. If it’s in the middle you’re open to view. Everything tends to be in a corner or up, or down, or in a blind spot*” (Participant Two). Figure 6.3 shows how the building structure and layout of products can create hiding places for offenders.

Measures that enhanced the likelihood of being observed were viewed as a clear deterrent. Whilst participants were unprompted regarding any specific security measure, participants referred to several elements that they perceived as risking (or not) the possibility of observation and detection. There was some doubt regarding the effectiveness of CCTV—if there was a possibility of it being monitored in live time, participants felt



Fig. 6.3 Image of store design that limits surveillance and creates blind spots

that this would be a deterrent. However, many elements led them to express the view that CCTV would not be monitored constantly and any risk would be delayed—with apprehension after the offence: “*The store is quite large isn’t it, it must have a lot of cameras. That says to me that they’re not watching all the cameras*” (Participant One). Mirrors were seen as ineffective as a method of enhancing surveillance, one participant expressing the view that they could be effective in smaller stores, but that in larger stores they enable offenders to check who is watching them, as opposed to enhancing the threat of surveillance from staff and legitimate shoppers.

That poxy mirror is no good to nobody, they’re a favour to you cos you can see who’s watching you. (Participant Three)

High shelving units (as can be seen in Fig. 6.4) were viewed as assisting them in avoiding detection. Offenders spoke about taking goods from around the store to blind spots (areas with high shelf units) to conceal those products in a bag or within their clothes: “*Shelving units round here*



Fig. 6.4 Image of high shelving units

are quite high and nice. They're that high that you're not gonna be seen really, so you can just do a bulk and absolutely get loads" (Participant Two).

One of the store designs that was regularly commented upon by all participants was the positioning of products at the entrance/exit to the store (see Fig. 6.5 for an illustration of what offenders were commenting upon). These products were often on offer, and stacked in high piles that obstructed the view of the security guards' station. The products varied—one visit this was clothing, the next it was boxes of beer, but each time the display was almost floor to ceiling and positioned immediately adjacent to the entrance/exit doors. Participants were surprised by this design feature that they clearly viewed as obstructing surveillance and thus assisting in their offending.



Fig. 6.5 Image of products positioned to obstruct security guards

If we start here [entrance to shop by sliding glass doors] you see the Budweiser boxes are quite high up, when you get here you are beyond eye level for those security guards. That's quite nice because realistically he can't see you. (Participant Two)

Changing rooms were also seen as an excellent opportunity to avoid surveillance. Participants were aware that CCTV could not be used in the changing rooms and most discussed taking goods from around the store

into the changing room to deposit them into a bag or to secrete them about their body: "... *if they can get whatever it is that they want to steal to here, they can go in there [changing room] and secrete it about their body without anybody seeing them*" (Participant One).

Participants gave conflicting accounts regarding the extent to which crowds of shoppers assisted or hindered surveillance from staff and other users of the store. Two participants spoke about 'suicide Sunday'—the day of the week where shops were quiet thus enhancing risk of surveillance from staff (less people makes you stand out): "*Sunday is the worst day ... they call it 'Suicide Sunday' ... you have less people in shops that made it more difficult cos shops weren't as busy. Your best day is when the shops are heaving. They're too busy to be actually noticing you nipping in and nipping out*" (Participant Two). Others expressed the view that busy shops enhance surveillance risk, with more shoppers increasing the risk of observation from what they referred to as: "*Nosey Norahs*" (Participant Three).

Movement Control

The ability to move in, through and out of a store unrestricted was a factor discussed by several participants. The positioning of products close to exits (for example, in Figs. 6.6 and 6.7) attracted offenders, Participant One summarising that: "*The closer you was to the door, the easier it was to escape*"; Participant Two confirming the attraction of goods placed near to entry and exit points: "*If people were putting stuff on display at the front nearer the till then it's easier for people to get out*". The location of the store within the context of the local environment also played a key role in offender decision-making. Participants referred to being able to 'disappear' once you leave the store, be that into a busy shopping area, onto transport or into another store.

You'd definitely think of where you are ... you'd think about it before. It would all be part of how you do things, where you go, how quickly you disappear from that area. (Participant One)



Fig. 6.6 Image of products positioned at the entrance/exit to the store

Physical Security

In terms of physical security measures, participants largely focused upon EAS—highlighting both inadequacies and ways in which this intervention type could be improved. Participants discussed many ways in which different tags could be overcome, and these ranged from simply peeling sticker tags off, to cutting wires with clippers (carried by many of the shoplifters). The walk rounds revealed many weaknesses in the design and application of different tags. For many products, these were attached to part of the packaging which would not compromise the quality of the goods if cut/pulled off (Fig. 6.8). As Participants One and Two highlighted: “... you’d cut that tag off wouldn’t you, it’s only a



Fig. 6.7 Image of products positioned at the entrance/exit to the store

piece of cardboard. You'd just pull that top layer of the wrapping off (Participant One); and: “*Although they've got tags, it's only paper so you would just rip it off. It would only take a few seconds*”. Participants demonstrated how simple it was to pull spider tags off (Fig. 6.9), with no requirement to cut or compromise the wires: “*... cos it's cardboard you can bend it and slide it off, that's all you're doing, you're just forcing it out of it—cos it won't go off then cos you're not breaking any of the wires, you're literally taking it out*” (Participant Two). Tags that could not be removed were overcome by placing the product in a foil-lined bag, as Participant Two highlighted: “*With any kind of tag there's always a device to eliminate it*”.



Fig. 6.8 Image of tagging that can be easily removed



Fig. 6.9 Image of tagging that can be easily removed

As well as disabling the tag within the store, participants also spoke of evading alarm barriers by lifting the products above their head, or walking through the gap between the alarm barrier and the wall: *“It’s like PC World they had Playstation 4s, highly alarmed, but all you do is walk round the barrier, you’re walking round it instead of through it ... if you’re not covering every element they are gonna find a way through it”* (Participant Two). Others spoke of having little concern should the alarm sound, suggesting that shoppers and security guards rarely react, presuming that the alarm has gone off in error: *“Went in the other day, alarm went off and there were 3 of them round the camera system, but didn’t even bat an eyelid, and that’s what happens a lot of the time—oh it’s somebody’s meat they haven’t taken the thing off”* (Participant Two).

As with any security measure, participants were very aware of the human error in applying tags to products within the stores. All were quick to point out inconsistencies in application—some products were tagged, yet identical products were not tagged. Some tags were applied well; others were poorly applied, making it simple to remove them without activating alarms: *“You’ve got someone coming along whose job it is to do all these. We all get complacent, can’t be arsed. Basically that stretches that wire, so if I was to pull that tag I’d just stretch it and it would come off”* (Participant Four).

Defensible Space/Territoriality

Participants gave very little indication that measures to enhance defensible space had any impact upon their decision-making. Signage had little impact on participants, many being seen as laughable. One offender demonstrated the ability to enter the supermarket’s dedicated warehouse (to be accessed by staff only) space by simply *‘blagging it’*, claiming to be carrying out a fire risk inspection. Participant Four highlighted that you are unlikely to be challenged if you enter these spaces with confidence: *“No one’s gonna think ‘what are they doing?’ cos you approach them before they even think that. So that’s why when we gone in there then I spoke to them first. Most people would start panicking”* (Participant Four).

Conclusion

Whilst the aim of this research was to focus upon the applicability of CPTED principles to a retail environment, many other elements of offender decision making, clearly relevant to design and layout, were also discussed. When describing a suitable target, offenders spoke of the store design and layout, the presence of what they consider to be attractive products and the absence of effective deterrents. The most attractive products were those that were low priced, or priced just below the threshold requiring EAS, products that were a day-to-day necessity and those priced high enough to make the risk of committing the offence worthwhile. These findings, albeit from a small sample, appear to confirm that CRAVED (Clarke, 1999) is still a relevant measure of product risk. Security measures considered to be ineffective deterrents included EAS—largely due to human error in application and implementation as well as CCTV—for which offenders considered the delayed risk of detection post-event to be a risk worth taking. Conversely, offenders described unsuitable targets as stores where the design and layout facilitated surveillance—particularly where the checkout was at the entrance/exit to the store. Products that were unattractive were those that were too big to carry, and would attract attention from security and other staff, and those goods where the financial reward did not warrant the risk of apprehension. Again indicating confirmation of the relevance of CRAVED as a predictor of risk. The effectiveness of security measures also influenced target selection, with the following measures considered, albeit in a small sample, to be effective deterrents: CCTV monitored in live time, security guards placed at the entrance/exit to the store, tagging of products at source and floor to ceiling alarm barriers.

Whilst participants were not prompted regarding the focus upon store design and layout, with responses merely reflecting their narration of the journey through store, it was clear that the key principles of CPTED would act as deterrents if implemented effectively in store. The threat of surveillance was a primary and consistent concern, with all participants discussing the need to avoid surveillance from cameras, security staff, general staff and other legitimate users of the store. Recommendations to

enhance surveillance included designing out blind spots, ensuring that CCTV is monitored in live time, lowering shelving units, avoiding poor positioning of products on offer and ensuring that changing rooms are staffed at all times. Physical security, if implemented effectively, was considered to be a deterrent, however, participants were clearly aware of human error in applying security measures—for example, loose tags, inconsistent tagging, gaps in alarm barriers and staff apathy in responding to alarms. Movement control—into, throughout and out of the store was also considered as a key factor in influencing store and product selection. Early indications suggest that stores would benefit from regular training in ensuring that crime prevention measures are implemented effectively. One of the findings to emerge from these initial interviews was that effective deterrents must portray (whether real or perceived) an immediate risk of apprehension to shoplifters. Detection post-offence—be that hours, days or weeks after the offence did not appear to act as a deterrent. The threat of someone, or something, intervening to stop them successfully exiting the store with their stolen products was the most consistent deterrent discussed by this (albeit small) sample of offenders. Initial findings suggest that there may be advantages to prioritising immediacy of apprehension; however, further research is required to strengthen this assertion.

*There's only once when I went for a security guard. He'd noticed the bottles one day and said give them to me. But to me it wasn't the bottles he was taking off me it was my drugs. I was f*cked. I was desperate. (Participant 4)*

This chapter reports the initial findings from a larger project aimed to assess the extent to which shoplifters consider the design and layout of supermarkets when considering their choice of store and product within that store. The focus was upon supermarkets within England, however, the conclusions are relevant internationally and transferable to other retail settings. At present, the sample size is small, however, the findings reveal early indications of clear patterns in offender decision-making, suggesting that CPTED can be used as an effective retail crime reduction measure.

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7

Shoplifting in Small Stores: A Qualitative Case Study in Perth, Western Australia

Paul Cozens

Introduction

The Global Retail Theft Barometer (GRTB) suggests shrinkage losses for the global retail industry of around \$119 billion for 2011 (Bamfield, 2013). Shoplifting is estimated to represent 43% of this figure, while employee theft (35%), process failures and accounting procedure error (16%) and supplier/vendor fraud (6%) account for the remaining proportions. However, for some areas, the ratio of shoplifting is higher. For example, in the Asia Pacific Region (which includes Australia, China, Hong Kong, India, Japan, Malaysia, Singapore, South Korea, Taiwan and Thailand) shoplifting represents 53.3% of total shrinkage (Bamfield, 2013).

In Australia, the actual extent of retail theft or shoplifting remains largely unknown. However, the Australian Institute of Criminology has estimated that there were 1.3 million incidents of shop thefts in 2011 (Smith, Jorna, Sweeney, & Fuller, 2014). The Australian Retailers

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Association estimate total shrinkage costs of \$2.16 billion per annum and retailers spent around \$499 million on loss prevention and security in 2009 (Mohamad, 2011). Further costs can include increased prices, reduce employees' hours or pay, job losses or even the collapse of businesses and security measures can also affect the retail consumer experience itself and compromise convenience (Mohamad, 2011).

This chapter provides an overview of some of the trends in retail crime in Australia. It also presents research findings from interviews with a sample of six retail managers/shop owners in Perth, Western Australia. This exploratory research probes their experiences and perceptions of shoplifting and their knowledge of the theory and principles of crime prevention through environmental design (CPTED). The research also tests the relevance of the CRAVED concept (Clarke, 1999) by investigating to what extent stolen goods are more concealable, removable, available, valuable, enjoyable and disposable than other goods, less frequently targeted by shoplifters.

Trends in Australia

Retailers can experience many different types of crimes but the most common is shoplifting (70%), with significantly lower rates for employee fraud (7%), cheque/credit fraud (7%), burglary (6%), vandalism (5%), assault (3%), vehicle theft (1%) and robbery (1%) (New South Wales Department of Attorney General and Justice, 2012). The Australian Bureau of Statistics (ABS, 2011) category 'Theft from retail premises' refers to the "Theft of goods for sale, other than motor vehicles, by avoiding payment for those goods", and includes shoplifting, theft from market stalls, theft from wholesale or factory retail outlets, and theft of retail goods. It is estimated that 53% of shoplifting is by non-employees and 23% by employees (Bamfield, 2013).

ADT Security's Small Business Security Report (2013) surveyed over 500 small to medium business owners in Australia, about security measures taken, experiences of crime and their perceptions of crime. In this study, a 'small' business was defined as one with less than 50 employees. Burglary was the most prevalent crime, with 55% of respondents

reporting they were a victim at some stage. Small businesses reported being the victim of employee theft of merchandise (27%) and cash (22%), while 26% reported being the victim of shoplifting. Figure 7.1 reveals the percentage of small retailers who use certain security measures with locks (63%), alarms (44%) and locked safes (24%) and CCTV (19%), window bars/bollards (17%) all featuring. However, 14% of respondents reported that they did not use ANY security measures to protect against their losses. Furthermore, 37% of small businesses reported that they never train staff on security procedures and 60% reported losing 5% of their annual profits to crime (ADT, 2013).

In Western Australia (WA), Clare and Ferrante (2007) observed how few studies had been conducted in the area of retail crime. The findings reported by Clare and Ferrante (2007) appear to be the most recent academic study of retail crime in WA.

Figures 7.2 and 7.3 show the top ten categories of goods stolen from retail premises in terms of quantities of goods and value of goods stolen in Western Australia.

Research on retail crime in WA is clearly dated and has focused on the type of goods stolen and the use of security measures to prevent access to shops. No studies could be located that investigated how the interior layout of small retailer stores was being manipulated to reduce shoplifting via the use of CPTED/SCP principles.

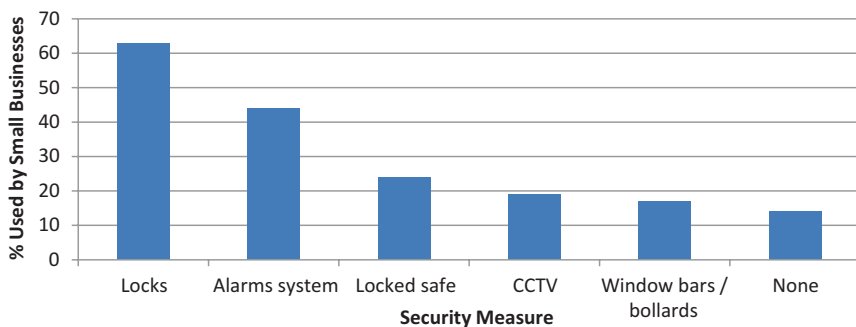


Fig. 7.1 Security measures used by small businesses in Australia (ADT, 2013)

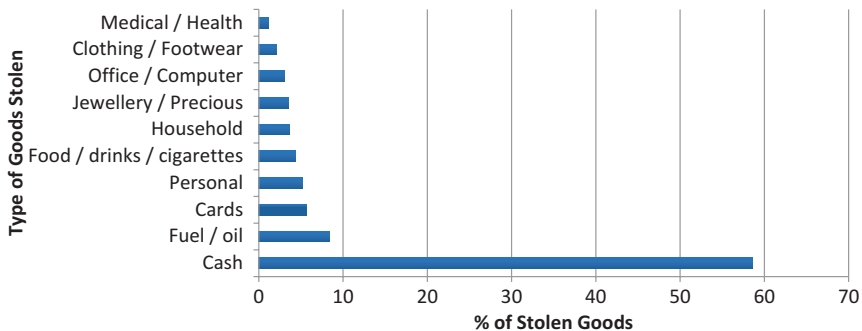


Fig. 7.2 Top ten types of goods stolen from retail outlets by quantity (adapted from Clare & Ferrante, 2007)

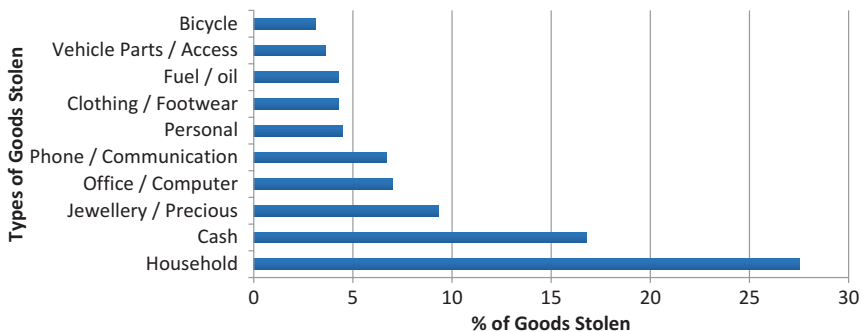


Fig. 7.3 Top ten types of goods stolen from retail outlets by value (adapted from Clare & Ferrante, 2007)

An Overview of the Literature and Theoretical Perspective

There is an extensive body of research on shoplifting, but this chapter focuses on the interior of the retail setting. Indeed, the research highlights a number of situational factors, which can encourage or facilitate shoplifting (Morgan, Boxall, Lindeman, & Anderson, 2012) within the interior domain of a retail shop.

Cardone and Hayes (2012, pp. 33–34) define the interior retail environment as “the design of the store’s interior including situational factors such as architectural layout, territorial boundaries, lighting levels, fixtures and shelf placement, product display, and users present”. They further note that such features can be controlled, affected or influenced by retailers. Factors outside this setting such as the product packaging or planning-related issues such as the location of the store in a neighbourhood or proximity to road/transport networks (Cardone & Hayes, 2012) are outside the scope of this chapter.

In terms of the interior of a retail store, it is useful to consider the notion of affordances, which has its origins in environmental psychology (Gibson, 1977). Affordances refer to all the possible actions which are perceived to exist in an environmental setting (Gibson, 1977). These settings provide affordances which can suggest, invite or discourage specific actions—including criminal actions. This notion clearly links with opportunity theories, such as rational choice theory (RCT) (Cornish & Clarke, 1986) and routine activities theory (RAT) (Cohen & Felson, 1979). RCT assumes offenders recognize, evaluate and respond to environmental cues based on the perceived risk, reward and effort associated offending. RAT (Cohen & Felson, 1979) suggests a criminal offence occurs when there is a convergence of a suitable target and a motivated offender in the absence of a capable guardian. An offender’s perception of human and environmental factors within the built environment are therefore seen as an integral part of their offender decision-making process. This resonates with the theories of situational crime prevention (SCP) (Clarke, 1992) and crime prevention through environmental design (CPTED) (Crowe, 2000).

SCP theory argues there are ‘situational’ determinants of crime, which are the result of offender’s immediate choices and decisions. It seeks to develop practical prevention strategies to reduce opportunities for crime and increase the chances of an offender being caught. SCP is influenced by opportunity-based theories and operates largely at the micro-scale. SCP is crime-specific (e.g. shoplifting) and can be applied to increase the effort and risk of committing a crime while reducing the rewards, excuses and provocations associated with offending.

Similarly, CPTED theory (Crowe, 2000) argues that the design and management of space can influence crime and provide opportunities for crime. The seven concepts of CPTED are territoriality, surveillance, image management, access control, activity support, target hardening and geographical juxtaposition (see Cozens & Love, 2015 and Cozens, 2016 for a detailed review). All are relevant to understanding the opportunities for shoplifting inside a retail store (although, as previously stated, geographical juxtaposition is outside the scope of this research). Indeed, as highlighted by Carmel-Gilfilen (2013) these SCP/CPTED strategies could include;

- Hardening targets by obstructing access to CRAVED items.
- Controlling access and screening exits with clear lines of sight, well-defined spatial boundaries.
- Extending guardianship through the use of Closed Circuit Television (CCTV) and using staff to optimize protection and promote visibility.
- Promoting surveillance via layout, using lowered shelf and fixture heights, wide, clear aisles, placing CRAVED items in visible areas and creating lines of sight to enhance visibility.
- Maintaining a 'positive image' to keep spaces looking well-cared for and well-managed.

This research investigates the interior setting of six small retail stores using the theories of SCP and CPTED. There is a large body of literature, which has explored the use of a variety of techniques to reduce shoplifting which resonate with these theories and they are discussed in terms of store layout, security devices and guardianship.

Studies reveal offenders *do* consider retail interiors in their decision-making process for shoplifting and research consistently suggests that store layout plays a role in understanding shoplifting (Beck, 2016; Cardone, 2006; Carmel-Gilfilen, 2011; Carroll & Weaver, 1986; Ekblom, 1986; Farrington et al., 1993; Gill, 2007; Kajalo & Lindblom, 2011; Tonglet, 2000). Carroll and Weaver (1986) found shoplifters focused their attention on security devices and the number of people present—but also, on the physical layout of the store. Farrington et al. (1993) found immediate reductions in shoplifting following the redesign

of a store. However, over time, this effect was not sustained. They recommended the need for a research program directed at achieving lasting benefits from the redesign of stores. Tonglet's work (2000) suggested that the interior of a retail store was a significant factor in the decision to steal made by 417 consumers (25% of which admitted to stealing in their lifetime). Cardone (2006) interviewed known shoplifters to identify the strongest design elements influencing behaviour. Target hardening, guardianship and natural and informal surveillance emerged as important factors. Carmel-Gilfilen (2011, p. 26) surveyed 20 retailers, suggesting the 'best' deterrents were "customer convenience, product and employee positioning, maintenance, security efforts, aesthetic design and access control". In a study of offenders from around the world, Gill (2007) also highlighted the significance of store design—particularly in relation to employees' lines of sight to high risk products within the store. Kajalo and Lindblom (2011) interviewed retail store managers, highlighting the importance of store layout in providing opportunities for formal and informal surveillance. The use of mirrors to promote surveillance in stores has a long history but has not been systematically evaluated (Beck, 2016). Indeed, some (Clarke & Petrossian, 2013) suggest mirrors can help retailers monitor customers and staff, while others suggest mirrors can also be used by offenders to covertly watch staff/security (Ekblom, 1986; Lasky, Fisher, & Jacques, 2015).

Signage, stickers and media campaigns are also used to amplify crime risks. Although a detailed discussion is outside the scope of this chapter, we will briefly summarise the literature (see Beck, 2016 for a detailed review). Signage has a long history of use, although many studies are somewhat dated and are methodologically weak. Hartmann, Gelfand, Page, and Walder (1972) looked at notices and incidents of shop theft, finding few customers noticed criminal events and those who did, did not generally report it. McNees, Egli, Marshall, Schnelle, and Risley (1976) analysed 'shoplifting is a crime' signage and notices on high-risk products report reductions in losses. Bickmann and Green (1977) found signage made no difference in the likelihood of customers reporting staged shoplifting incidents. Carter, Hansson, Holmberg, and Melin (1979) found signs highlighting 'hot products' reduced losses of various products, but the losses were only significant for lip-gloss, leather coats and halogen bulbs.

A further study by Carter and Holmberg (1992) reported the relocation of products and use of signage to highlight high-risk products significantly reduced losses over a 38-week period. Rafacz, Boyce, and Williams (2011) concluded that signage made little difference to sales or losses.

The interior of the store can therefore facilitate or discourage shoplifting, but Carmel-Gilfilen (2011, p. 25) state “although store design has been identified as playing a significant role in preventing shoplifting, little evidence exists on the effectiveness of specific deterrents”.

Security devices such as closed-circuit television (CCTV) and electronic article surveillance tagging (EAS) have both been claimed to have revolutionized the retail industry and to have significantly reduced shoplifting. However, an examination of EAS technology is outside the scope of this paper, but we can reflect on the relatively recent reviews of the evidence for CCTV. Beck (2016, p. 23) reviewed a variety of research on the use of CCTV concluding; “there is a paucity of studies evaluating its effectiveness despite significant levels of investment and its widespread use”. Furthermore, offenders interviewed as part of the study were not particularly concerned by the presence of CCTV. Beck and Willis (1999) looked at different types of CCTV in 15 different stores, finding mixed results. The authors reported initial concern for CCTV expressed by offenders soon dissipated. A more rigorous study by Hayes and Downs (2011) looked at the effectiveness of Dome cameras (nine stores) and public view monitors (PVMs) (15 stores) at reducing the theft of Gillette razor blades; with an additional 14 control stores. Shrinkage rates reportedly fell more than 27% in the stores with dome cameras and 57% in stores with PVMs. However, the authors highlight the short study period and data auditing problems—which could have inflated the numbers of reduced thefts.

A systematic review and meta-analysis was undertaken by Welsh and Farrington (2009) on forty-four CCTV studies, where the minimum evaluation design involved before-and-after measures of crime in experimental and control areas. Their review suggested CCTV has a limited, but significant effect on reducing crime in car parks, but little effect in other settings (Welsh & Farrington, 2009). One study found CCTV encouraged offenders to be more vigilant (Lasky et al., 2015) while some found it could be a double-edged sword’ and discourage vigilance by

retail staff (Beck & Willis, 1999; Kajalo & Lindblom, 2011). Overall, Beck (2016) suggests there is a ‘very mixed picture’ and limited evidence to demonstrate the effectiveness of CCTV in the retail setting.

Guardianship in retail stores (e.g. customer service, staff, security guards) has been a long-adopted loss prevention strategy (Ekblom, 1986). A significant number of studies have investigated the role of people in reducing retail theft (e.g. see Farrington, 1999). Walsh (1978) discovered store staff could deter offending when they were aware of their role and what to look out for. Weaver and Carroll (1985) reported similar findings and that novice shoplifters were deterred more by the presence of staff than more professional thieves. Studies of store manager’s perceptions by Kajalo and Lindblom (2011) highlighted the importance of staff in dealing with shoplifting. Research by Lin, Hastings, and Martin (1994) found customer service was perceived by store managers to be the main shoplifting deterrent while Butler (1994) asserted the presence of staff near the target area acted as a deterrent. Tonglet (2000) studied shoppers, finding security guards were perceived to be more effective than CCTV. Langton and Hollinger (2005) also reported low staff turnovers and the use of capable guardians was an effective deterrent against shoplifting. Similarly, Howell and Proudlove (2007) found the proximity of staff to customers was more effective than CCTV or store detectives. Hayes (1999) and Gill (2007) studied offenders, highlighting the value of store staff and guardianship—particularly if they moved around. A study by Carmell-Gilfilen (2013) also supported the role of staff in deterring inexperienced shoplifters.

Taken together, Beck (2016, p. 30) suggests “the overwhelming consensus from the literature is that the role of a ‘guardian’ can be the key in amplifying risks in retail stores, be that by formal security-oriented member of staff, such as a uniformed security guard, or by general store staff”. However, Beck (2016) highlights the need for more empirical research that includes before/after comparisons and controlled experiments.

A brief exploration of scale is useful in contextualizing the research methodology and findings presented later in this chapter. Research from the UK has also indicated that larger retail chain stores often exhibit a deeper understanding and application of CPTED/SCP strategies and techniques than smaller independent retailers (Press, Erol, & Cooper,

2001). The smaller retailers often have less access to knowledge and expertise about these strategies and may not have sufficient resources to fund appropriate design changes or technologies (Press et al., 2001). Although this does not mean small retailers' decisions are necessarily ineffective, research by the Design Council suggests a more considered and conscious process of retail design drawing on well-informed common sense could help to address shoplifting and other crime issues (Press et al., 2001). This exploratory research discussed in this paper, focuses on a limited sample of small retail outlets with minimal staff (less than 5), and commonly, with only one member of staff present in the store.

Also relevant to this research is the notion of 'hot products' (Clarke, 1999). These represent products, which are more likely to be targeted for theft since they have 'CRAVED' characteristics, which heighten their potential vulnerability. Such products are 'concealable', 'removable', 'accessible', 'valuable', 'enjoyable', and 'disposable' (Clarke, 1999). In relation to retail premises, according to Clarke and Petrossian (2013, p. 12), "the most vulnerable parts of the store are those that carry hot products". This research therefore also sought to explore in more detail, what products were CRAVED in different types of small retail outlets selling a range of different products.

Methodology and Findings

This exploratory qualitative research is based on semi-structured interviews with a sample of six small retail outlets in Perth, WA. Interviews were conducted in-situ, within their stores, lasted around 30 minutes and were recorded and transcribed. The interviewees were asked to talk about their experiences of shoplifting and what measures they had taken to reduce it within the interior layout of their stores. Following Carmel-Gilfen (2013), key prevalent themes were identified in the interview transcripts and were sorted and coded using content analysis based on the conceptual framework of the study outlined earlier. These relate in particular, to the theories of SCP and CPTED.

Three of the outlets all had only one staff member present in the store, while the other three stores used between one and three staff members

depending on how busy the store was. In terms of their location, all the stores were in locations where research suggests shoplifting is higher (Clarke & Petrossian, 2013). All the stores fronted onto the street, were located in a busy location, close to highways with escape routes, and were near schools and relatively economically deprived areas (Clarke & Petrossian, 2013). Thirty surveys were distributed to retail outlets meeting these criteria and six were returned, representing a response rate of 20%.

Grounded in the literature, the interviews explored retail losses/incidents of theft, CRAVED products stolen (relative to the products sold in each outlet), and the security techniques and design practices used by each retailer. Interviewees were encouraged to share the experiences and stories about shoplifting in their stores and those relating to design, layout and security and are presented and discussed as qualitative insights and narratives.

The six small retailers included a DVD store, and liquor store (no drive through), a women's clothing and accessory store, a clothing/jewelry store, an outlet selling flowers, plants and gifts and a larger general store selling a wider range of goods (e.g. food, drinks, cooking and cleaning products, cigarettes and shaving products). They ranged in size from around 50 m² to 300 m² shopping floor-space. Three respondents were women and three respondents were men. It is noted that this is not a representative sample of small retail stores, but it does represent a novel qualitative exploration of an under-researched topic in Australia.

The qualitative insights from all six small businesses are initially briefly presented together in two sections relating to crime risks/incidents, CRAVED products (Tables 7.1 and 7.2).

Generally speaking, the sample of six small retailers did not report high levels of theft from their stores over the last year, and estimates for % losses were low, ranging from <1% to <3%. This measures reasonably favorably against reported average % losses of around 5% (ADT, 2013). Although the levels of crime were not perceived to be high, the six respondents were able to identify what products were stolen most, and what products were not subject to shoplifting (Table 7.2).

Arguably, the products stolen from the six small retail outlets were items, which could be considered to be 'hot products' and CRAVED, relative to other items in the shops. In addition, items which were not

Table 7.1 The six retail stores—crime risks

Store number	Goods sold	Floor space m ²	% losses per year	Number of incidents in the past year
1.	Clothing and jewelry	52	0	0
2.	Flowers, plants and gifts	52	<1% (around \$500)	3
3.	All types of alcohol	230	<1%	10
4.	Women's clothing and accessories	60	<1%	1
5.	DVDs, Blu-ray discs, ice cream, chocolate, crisps	200	3%	Unknown—but about 20 per year are 'caught'
6.	Food, drinks, cooking, cleaning and shaving products, cigarettes	300	<3%	Unknown but 12 caught on CCTV

Table 7.2 The six retail stores—CRAVED products

Store number	CRAVED ('hot' products)	Products NOT targeted ('cold' products)
1.	Expensive dresses	Jewelry located in secured display in front of counter
2.	Expensive face cream and nick-knacks	Flowers never seem to be targeted
3.	Jim Beam and coke mix, cider and six-packs of beer closest to the entrance	Spirits located in secured display at the rear of the shop
4.	Expensive dresses	Jewelry located in secured display in front of counter
5.	DVDs, ice creams, drinks	None stated
6.	Panadol/aspirin, cigarettes/razors (grab and run), hair products (e.g. dye)	Fruit and vegetables

commonly stolen ('cold products'), tended to be less expensive/enjoyable or harder to dispose of, or they were well-secured, being more difficult to remove and less available for a potential shoplifter.

Interviewees were also asked to discuss the security/design measures they employed inside their store, and how effectiveness they perceived

these measures to be. This is discussed below as a basic overview, before more qualitative detail is provided regarding the individual respondents' knowledge, understanding and use of SCP and CPTED within each of their stores.

All six respondents stated that they used interior layout to reduce shoplifting—techniques included moving the location of the till and product aisles/shelving to promote visibility and the flow of movement, and surveillance to optimize lines of sight so employees could see across the store. All stores used lighting to promote the visibility of their products, for security and to promote sales. Image maintenance was also used by all the stores to create a clean, well-maintained and organised store—and again, it was for both sales and security purposes. These measures were all perceived by the store owners to be effective in reducing shoplifting.

Most of the store owners stated that they used a bell or some other mechanism to alert them to the fact that someone was accessing the store and wall-units, display cabinets and shelving was used to promote the surveillance of products throughout the store. Staff were also specifically positioned to promote surveillance and guardianship and expensive products were often located close to staff or secured using target hardening (e.g. locked cabinets, in cases).

Half of the respondents mentioned using target hardening to make it more difficult to steal specific products while only one used signage, for example, to highlight that 'shoplifters will be prosecuted'. CCTV was used in most of the stores but was not generally perceived to be as effective as store layout, surveillance, maintenance or guardianship by employees.

Two stores said they maintained intervisibility with the street by limiting the amount of advertising/marketing or goods in the windows overlooking the street and two stores used mirrors to highlight specific parts of their stores. One storeowner specifically mentioned using 'territoriality' to clearly define different areas within the store and how it could inform customers where they were allowed to be within the store.

Retailer 1 (clothing and jewelry) had traded for around ten years at this location and had not been subject to any incidents of shoplifting within the past year. However, she did reflect on how the store had changed over time, in response to incidents in the past. Retailer 1 stated

that she used to have clothes racks outside her stores, but no longer did this due to repeated thefts. She observed;

We used to have a small display of clothes on a rack in the street outside the shop—it used to draw a lot of shoppers to it—but after a while, we had to move it inside—too many products were being stolen.

Jewelry had previously been located in an unlocked glass cabinet, close to the window of the shop near the entrance/exit. This was initially placed to entice shoppers into the store. However, a stocktaking exercise highlighted the fact that several rings had been stolen. The cabinet was then moved away from the entrance/exit, but the thefts continued. It was not until these more expensive items were relocated to a secured display in front of the counter, that the thefts curtailed. Retailer 1 stated;

A few years back, the theft of jewelry was an issue—until we moved the display to a more secure location, closer to the till and the staff.

Furthermore, a few expensive dresses had been stolen in the past and the retailers indicated that the changing room was where this act of theft was carried out. Retailer 1 stated;

We think the culprits took several dresses to the changing room to try them on—but they did not return all the dresses to the display racks—now we count each item each customer takes into the changing room to ensure this does not happen anymore.

Retailer 2 (gifts, plants and flowers) had traded at this location for five years and had reported three incidents in the previous year. She indicated that she did not believe that most of her stock was something which was likely to be stolen. Indeed, she commented that flowers had never been stolen. However, she also reflected on why she thought some items were stolen. Retailer 2 stated;

Who would want to steal flowers and little trinkets? The small losses we do have are usually the items closest to the front door—and are quickly grabbed when someone leaves the store.

This respondent also mentioned that she made a conscious effort to keep the aisles clear and tried not to put so much on show, since it impeded visibility of other items in the store.

We learned a few lessons over the years, ... now we don't put all our stock on show since it can become messy and hard to see certain parts of the store.

Retailer 3 (alcohol) had traded in the same location for ten years selling all types of alcohol. Over the years, the expensive spirits have been placed under lock and key and the design of the store now appears to promote surveillance in most locations. However, high displays in some parts of the store impede visibility. The manager was aware of this and installed mirrors so staff could see these areas and installed CCTV cameras. Retailer 3 commented;

Our expensive spirits used to be ok ... but then loads seemed to disappear and we caught a few people walking out with them, trying to hide them under their jackets. It got so bad we had to move them to a locked cabinet at the rear of the store. This can be a bit inconvenient for customers who want to buy these products—but I suppose that's just the way it has to be.

Following a consistent targeting of wine casks, the retailer decided to remove this item from the store and not to sell it any more. According to Retailer 3;

It was not worth all the hassle selling these cheap wine casks—they were frequently stolen and did not make us that much profit. With all the aggravation of keeping an eye on the wine casks and the groups that commonly stole them, and the violent confrontations that often occurred, we decided the risk was not worth it and stopped selling them.

Retailer 3 also noted that occasionally, a brazen theft occurs when a small group enters the store in a very intimidating way and takes as much liquor as they can and leaves—looking staff squarely in the eyes. Although CCTV provides police with footage of these incidents, none have resulted in the identification or apprehension of these particular offenders.

Every now and then a group of nutters comes in and just takes what they want—there's not a lot we can do about this—the CCTV often picks them up—but police have not been able to identify them yet.

Retailer 4 (women's clothes and jewelry) had owned and operated the store for seven years. She discussed in detail, changes she had made to her store over the years and mentioned that she had 'learned from her mistakes'. After several redesigns of her store, involving the removal of two 1.5 m high shelves and a 1.8 m high glass display, incidents of shoplifting were reduced. These shelves were replaced by displays/fixtures which were lower and did not impede visibility and lighting throughout the store was improved. Creaking floorboards alerted her to the movements of customers and mirrors on the ceilings helped the store-owner to see where all the customers were. She commented;

Often, if I was not looking around the store, I could hear my creaking floor-boards and knew where my customers were.

This retailer also mentioned that the changing room was problematic, before she relocated it closer to the till and where staff were located. She observed;

We would often get young women taking a few dresses into the changing rooms near the front door—and they would peak through the curtains to see where staff were—then leg it out of the store. Moving the changing rooms and counting the number of items has helped with this.

Jewelry items were placed in locked displays in front of the counter. The store was closed if the member of staff had to use the toilet—and a 'back in 5 minutes' sign was placed on the door. For this retailer, she was always trying to balance security with the convenience and needs of customers and commented;

Opportunity is the key ... if they can take it quickly and get away easily—they will—you just have to try to stay one step ahead of them.

Losses before the re-design were in the thousands (\$600.00 in one day) but after the store layout was redesigned and lighting was improved, losses significantly reduced. Retailer 4 was highly supported of store layout and the promotion of visibility throughout the store, commenting:

Shoplifting is now very minimal in my store. I attribute this to the wide and open design, a lack of 'black spots' and paying attention to all the customers in the store.

Retailer 5 (DVD store) had been at their location for 20 years reporting losses of around 3%. Although the most stolen items were predictably, DVDs, certain types were identified as being most vulnerable. Films about indigenous culture were stolen far more frequently than others. Also, the theft of ice creams from a freezer have been a recent problem. The store layout does promote visibility, but many DVD shelves are 1.8 m high—and limit surveillance. He commented on some changes he made to the store layout;

We used to have areas around the store where we could not see too well—so we moved the aisles into rows which faced the till—tilting them at an angle—so we could see along them.

The owner does have electronic article surveillance (EAS) sensing gates, but noted that offenders enter the shop with what he called 'shoplifting bags'. These are bags lined with foil, which disables the ability of the sensor gates to identify an EAS tag. They now have a policy to check bags before suspected offenders enter the store. The owner does have CCTV and posts photos of offenders on a notice board in the store. Retailer 5 said he was a franchise, and was limited in what he could do to redesign the store. Over the years he has moved display units and ice cream/drinks vending machines to remove hiding places and increase visibility. He observed;

We moved the ice cream freezer and chocolate stalls closer to the till where we could see them more clearly—there has been less theft since we did this.

He lamented at what he considered was a continuing failure to prosecute offenders who are caught, either by CCTV cameras, the EAS system or by vigilant members of staff.

Retailer 6 (corner shop) was head of security in this corner shop, which sells food, drinks, fruit, groceries, cooking, cleaning and shaving products and cigarettes. He had been in this position for five years. The visibility in the store is restricted by the presence of six very high (over 3 meters) shelving corridor areas where products are stored. Retailer 6 commented that this is an improvement since they were previously located so only one side of the end row was visible to the staff at the two checkout areas near the entrance/exit. Reconfiguring the six columns of shelving so they could be seen from the check out area has improved the situation. He said;

Before, all the aisles were not visible—but after we shifted them around a bit—staff can now see along them

Over the years, Retailer 6 has gradually relocated regularly stolen items to behind the counters of the check out areas. These include panadol/asprin tablets and shaving razors. He commented;

We had to move all the Mac 3's behind the tills, they were getting hammered.

He also mentioned that he was a martial arts expert and had trained his staff. They were trained in conflict resolution skills and to physically apprehend shoplifters and to move them to deal with the situation/confrontation in a private secure area away from the view of customers in the store. He suggested this reduced the tension of the situation.

The store did use numerous CCTV cameras but Retailer 6 commented that many of the offenders knew where they were—or they wore items of clothing to obscure their faces. He observed;

Yes we have plenty of CCTV cameras, but some of them just wear a hat and angle their faces away from the cameras—others just down care, cos they know they won't be prosecuted.

Conclusions

This small exploratory study has investigated a range of security and design measures used in six small retail stores in Perth (WA). It also explored to what extent the CRAVED concept might apply or be understood by retailers selling different types of products. A larger study is certainly necessary to corroborate these findings and it is suggested that the methodology used in this study could be usefully applied to a larger sample of retail stores.

Most of the six stores tended to rely on store layout and design and guardianship by staff, rather than expensive security/technology. Most retailers had some understanding of the importance of surveillance and visibility and redesigned their stores to promote visibility, usually following incidents of theft. However, none mentioned that they had any retail training about store layout and all mentioned that they were 'learning by doing'—and essentially, they learned from their mistakes. Within each store, managers/owners were aware of their most targeted goods—and they tended to possess many CRAVED characteristics. Often, 'hot products' identified as being CRAVED were either placed in more secure/visible locations or they were completely removed from the store. Locating 'cold', non-craved products in high-risk locations could also represent a useful strategy for small retailers.

The six retailers did have some understanding of and experience in using CPTED/SCP in their stores. However, most said they had little understanding until shoplifting incidents highlighted a problematic aspect of design/security or layout. Basic training and guidelines could be useful in this regard.

It is suggested that the findings from this small exploratory survey do provide some interesting insights, which confirm the usefulness of understanding how layout and design in small retail stores can enhance visibility, guardianship and potentially reduce retail theft.

Future research could focus on a larger sample size and research exploring shoplifters' perceptions of layout, security and guardianship in small retail stores. This could contribute to our understanding of what can be done simply, rapidly and inexpensively to help to reduce shoplifting in small retail stores.

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8

Crime in a Scandinavian Shopping Centre

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Introduction

For many of us ‘going shopping’ is perceived to be an activity filled with great pleasure (Bamfield, 2012) as shopping centres have evolved from a group of stores to large enclosed malls with an eclectic number of services and functions (Savard & Kennedy, 2014). The term shopping centre (or shopping malls) was originally used in North America to describe a group of shops or stores designed and developed as one architectural unit. Most recently, shopping centres are all over the world. They may be strip malls or giant complexes with stores, office complexes and cinemas as well as department stores, banks and schools. Regardless of their size or type, these facilities generate and attract crime (Bamfield, 2004; Brantingham

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& Brantingham, 1995). Yet, not all environments in a shopping centre are equally prone to crime (Bamfield, 2012; Poyner & Webb, 1995; Savard & Kennedy, 2014). Regardless of whether the risk of victimisation is real or not, little empirical research has looked at criminogenic conditions within shopping centres over time.

This study makes a contribution to a better understanding of the nature of crime in space and time in a shopping centre. This is done by first analysing a 17 month database from a security company with data on crime and incidents of public disturbance. In order to detect areas that run a higher risk of crime, crime and incidents of public disturbance are linked and mapped using a 3-D model by crime type, types of environments and time slices. Then, the study concludes by making suggestions to improve safety using CPTED principles as a theoretical reference. The three research questions are:

1. Which are the most common types of crime and incidents of public disturbance in a shopping centre?
2. Are crime and incidents of public disturbance spatially and temporally clustered in certain environments in the shopping centre?
3. Based on evidence from a 3-D model and fieldwork inspection, which are the shopping environments most in need of crime prevention intervention?

The novelty of this study is threefold. First, it suggests a conceptual framework of analyses for shopping centres drawing from environmental criminology theories. Second, it makes use of BIM—Building Information Modelling in environmental criminology for visualisation of crime and crime concentrations in shopping centres. Finally, this study advances the knowledge basis in this area by adding evidence of one of the most visited shopping centres in Stockholm, the capital of Sweden—contributing therefore to the international literature on this area.

The structure of the article is as follows. First, the shopping centre as a criminogenic place is discussed followed by a review of the potential of using 3-D visualization techniques in research and practice. The case study is framed followed by a description of the methods. Then, the nature, levels and patterns of crime and public disturbance in the

shopping centre over time and space are presented. The chapter concludes by bringing together the evidence from a fieldwork inspection to the evaluation provided by the 3-D visualisation as well as suggestions for improving the environment of this shopping centre using CPTED principles as a theoretical reference.

Theoretical Background

Crime Theory in Risky Facilities

Shopping centres are risky facilities (Eck, Clarke, & Guerette, 2007; Eck & Weisburd, 1995). These may arise from complex dynamic interactions among individuals—offenders and controllers, mediated by the types of environments (including targets) they are exposed to. Five perspectives suggest the importance of places for understanding crime: rational choice; routine activity theory; crime pattern theory; social disorganisation theory and Crime Prevention Through Environmental Design (CPTED). Although these perspectives are mutually supportive, the first three perspectives provide different explanations for crime occurring at different places, the fourth considers the importance of context for explaining high crime areas in risky facilities and the fifth theory provides micro-environmental clues for why crime occurs in particular places.

A *rational choice* perspective provides the basic rationale for defining a particular place as criminogenic, since it suggests that offenders choose targets and define means to achieve their goals in a manner that can be explained (Cornish & Clarke, 2008). *Routine activity* perspective seeks to explain the occurrence of crime as the confluence of several circumstances (Cohen & Felson, 1979; Eck & Weisburd, 1995), namely a motivated offender, then, there must be a desirable target and the target and the offender must converge in place and time. Finally, three other types of controllers—intimate handlers, guardians and place managers (Felson, 1986, 1995, 2006), must be absent or ineffective. Felson (2006) suggests that multiple actors exercise social control: *handlers* who control potential offenders, *managers* who control places, and *guardians* who control

targets. In the case of youngsters at a shopping centre, handlers could be older siblings or store personnel. There could be two types of *guardians* in a shopping mall: formal guardians whose responsibility is to protect targets (people and property) from crime, such as police officers, security guards and store controllers, and informal guardians, including employees or other customers in a store. If the target is an individual then guardians can be family members, friends and others who are at the same place as the target. Place *managers* can be shopping personnel, guards, or parking lot attendants—they regulate behaviour at the locations they control. A thief may give up stealing a purse if (s)he notices that (s)he is being watched by a restaurant employee. In real life, there are overlaps between the role of handlers, guardians and place managers among those who work at a shopping mall. There may also be *crime promoters*—people who inadvertently, carelessly or deliberately make crime more likely to happen.

Yet, these opportunities for crime do not happen at random in time and space. They tend to follow individuals' daily rhythmic patterns of activities, and crime may just occur in some of areas/times in which a potential offender is aware of them. In *crime pattern theory*, this 'awareness space' refers to criminals' knowledge about the environment and its opportunities for crime, which depends on their routine activity (Brantingham & Brantingham, 1984). Although offenders may seek out unfamiliar places and uncharted areas, most conduct their searches within the areas they become familiar with through daily activities (Santtila, Laukkanen, & Zappalà, 2007; Wiles & Costello, 2000), some taking place in their own neighbourhood. Thus social *disorganisation theory* can contribute to understanding the links between risky facilities, such as a shopping centre, in a wider geographical context. The *social disorganisation theory* relies on the idea that crime occurs when the mechanisms of social control are weakened (Shaw & McKay, 1942). Crime in public places such as muggings in bus stops and burglary in parking lots in the surrounding areas of a shopping mall, for example, go hand in hand with high levels of social disorganization (Kornhauser, 1978) or low collective efficacy (Sampson, Raudenbush, & Earls, 1997) in the neighbourhoods where a shopping mall is located. Researchers have long pointed out that

shopping centres have problems similar to those of that a central business district (Lee, Hollinger, & Dabney, 1999). One reason is that they may be located in criminogenic areas, places that have a disproportionate number of opportunities. Another reason is that, as with city centres, shopping malls also have alcohol selling premises, bowling and cinemas, which generate activities that reproduce problems, associated with the city centre, in particular, night life crime. One of the seminal studies with shopping centres was performed by Engstad (1975). He found that areas with shopping centres had higher rates of crime per thousand population than areas without shopping centres. However, regardless if a risky facility such as a shopping centre ‘works’ in fact as a *crime generator* or *attractor* (Brantingham & Brantingham, 1995), research so far says little about whether and how the internal and external physical and social environments of these facilities influence crime and safety (Bamfield, 2012; Lindblom & Kajalo, 2011). Note that traditionally *crime generators* are particular areas to which large numbers of people are attracted for reasons unrelated to any particular level of criminal motivation they might have or to any particular crime they might commit. Examples include shopping and entertainment areas while *crime attractors* are particular places or neighbourhoods to which strongly motivated offenders are attracted due to the known opportunities for particular types of crime. Examples might include bar districts, prostitution areas, and drug markets.

The type of building and architectural design influences what occurs in them and in their surrounding environments. The reason is that the social interactions that these environments promote (or attract) at a particular spot—are fundamental in turning these facilities from safe to unsafe (Cozens, Saville, & Hillier, 2005; Glasson & Cozens, 2011; Jacobs, 1961; Newman, 1972; Reynald & Elffers, 2009). These principles underlie what is called *Crime Prevention Through Environmental Design* (CPTED). CPTED is defined as “the proper design and effective use of the built environment which can lead to a reduction in the fear of crime and the incidence of crime, and to an improvement in the quality of life” (Crowe, 2000, p. 46). This implies that environments can be planned in a way that reduces the possibility of crime occurring, by stimulating surveillance, fostering territoriality and reducing areas of conflict by controlling access and improving overall perceived safety (for details, Cozens, Saville, & Hillier, 2005; Ekblom, 2011; Jeffery, 1977; Newman, 1972; Saville, 2013).

Most of CPTED interventions have been implemented together with other situational crime prevention techniques (Clarke, 1983) to housing developments and neighbourhoods in both urban and rural areas (Armitage, 2013; Clarke, 1989, 1992; Cozens, 2002; DeKeseredy, Donnermeyer, & Schwartz, 2009), transportation systems (e.g. Ceccato, 2013; Loukaitou-Sideris, 2012) and parks (e.g. Iqbal & Ceccato, 2016). Much less evidence is found in the literature about the use of CPTED to inventory safety in commercial properties and shopping (but see Clarke, 1989; Kajalo & Lindblom, 2011; Schneider & Kitchen, 2002). Although not free from criticisms, such as portraying individuals as passive agents or neglecting the social construction of physical space for particular groups (Ceccato, 2016a; Pain, 2000; Smith, 1987), the value of the CPTED approach resides in the attempt to gain a better understanding of the effect of micro-spaces on individuals' behaviour in a shopping centre, either as a visitor (potential target) or an offender (seeking opportunities).

Crime in Shopping Centres: A Conceptual Model

Modern shopping centres are complex environments (Fig. 8.1). The macro-scale is constituted by the overall system (the shopping centre itself and the immediate surroundings); the meso-scale can be represented by a group level of stores (a floor or set of stores or restaurants in a food court); and the micro-scale: settings in a location (e.g. an entrance, a store, the cinema) (Ceccato, 2016b). They are composed of public, semi public and private areas, sometimes with subtle boundaries between them. Drawing from CPTED principles (for a revision, Cozens et al., 2005 and Ekblom, 2011), Ceccato (2016b) proposed a conceptual framework for assessing spaces and times at a shopping centre that are criminologically relevant to crime and perceived safety. Safety in a shopping centre, taken as either as by absence of crime or fear of crime, is dependent on multi-scale environmental conditions that are at work at various levels in the building and its immediate surroundings, some of them varying over time. Based on their

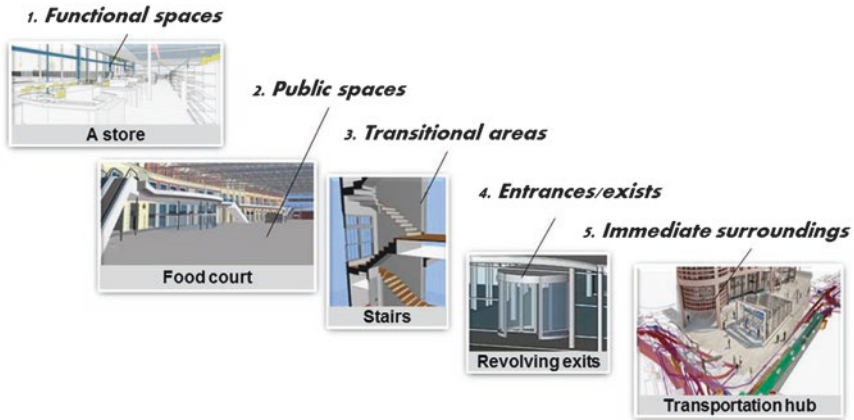


Fig. 8.1 Crime and safety in shopping centres: a conceptual model. Source: Ceccato (2016b)

capacity to generate crime relevant outcomes, Ceccato (2016b), divided the shopping premises into five parts.

Functional spaces are those spaces which have a defined function in the shopping mall, such as stores, restaurants, banks or toilets. How much they are exposed to crime depends on their location in the mall but also internal and external features such as good lighting, design and positions of doors, windows and stair cases, entrances. These features may reduce the possibility of crime occurring by stimulating surveillance, fostering territoriality and reducing areas of conflict by controlling access from outsiders (Ekblom, 1995, 2011, 2013; Jeffery, 1977; Newman, 1972; Poyser, 2004).

The vulnerability of a particular store depends on its layout, its management and the types of goods sold. Clarke and Petrossian (2013) suggest that most vulnerable parts of the store are those that carry 'hot products'. Clarke and Petrossian (2013) suggest that stores are more vulnerable to crime when they have: (1) many entrances/exits, particularly where they are accessible without passing through the checkout; (2) passageways, blind corners, and hidden alcoves; (3) restrooms or changing rooms, (4) high displays that conceal shoppers (and shoplifters) from view, (5) crowded areas around displays of high-risk items; and, (6) aisles

that staff cannot easily survey from one end. This may explain why similar stores (same goods sold) are differently targeted by crime (Hendricks, Landsittel, Amandus, Malcan, & Bell, 1999) and some get disproportionately large amounts of crime. There are indications that 'the law of crime concentration' (Sherman & Weisburd, 1995; Weisburd & Amram, 2014) may also apply to micro-scale retail crime and directly relate to these risky facilities and their surroundings.

Yet, the vulnerability of particular premises might go beyond the spatial dimension; it might be time dependent, and sometimes concentrated to particular 'time windows' (from day to seasonal ones). Bars, pubs and restaurants, for example, may become source of problems when the shopping mall closes down. Jewellery stores and retail with high valued goods (e.g., electronics) also become more vulnerable to burglary when most facilities are closed. After school hours might attract youngsters to particular settings at shopping mall, often with no guardians around (e.g., bowling, parking lots, libraries and game facilities).

Open *public spaces* in a shopping mall have a key role in terms of safety as they are settings of convergence at all times. Furniture and decorations in public spaces may limit visitors' capacity to exercise social control from a long distance. For instance, in a food court they may create obstacles, obstructing the field of view of clients. Open paths dividing food courts, stores and restaurants create unnecessary opportunities for thieves as they allow non-clients to have access to their premises. Previous studies suggested that small distances between tables in a food area would also make it easier for thieves to pass, grab a bag and leave (Poyner & Webb, 1995).

Shopping centres also have *transitional areas*, such as corridors, stairs and paths. Length and width, location, types of materials, enclosure and design, all affect how safe these transitional areas are. Corridors often have obstacles placed in locations that might offer criminals opportunities to commit a crime and then hide (Newman, 1972). These environments may differ in terms of 'properties, features and content' that directly impact on overall safety (see Ekblom 2011, for details). Examples of these obstacles can be temporary shops, permanent pillars or furniture, blocking the view of transients. They can themselves be a target of crime as people might steal goods. Demonstration stalls at corners and in public spaces in the shopping centre help visitors to get to know new products

but also to become distracted, and as a consequence, becoming themselves an easier target for thieves. Corridors might be straight and in peak visiting hours, they can be a source of irritation as well as places for bag snatching and pickpocketing. Moreover, if anyone is allowed in the area, this might create a sense that nobody is in control. This feature is particularly important for places such as *entrances/exits*.

The *entrances* carry the identity of the shopping centre. They can be of many types, for pedestrians or for cars, giving access to the parking lot. In any case, well-functioning entrances allow the flow of people (or cars), both under normal and emergency conditions. Using semi-transparent materials and glass in the construction of entrances allows good sunlight illumination and may affect natural surveillance. The entrances are also the connection of the centres with the rest of the city. The number of entrances varies with the size of the shopping centre. More entrances increase the flow of passengers and according to routine activity theory (Cohen & Felson, 1979), crime opportunities. More entrances in problematic neighbourhoods may mean more crime.

A shopping centre's *immediate surroundings* are also an important criminogenic factor for what happens inside the mall. High crime areas tend to affect victimization at shopping centres and perhaps vice-versa (see 'crime radiators' and 'crime absorbers', by Bowers (2014)). Bowers (2014) suggests that there is a positive relationship between internal and external crime in an area. Two different mechanisms might explain such a relationship, one that risky facilities act like crime 'radiators' and transmit risk to the external locale, while the other is that they are crime 'absorbers'—they absorb risk from the external locale. Public transportation links to a shopping mall are essential for bringing customers but bus stations and underground stations are themselves crime attractors, and they allow an easy escape for criminals (Ceccato, 2013; Ceccato, Cats, & Wang, 2015). Failed security systems in parking lots bring in individuals that would not have the right to be in the premises, including thieves. The impact of CCTV cameras in reducing crime in parking lots has long been confirmed in the literature, at least for property crime (Welsh & Farrington, 2009). Inner city shopping centres may be extra vulnerable to crime spill-over from mixed land use, with bars and restaurants.

Visualisation of Crime Incidents in 3-D and BIM: Building Information Model

The studies by Rengert and colleagues in the USA from late 1990s and mid-2000s are seminal in the analysis of crimes in buildings. These prototypes were later tested and described in Rengert and Ratcliffe (2005) on the 3-D visualisation of inmate violence against correctional staff. Authors selected two county prisons in the King County, Washington because they thought they had valuable design characteristics that provided a unique opportunity to study different spatial arrangements of prisons. One location was a traditionally spread-out site with considerable horizontal expansion while the second was a high rise installation. Rengert and Ratcliffe (2005) assumed that by studying different floor plans and supervision models, it would help them to translate their findings to other prisons across the country. Authors summarised the available technological paths at that time to build a 3-D visualization model for crime events as following:

Each floor plan was registered as an 'area'. Each room on a floor, each sight-line in a hallway and each exit from an elevator or stairway are assigned a 'location' within this area. Once each unique location was identified, the user was capable of assigning incidents to each location. In this simple approach, incidents were plotted in the centre of each location with the symbol designating the number of incidents that occurred in that location over a designated time period. (p. 22)

Later on, they developed an advanced GIS approach to visualise in more detail and with more accuracy the crime location (e.g., no longer at the middle of the room). Yet, while the capacity to visualise incidents onto a digital map provides a wealth of possibilities, Rengert and Ratcliffe (2005) concluded that it also created some barriers to effective analysis, such as increased software and training costs and problems with the identification of repeat victimization. Moreover, they did not explore the temporal dimension of crime incidents across the 3-dimensional space. Taking the previous work by Rengert and colleagues, this study takes a

step forward by testing a prototype with new visualisation tools (BIM) and explores the temporal dimensions of crime in space in a shopping centre.

The BIM Approach

The term BIM, which comes from Building Information Modelling, can be defined as “a modelling technology and associated set of processes to produce, communicate, and analyse building models” (Eastman, Teicholz, Sacks, & Liston, 2011, p. 16). The notion of ‘building models’ denotes digital representations of building components containing geometry, functional and behavioural attributes and parametric rules (Eastman et al., 2011). However, BIM as a term can be misleading. As suggested by Bisio (2016), BIM is not just about buildings, it is a process that enables efficient and quality design, construction and operation of a structure such as a building (e.g. a shopping centre), a bridge or highway. One of the most appreciated capabilities provided by BIM is high-end 3-D visualization. Despite great potentials, visualization capabilities offered by BIM are limited to a number of areas (Becerik-Gerber & Rice, 2010). No previous research has tested the use of BIM for visualizing and analysing criminal occurrences inside buildings, such as a shopping centre.

The Case Study

Sweden has about 300 shopping centres today, twice as many as the country had 15 years ago (Grip, 2012; Sorbring, 2012). The shopping centre used as the study area is one of Stockholm’s largest shopping centres with 19 million visitors per year, and has the longest opening hours (10–21 hours, over 180 shops), a large number of restaurants including a food court and other leisure activities such a movie theatre, a bowling alley, a hotel and a go-kart track. This shopping centre includes stores from the most important Swedish chains. The mall is frequented both weekdays and weekends, with around 60,000 and 45,000 visitors per

day, on average 350,000 a week. There is also a large library and a hotel. The mall is located adjacent to a metro line (18 minutes from Stockholm central station) and a large bus station with several bus routes to other parts of the city. The shopping centre is located close to the largest Information and Communication Technology cluster in Europe and one of the biggest in the world (CITYCON, 2016). Equally important is to mention that the shopping mall is located near several areas in the Stockholm region with relatively high crime levels (BRÅ, 2016).

The mall is formed with a main entrance in the middle of the building. There are two floors, a main floor where most of the activities are available and an upper floor where some shops, a restaurant and cinema are sited. In the middle of the building is the shopping heart, the food court with some 20 restaurants. There are eight entrances of different sizes. What is also relevant from a criminogenic perspective is that in the middle of the aisles too some activities are situated, including telemarketers, sweet stores and cafes. From the mall student housing located on top of the main building can be reached (CITYCON, 2016).

Data

The empirical materials used for this study were:

1. reports of occurrences of crime over a period of 17 months (from January 2015 to May 2016) in PDF format. This dataset was used because police records cover just a minor portion of total incidents, for shoplifting is only 2 percent of the total, for example (Swedish Trade Federation, 2015). The data is gathered by the company in charge of security services in the mall. There are different ways of reporting crime and incidents of crime and disorder. The most common way if a crime happens or is ongoing is that personnel press a button ('panik-knapp', 'bråk-alarm'), so the security company is immediately informed and can intervene if the incident is still ongoing, or report it after the event. Incidents other than crime are also recorded in the same database. The security company does not cover the parking

lots, and incidents that take place there are not included in this dataset. Supermarkets are open from 8:00 to 21:30 while bars are open from 10:00 to 24:00. The majority stores open between 10:00 and 21:00 hours.

2. Number of visitors by trading hours in 2014 provided by shopping mall.
3. 14 plan drawings of different floor levels of the retail facility including names and codes of the constituent spaces, tenant businesses as well as horizontal and vertical dimensions of spaces in PDF format.
4. Data collected through fieldwork inspection performed in a series of visits to the shopping centre in particular environments most targeted by crime and incidents of public disturbance.

Methods

In order to obtain a better understanding of the nature of crime concentration in space and time in a shopping centre, a 3-D visualisation using BIM was combined with fieldwork inspection.

Creation of the Object-Oriented Semantic Model of the Shopping Centre

An object-oriented model of the entire building was constructed based on the drawings using a proprietary BIM-authoring software application (Autodesk Revit 2013¹). Next, underlying plan drawings were used for creating a three-dimensional model of the building at a relatively low level of detail. The levels of detail of the model were based on three level scales: the macro-scale: the overall system (the shopping centre); the meso-scale (a floor); and the micro-scale: settings in a location (e.g. food court, an entrance). Each floor was considered a separate layer connected by limited access corridors or ways (elevators and stairs) that could also be visualised together and be the basis for analysis. Then, the next step was to populate this model with crime data. Through an iterative process,

both the model and XML reports were synchronised to reflect the total number of events per room. First, a standardized list of crime types was used for interpreting the descriptive texts through reports. Then, based on official crime codes (BRÅ, 2012), several filters with key words associated with each offence were created (e.g. 'snatt' was meant to look for cases of 'snatteri', shoplifting). After several trials using different filters, 90 percent of crime occurrences and incidents of public disturbance were mapped in the model.

Visualisation of Space-Time Patterns of Crime with BIM Model

Cylinders were used to represent the volume or rates of crime by location in each store. In order to visualise crime by location and over time, a tool was programmed allowing three 3-D mapping modes: *Choropleth 3-D map*—The size of the cylinder corresponds to the absolute number of crimes per type and location. This feature is useful to compare particular sections of data by crime type, for instance, peak hours versus off-peak hours. *Stacked cylinder map*—The size of cylinder is standardized by 100 percent (total crime by each individual location in space) and is split by the proportion of each crime incident (absolute numbers) for each crime location. *Scaled map*—The most important advantage of this mode is that it indicates a unique specialization of crime incidents by location, for instance, violence dominates security guard calls for service in bar A while in shoplifting and thefts dominate calls in supermarket B. In all modes, the tool makes it possible to filter crime incidents by time slices, for instance, to visually check sections of the data by day or hours of the day.

Inspection of the Shopping Environment

In order to assess the environments where crime is mostly concentrated, a systematic and detailed 'inspection' of the crime locations in the shopping centre (including photographic documentation), as well as a check

on the surrounding area of the shopping centre were conducted in June-August 2016. Using CPTED principles a template was developed to check the conditions at these locations: illumination, dark corners, hiding places, clear field of view, transparent materials, presence of objects/barriers, level of maintenance, formal and informal social control, visibility, target hardening features, social environment (people gathering outside, blocking entrance, drinking, noise, beggars sitting outside, litter) and land use of immediate environment (transport nodes, ATM machines, bars). Results from the visualisation combined with the fieldwork inspection provided the basis for making suggestions for improvement of the most targeted settings and/or areas in the shopping centre as presented in the following sections.

Results

The Most Common Crime and Safety Related Incidents in the Shopping Centre

Out of 5768 (11.2 cases per day about 1 incident per open hour) from January 2014 to May 2015, 68 percent of incidents are acts of public disturbance and vandalism (Fig. 8.2). This overwhelming majority of records of minor incidents is typical of other public places in Stockholm (see, for example Ceccato, 2013). Acts of vandalism include graffiti on walls or floors, as well as damage to objects. They are rarely inside the shopping mall, and more often in the immediate surroundings. Note that incidents of public disturbance are not crimes and therefore are not part of police records, resulting in a dataset that is dominated by thefts and acts of vandalism and to a less extent violence. Regardless of whether they are offences or not, the overwhelming majority of these minor incidents are bound to have an impact on visitors' perception of risk of crime and ultimately on their perceived safety.

There are also violent acts and/or threats, which compose 16 percent of incidents. Conflicts among young people who spend time after school at the library or other shopping premises (fast food restaurants) are common;

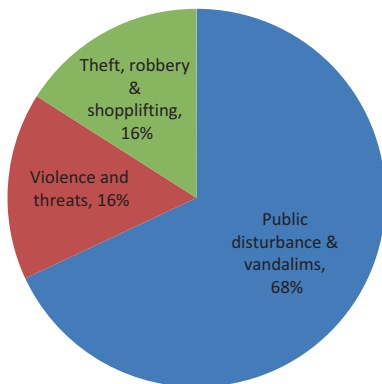


Fig. 8.2 The most common types of incidents recorded in the shopping centre, Jan 2014–May 2015, $N = 5768$ incidents. Data source: Security company, 2016

as well as cases in which personnel feel threatened by customers' behaviour. Theft, robbery and shoplifting with 16 percent of incidents were common in jewellery stores, electronic/mobile phone stores, clothing stores as well as supermarkets. A new study in Sweden shows that shoplifting can be as high as 8.1 billion dollars per year (Swedish Trade Federation, 2015) and crimes of these type are also common elsewhere (Clarke & Petrossian, 2013; Hendricks et al., 1999; Poyner & Webb, 1995).

Within each crime group there are major variations of types of behaviour, for instance, among cases of property crimes, there are records of minor crimes, such as attempts of shoplifting to major burglary followed by theft with use of weapons, cars and explosives (e.g. against jewellery and electronic stores). Violence and threats include physical violence (fights, including sexual assault) as well as verbal ones, threats against personnel or other customers but also sexual harassment. Table 8.1 illustrated common incidents recorded by the security company in this shopping centre.

Table 8.1 Typical examples of crime and incidents of public disorder from the database

Events	Typical examples
Violence & threats	Two children fought with each other and parents got involved too Non-Swedish speaking customer wants to change a product, the customer is now upset and making threats. Security guard is assisting store personnel Staff at mobile store calls and says that a person is threatening them
Theft, robbery & shoplifting	Jewellery call for help. Security guard announced a theft of three watches Store called on suspected shoplifters at the store A custom's purse was stolen in main public corridor A bag was stolen close to restaurant X in the food court
Public disturbance & vandalism	Staff at a restaurant call for help as they have people vandalizing their soda automat Security guard is called because there is an intoxicated man disturbing other shopping visitors in the food court A large group of young people were screaming and raging in the library Three women are undressing and washing their clothes in the sink at the restaurant toilets. Security guards went there and talked to them

Temporal and Spatial Patterns of Crime Incidents of Public Disturbance

Figure 8.3 shows that most crimes and incidents of public disturbance in the mall happen in the evenings, but a peak is also observable in the afternoon hours. Although there are variations between crime types, for property crimes, for instance, most crimes happen around 14:00, but there are also peaks between 18:00 and 21:00. Violence, vandalism and problems of public disorder peak between 18:00–20:00 hours. Interestingly, a minor peak for property crimes has been recorded in the morning, just after opening hours. This peak comprises records of burglary (often against electronic stores, jewellery stores), crimes that often happen during the night are only discovered when the mall opens (note that 'burglary' is included in the category 'thefts and robberies' in all Figures of

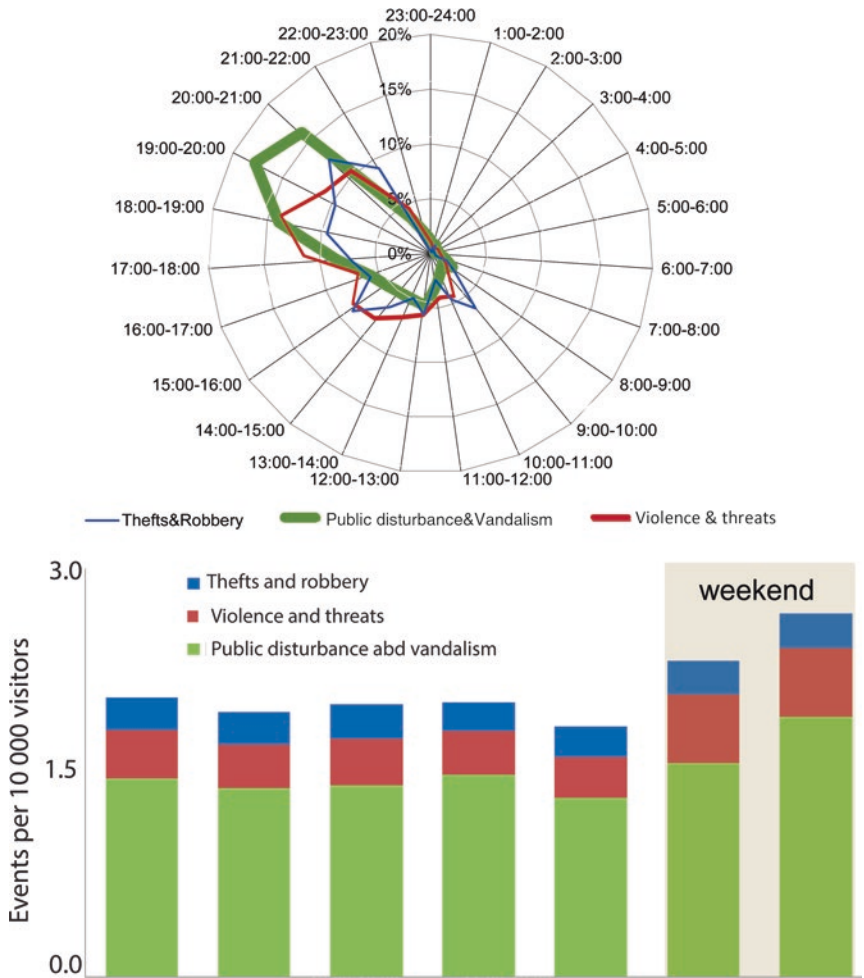


Fig. 8.3 When do most incidents happen? Hourly, daily and monthly patterns, 2014. Note that daily and monthly patterns are events per 10 000 visitors. Data source: Security company, 2015–2016 and shopping mall, 2014

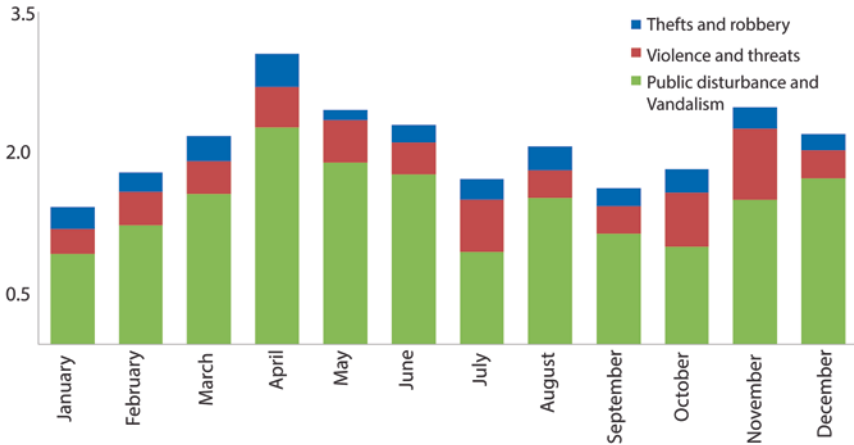


Fig 8.3 (continued)

this chapter). This shopping centre has relatively long opening hours (stores 10:00–21:00 hours, bars, up to 24:00 hours). Yet, crime records decrease drastically after 22:00.

The peak after 18:00 for all crimes and incidents of public disturbance is associated to people's patterns of routine activity (Cohen & Felson, 1979; Felson, 2002), namely it is when customers go shopping, run errands after work, engage in leisure activities and eat, or just spend time with friends after school hours. In order to check daily variations, frequency of violence was standardised by total visitors per day. Note that this shopping centre had an average of 358,000 visitors a week (trading hours) in 2014. Figure 8.3 shows that crime rates are higher over the weekend. Yet, it is important to notice that they are higher not because there are more crimes but because fewer visitors go there over the weekend (crime frequency is fairly constant over the week). Compared with shoplifting and other property crimes, such as burglary, violence and acts of public disorder tend to be slightly higher on Saturdays and Sundays than weekdays. The data also show seasonal variations. Spring (particularly April) and autumn (November) show both high number of crimes as well

as rates. However, summer (July) shows a slightly larger rates of violence, which also appears in the autumn (October and November). Now we turn our discussion to the spatial patterns of crime in a shopping centre.

The crime geography in the shopping centre provides evidence of the law of crime concentration at the micro-scale level (Eck & Weisburd, 1995; Weisburd & Amram, 2014; Weisburd, Morris, & Groff, 2009). As much as 64 percent of all incidents happen in 10 percent of meso and micro-places in the shopping centre.

Visualising Crime in Shopping Centres Using BIM Diagrams

Figure 8.4a shows the geography of crime per store location in the BIM diagrams. The rank is topped by the food court (mostly public disorder) followed by two fast food restaurants, then by two entrances and not far behind, two main corridors linking the stores (note that these corridors also contain temporary stalls). This rank depends on crime type. For property crimes, for example, shoplifting in supermarkets and clothing stores (large Swedish chains) are the most targeted places. It is unclear how much of this shoplifting is associated with self-service check-out in the Swedish case (but see Taylor, 2016; for evidence from elsewhere).

Alcohol outlet stores (Systembolaget, 2013)² in this shopping centre are commonly targeted. Although armed robberies with heavy weapons against electronic stores and jewellery shops constitute few cases in a year, they are the ones that visitors notice the most. These findings fit the picture portrayed by the local media about this shopping mall. According to Johansson (2016) the majority of the press articles recently published about crime in this shopping mall were about robbery of all types, with and without use of weapons. Threats and assault against a person or fights populated cases of violence that account for 17 percent of all records. Facilities and stores located close to entrances tended to experience more safety problems than the ones far from the entrances/exits of the shopping centre. Note Johansson (2016) in her exploratory study with a small sample of respondents found that entrances and the parking garage were places where visitors felt most unsafe. Notably, these are also places where

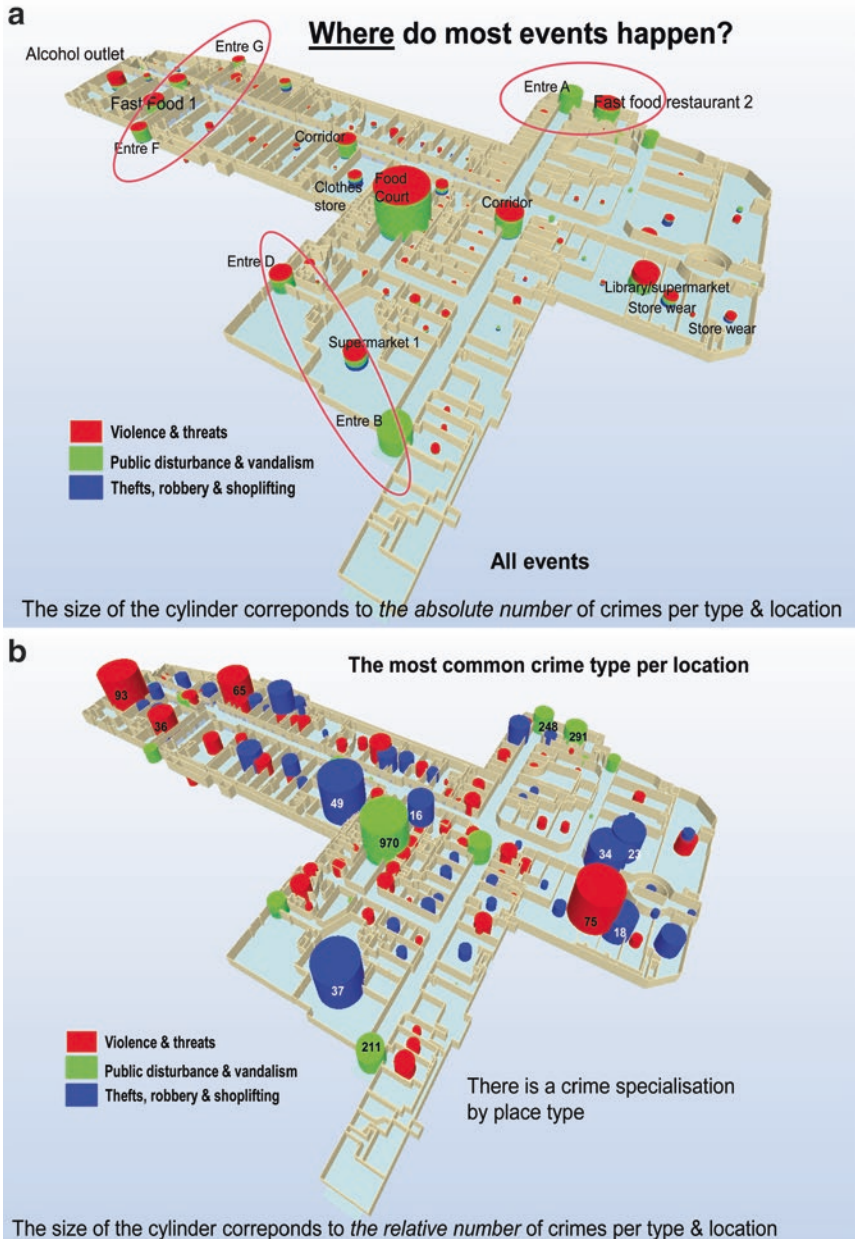


Fig. 8.4 (a) Crime by type and location and (b) the most dominant crime type per store and (c) crime in peak hours




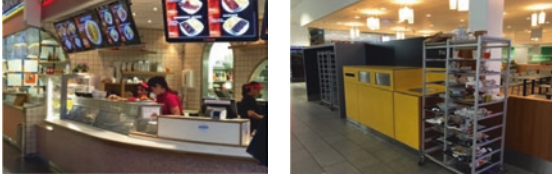

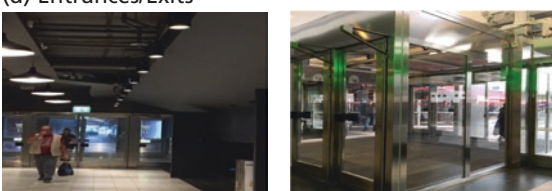
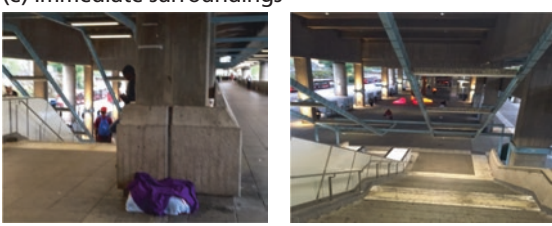
Fig. 8.4 (continued)

visitors have responded they are relatively dissatisfied with the comfort level. It has been observed that there is a clear crime specialisation per location and crime type Fig. 8.4b. Food courts tend to have more problems with public disorder while stores experience more property crimes; entertainment centres and restaurants experience problems with threats, assault and other violence related issues. Similar visual snapshots over the shopping mall were created to illustrate crime peak and off peak hours for all types of offences by hour of the day, weekdays and by month (example shown in Fig. 8.4c).

The Shopping Environment Most in Need of Intervention

Table 8.2 exemplifies a set of places in the shopping centre that are most in need of intervention. This analysis was based on intensive fieldwork

Table 8.2 Examples of places most in need of intervention following CPTED principles

Type of environments		Main safety issues
(a) Functional spaces		<ul style="list-style-type: none"> • permeable spaces • poor territoriality markers • lack of access control • easy escape • unintended use of premises
(b) Public spaces		<ul style="list-style-type: none"> • poor natural surveillance (blocked view, hidden spots) • access control & permeable spaces • image/poor management
(c) Transitional areas		<ul style="list-style-type: none"> • tight corridors • disruption by physical barriers • poor natural surveillance—stalls affect visibility • products easy to steal
(d) Entrances/Exits		<ul style="list-style-type: none"> • illumination • easy escape • lack of access control
(e) Immediate surroundings		<ul style="list-style-type: none"> • illumination • easy escape • alcohol drug use • rowdy youngsters • unintended use of premises • desolate at certain times

using CPTED principles and maps of hot spots of crime over time and across the shopping groups discussed in the previous section. Instead of describing all potential problems with the design of the environment and management of the shopping groups, the next paragraphs reveal some examples of each type of environment, namely, *functional spaces*, *public spaces*, *transitional areas*, *exits/entrances* and *immediate surroundings* following the conceptual framework suggested in the beginning of this chapter (Fig. 8.1).

Among *functional spaces*, the layout of selected stores is particularly problematic in this shopping centre. A number of stores targeted by crime have their door layout in common. They allow non-customers to pass-through the store which makes them more vulnerable to thieves. Some supermarkets share the same problem of permeability of boundaries between public and private areas. The entrance to the stock of goods is, in one supermarket, located in the middle of the store, giving free access when open. A set of establishments (e.g., money exchange, jewellery, electronic) should consider relocating to other sites within the shopping mall that are more secluded, yet well-guarded. Armed robbery in jewellery stores happens often early in the morning (09:00–11:00) with use of heavy weapons, cars and even motorcycles. Moreover, security guards should be alert at particular sites, at particular times. Security officers could patrol on motorised vehicles to respond quickly if on call (targeted areas) and to maximise visibility on shopping grounds.

Another example of places that need intervention among *functional spaces* is the library and the toilets. The library is often linked to conflicts among users (especially youngsters after school hours) and between personnel and users. Clear rules about what can be done in the library should be available at the entrance. Training of library personnel to deal with conflicts between users should be considered. With regard to toilets, unattended toilets are used for other purposes for temporary visitors, including the homeless. Isolation of toilets (often located in isolated spots) makes them possible sites for anything from robbery to sexual assault. Having personnel more often in toilets (maintenance or house-keeping personnel) would be desirable if relocation is not viable. In

summary, among the CPTED principles, the main safety challenges in functional spaces involve problems of permeability (e.g. easy escape), poor territoriality markers and lack of access control (e.g. unintended use of premises) (Table 8.2a).

The food court is an example of a *public space* with a set of safety issues. The presence of multiple barriers affects visibility (breaks field of view) and negatively impacts on natural surveillance. Another visibility problem is the presence of objects, stairs, food stands, and an excessive amount of furniture, which provides corners to hide and allows anonymity/distractions that offenders need to act. Moreover, issues of permeability within sections of food court facilitate pickpocketing, bag snatching and conflicts between visitors in busy times. More formal control in the form of security guards are desirable at peak times (18:00–21:00) in the food court as well as CCTV cameras. In order to maximise guardianship, this practice should be encouraged and integrated as part of the activities that are carried out in the shopping centre, especially during hours of least activity within the mall. Overall, *public spaces* in this shopping centre show a number of challenges according to CPTED principles. They have features that hinder natural surveillance (objects and poor design that block the view or generate hidden spots), weaken territoriality (several spots that are permeable) and damage the image of the place as a safe environment (e.g. limited maintenance) (Table 8.2b).

Equally important are the *transitional areas*. Stores and stalls along the main corridor are extra vulnerable places; they make visitors vulnerable to crime, for instance, pickpocketing. The stands themselves are more at risk as products are openly exposed along the corridor. They also disrupt the landscape, making it more difficult to see what is happening. Visitors also complained about feeling unsafe along the corridor when it is too crowded. These corridors are perceived as tight and unsafe because of volume of visitors and the presence of temporary stores. According to CPTED principles, tight corridors associated with intense flow of visitors impose clear security restrictions (Table 8.2c). Stalls along corridors disrupt natural surveillance, the boundaries between public and private become blurred (territoriality), making it easy to steal products on

display or from transients. It is understandable that shopping centres have requirements other than security, such as the need to maximise use and income from floor space. Therefore, it is extra important to promote good design to achieve both security and other goals.

At *entrances/exits*, interior and exterior lighting in the shopping centre and other external areas towards the bus station and underground station has to be constantly inspected. According to CPTED principles, entrances and immediate surroundings impose a number of challenges that go beyond design and maintenance of the physical environment. Having welcoming hosts at those areas may improve social control and avoid gathering of people at the entrance and blockage of the entrance (Table 8.2d, e).

External entrances and *immediate surroundings* are targeted by a number of incidents that are not always crime but affect perceived safety of personnel and visitors of the shopping centre. A range of programs and best practices to tackle these issues requires effort from multiple actors (shopping centre, municipality, those responsible for the transportation hub located just outside the mall) in collaborative schemes that are tailored for that particular community. These more comprehensive programs do not obviously fall into the traditional framework of CPTED, yet, they embed the need for expanding the role of CPTED to include more holistic solutions to safety—those that consider safety as an individual right.

Conclusions

This study illustrated the nature of crime in space and time in a shopping centre in Stockholm, the capital of Sweden. Drawing from environmental criminology theory and in particular, principles of Crime Prevention Through Environmental Design (CPTED), this analysis is carried out at three scales: the macro-scale: the overall system; the meso-scale: in a group level of stores; and the micro-scale: settings in a location. The methodology applied makes use of three-dimensional visualisation using

BIM (Building information modelling) to detect places where crime concentrates. With these diagnostics in hand, a fieldwork inspection was performed to detect the most problematic areas in functional spaces, public spaces, transitional areas, entrances/exits and immediate surroundings. The chapter concludes by discussing the potential of using this methodology to identify the types of environments that are in need of extra attention to improve safety.

Findings show that 68 per cent of the incidents recorded in the shopping centre constitute problems of public disturbance and vandalism, the remainder being 16 percent of violence and 16 per cent of property crimes. Crime is not distributed randomly either in time or space. Results show peak and off peak hours for all types of crimes, but the most vulnerable time window is between 18:00 and 20:00 hours. Despite variations by crime type, weekends tend to show higher crime rates than weekdays, with particular peaks in the spring and later autumn.

Most problems happen in relatively few types of facilities. Findings also illustrate the potentiality of using BIM—Building Information Modelling—in environmental criminology for visualisation of crime and crime concentrations in micro-environments in shopping centres, in particular when multi-storey buildings are the study area. The 3-D visualisation has shown evidence that crime not only concentrates in space; it shows that a disproportionately high amount of crime takes place in a limited set of places—a finding that helps corroborate much of the previous research of crime concentration. Note that 64 percent of all incidents happen in 10 percent of micro-places in the shopping centre, in particular food court followed by two fast food restaurants, then by two entrances and not far behind, two main corridors. These maps also allow showing how different environments in the shopping are crime specialised (when a type of crime dominates in the facility) over time, which illustrates the potentiality of the tool for crime prevention. The time and space visualisation can be better demonstrated if the BIM diagrams include standardisation by space-use categories, for instance, by shading the map itself or the cylinders. Future development of the BIM visualisation should include automatically generated statistical indicators, with

descriptive by time and space but also global and local measures of spatial association.

With the fieldwork inspection it was possible to obtain clues about why similar places ended up having different levels of crime. A list of environments most in need of intervention was suggested using the conceptual framework suggested in this study. Although the inspection of the shopping mall (as it was performed in this study) is not conclusive as to whether the environment is the main cause for crime, this research provides some guidance to how their location in the shopping mall and their design make them more crime targeted than others. This limitation calls for caution when drawing conclusions about the causality between crime occurrence and shopping environment. Future research should devote time to test, in a more controlled manner, the potential effect of changes in the environment over time.

This study has two important theoretical contributions related to CPTED framework. First, it shows that in conjunction with BIM diagrams, CPTED principles can provide a solid theoretical basis for inspecting safety conditions of a shopping centre. Although not all principles of CPTED are equally important to assess safety in these facilities, they support the understanding of the nature of the relationship between design, use of space, crime and safety. A way forward to improve this analytical model is to further explore the use of the notions of properties, features and content in CPTED, as suggested by Ekblom (2011). The impact of property of 'enclosure' (that separates off part of the environment from the rest) or 'the feature of design' (whether via materials, structure and form) could be further explored when planning for internal and external environments of a shopping centre.

Second, if CPTED principles are to be applied to large retail facilities, such as a shopping centre, then more attention should be given to the role of urban context in CPTED as theoretical framework. This study indicates the advantages of considering the parts of shopping facilities, their specific criminogenic characteristics and to some of extent, the interactions between these conditions and those that define the place in which the facility is embedded. This is however not theoretically sufficient.

Whether shopping malls concentrate crime or not, we claim that the complexity of safety in these facilities can only be fully understood if neighbourhood and city contexts are integrated in the CPTED framework.

There is a need to better tackle both in theory and practice the concept of territoriality of public spaces in retail. Shopping malls are privately owned, yet they are public places. As in the Swedish case shows, there has been misuse of entrances as well as misappropriation of internal public spaces (such as toilets and stairs). Some groups, just by their presence at entrance, for instance, can be a source of fear to others. Yet, a shopping centre as a public space means that access to it is a lawful right; everybody has the right to spend time and feel safe there. However, the right of an individual to access and spend time there affects everybody's right to feel safe. This ambiguity in ownership, responsibility and use of the shopping environment plays negatively against those who are responsible for their quality, which at the end impact on customers' safe.

Shopping centre environments should be safe and pleasant for all. Good planning and well considered practices can increase the odds that major retail environments, such as shopping centres, are safe for both visitors and personnel. It is fundamental that shopping centres are properly designed to promote the effective use of the environment and contribute to the safety of those visiting and working in the premises. However, it is important to acknowledge that shopping centres have other goals than security (such as the need to maximise use and income from floor space), therefore a need of good design to achieve security and basic commercial goals is fundamental. Despite the limitations, this study is a contribution to the knowledge on how crime varies over time and space in a shopping centre and how this information combined with a detailed knowledge of these environments can help to promote better safety in these facilities.

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Notes

1. <http://www.autodesk.eu/>
2. Systembolaget is a government-owned chain of liquor stores in Sweden and it is the only retail store allowed to sell alcoholic beverages that contain more than 3.5 percent alcohol by volume. To buy alcoholic beverages at Systembolaget one has to be 20 years of age or older.

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9

Perceived Safety in a Shopping Centre: A Swedish Case Study

Vania Ceccato and Sanda Tcacencu

In the shopping mall ... young people may want a central place to gather, while the old want freedom from noise, jostling and fear, one shop may wish to sell fast food, while its neighbours may not wish to be buried beneath boxes of half-eaten chicken legs.
(Ekblom, 1995, p. 45)

Introduction

Shopping centres¹ size and design vary enormously regardless of where they are in the world, from small regional malls made up of a cluster of ordinary retail stores to megamalls offering a combination of shopping and recreation. However, despite the differences in size, type and security operations (Bamfield, 2012; Lindblom & Kajalo, 2011) researchers often homogeneously define them as ‘enclosed spaces characterized by comprehensive surveillance and security’ (Salcedo, 2003, p. 1084). Shopping

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centres have additional requirements other than surveillance and security. They need to maximise use and income from floor space at the same time that they must offer an environment that is pleasant and attractive. Therefore, it is important to promote good design to achieve both security and other goals.

If visitors perceive the shopping centre as unsafe, they may avoid going there. What could cause a shopping centre to be perceived as unsafe? Little research has been devoted to the influence of the physical and social environments on the perceived safety of shopping visitors (but see e.g. Poyser, 2004). Chapter 8 in this book reports on the nature of crime and disorder in space and time in one of the largest shopping centres in the Swedish capital, Stockholm. Using this same shopping centre, this chapter takes a step forward by assessing visitors' declared perceived safety using a questionnaire ($N = 253$) and drawing from a conceptual model proposed by Ceccato (2016). This study builds on the work conducted by Kajalo and Lindblom (2016) who previously showed how CPTED—Crime Prevention Through Environmental Design—can be applied to studying consumer attitudes towards different surveillance practices in shopping malls in Finland.

The aim of this study is twofold. Firstly, it is to assess the declared perceived safety of visitors in relation to their personal characteristics as well as to the environment of the shopping mall. Based on this assessment, the study proposes changes to improve shopping centres' safety conditions. In order to achieve this aim, the study will:

1. Investigate whether perceived safety varies by the characteristics of shopping centre visitors (e.g., gender, age, place of residence, previous victimisation).
2. Assess how respondents declare their perceived safety in different shopping environments.
3. Check for behaviour avoidance in space and time in the shopping centre.
4. Compare the characteristics of crime locations from official statistics and those pointed out by shopping centre visitors responding to the survey.
5. Identify visitors' sets of preferences in terms of improvements of the shopping centres' safety conditions.

This chapter is organised as follows. The next section provides the theoretical background for the analysis, including the hypotheses of study. This is followed by the presentation of the study area and then the description of data and methods. Later, results are presented followed by discussion of results, and finally conclusions.

Theoretical Background

Perceived Safety in Shopping Centres

The perception of safety of a shopping mall is fundamental for businesses. If a shopper feels that a shopping centre is not safe (or at least parts of it), then she or he will avoid it and look for another where this basic need—safety—is satisfied. In general, shopping malls tend to be perceived as safer than town centres (Beck & Willis, 1995; Savard & Kennedy, 2014), mainly because they are composed of hermetic buildings with contained and fragmented functions, such as stores, restaurants, entertainment, parking lots.

Visitors' perceptions of a shopping centre's safety is a function of a number of overlapping factors such as the characteristics of the customers themselves, the safety conditions of the facility, the quality and maintenance of the shopping mall environment and surrounding areas, and the security system in place (Poyser, 2004; Sandberg, 2016; Savard & Kennedy, 2014). The international literature is populated by examples showing how *individual factors* affect declared perceived safety; the most common of which include age, gender, place of residence, frequency of use of the place, and previous crime victimisation (Ceccato, 2014; Hale, 1996; Pain, 2000; Skogan & Maxfield, 1981). People who have already been a victim of crime are often more fearful than those who have never being victimised (Hale, 1996); women are more fearful than men (Pain, 2000); older adults express more fear than younger individuals (Lagrange & Ferraro, 1989); familiarity with the environment makes people feel safer (Jackson, Harris, & Valentine, 2017; Valentine, 1990); newcomers (or incomers) may make people fearful (Sandercock, 2000, 2005); and

people may declare fear for their family and friends, what is often called 'altruistic fear' (Trickett, 2009). In addition, perceived safety can be influenced by other, more multi-scale factors (national, global) that affect individuals in their daily lives through, for instance, the media (Gray, Jackson, & Farrall, 2008; Pain, 2009).

The knowledge (or perception) that a particular place is criminogenic also affects individuals' perceived safety. Savard and Kennedy (2014) review a number of studies in shopping centres and conclude that reported crime victimisation in shopping centres was much less than visitors' fear of crime. Yet, shopping centres are perceived as risky facilities (Eck, Clarke, & Guerette, 2007; Eck & Weisburd, 1995), since they may attract thousands of daily shoppers bringing large amounts of cash and credit cards, and then leaving with valuable products, which makes them a crime attractor for offenders (Brantingham & Brantingham, 1995; Eck & Weisburd, 1995). In other words, the types of activities shopping centres provide are bound to create particular conditions for crime at certain places and at particular times. In a shopping centre, shoppers start expressing evidence of functional fear (Jackson & Gray, 2010) by trying to prevent 'something bad from happening' so they take precautions that make them feel safer. In this case, shoppers adopt behaviour avoidance (Riger, Gordon, & LeBailly, 1982; Skogan & Maxfield, 1981), either by avoiding going to certain places in the shopping mall and/or at certain times of the day.

Moreover, shopping centres are not isolated from the urban system. Thus, location and reputation of a shopping mall are important factors for all visitors (Kajalo & Lindblom, 2016), as shopping facilities can bring about a large number of crime incidents because of their context. For example, shopping malls are linked to transportation hubs, which are important for the development of people's routine activity (Cohen & Felson, 1979). According to Felson (1987), shopping centres are connected to larger socio-circulatory systems via major thoroughfares which provide them with convenient access and egress, facilitating crime. Also, shopping facilities in high crime neighbourhoods face extra challenges in terms of crime prevention and ensuring safety since they may tend to absorb crime from and/or irradiate crime to the immediate surroundings (Bowers, 2014).

Shopping Centre Environment and Perceived Safety

The design and maintenance of a facility can impact people's safety. In shopping centres, Scott (1989) stresses the importance of maintaining visual corridors within buildings in affecting users' feelings of safety, their actual safety, and in deterring criminals. However, a shopping centre is more than corridors. Poyser (2004) reports on research undertaken to assess whether architects were aware of the link between environmental design and crime when they built shopping centres in the 1960s up to 1990s (the study is a comparison of two English shopping centres). Poyser (2004) found that some architects were more aware than others of the links between the built environment and fear of crime in shopping centres. Moreover, he found that ongoing maintenance and cleanliness of the built environment were signs of control that reassured users. Poyser (2004) concluded that aspects that made visitors feel safe were: open-plan design, good radio communication and presence of CCTV cameras, the layout and design of: transition areas (walkways, lifts), public spaces (squares), entrances (signage at entrances) and immediate surroundings (car parks) (Table 9.1). Image and maintenance inform how the aesthetical atmosphere of the environment can enhance the perceived safety of the area and keep potential criminals away because well-kept environments convey that people are in control of the area. Conversely, a lack of maintenance can encourage crime (because the environment provides

Table 9.1 Positive and negative environmental factors affecting perceived safety

Positive effect	Negative effect
'Because you can see everything that is going on from the square';	'... Poorly lit and with hidden places';
'It is not too enclosed';	'The lifts '... filthy ... not maintained';
'You can see right down the walkways';	'The car park ('a really horrid place' and, 'dark, grey);
'There are no dark corners, nooks or crannies';	'Open to the weather conditions';
'The walkways ... are wide';	'... The walkways 'covered in graffiti ... [I] felt unsafe ...'
'Everything is clearly signposted'	

Source: Poyser (2004)

clues that formal surveillance is not present) and also negatively affect visitors' perceived safety.

Research has indicated other factors that also impact safety in a shopping mall, including the amount of people present, illumination and surveillance (Savard & Kennedy, 2014). Surveillance, for example, the most known CPTED principle, can be implemented in many ways. In a shopping centre, formal surveillance is often carried out by security guards and shopkeepers, whereas informal surveillance is performed by customers, visitors and/or transients of a place (Hilborn, 2009). Natural surveillance can also be facilitated by creating the sense of territoriality, referring to how physical design can develop a sense of ownership in specific areas (Reynald, 2014), for example places clearly identified between stores and public places. Designing spaces with a specific purpose can also help regulate access, and target hardening measures can make it difficult for people to steal or damage private and/or public property (e.g., alarms at store entrances, CCTV cameras).

Although shopping malls vary greatly in terms of security programs Savard & Kennedy (2014) and Koskela (2000, p. 245) corroborated the importance of surveillance by stating that surveillance and the practices that emanate from it are aimed not only at protecting property and reducing violence but also at creating a perception of safety. More recently, Kajalo and Lindblom (2016) applied CPTED to investigate how consumers view various formal and informal surveillance practices in the context of shopping malls. They found that consumers have different preferences for, for instance, clean and well-lit premises, parking lots, sales personnel, and target-hardening security. They also showed that shoppers differ in many ways in terms of patronage behaviour, some emphasising the importance of overall safety in relation to other factors, such as location, variety of stores, illumination, maintenance, reputation. Interestingly, the authors also found that good location and good reputation of the shopping centre are equally important to all consumer groups. The results of the study indicate that CPTED is useful as an inventory tool, as the empirical results reflect the distinction between informal and formal surveillance.

Using previous literature on retail crime, situational crime prevention theory (Clarke, 1989) and principles from CPTED (Armitage, 2013; Cozens, Saville, & Hillier, 2005; Ekblom, 1995, 2013), Ceccato (2016) suggested a conceptual model for the analysis of shopping premises. The conceptual model splits the shopping centre into five parts classified according to their relevance in relation to their situational conditions of crime and perceived safety. For example, *functional spaces* are those spaces which have a defined function in the shopping mall, such as stores, restaurants, banks or toilets. The *entrances/exits* are the second type of criminogenic environment and can be of many types, for example, for pedestrians, cars, for parking lot access. Shopping centres also have *transitional areas*, such as corridors, stairs and paths. *Public spaces* are settings of convergence most of the time, such as food courts, but toilets also compose examples of these places. The shopping centre's *immediate surroundings* are also an important criminogenic factor influencing what happens inside the mall, as discussed further in Chap. 8.

Hypotheses of Study

Following the evidence from previous research on crime and perceived safety, the following hypotheses are tested in this study:

1. Visitors' profile (individual characteristics) influences their declared perceived safety in the shopping centre. For instance, those who declare feeling less safe are more likely to be female. Being a previous victim or witness of a crime affects visitors' declared perceived safety. More frequent visitors will declare feeling safer than will less frequent visitors.
2. Visitors' perceived safety at a shopping mall is affected by the mall's environmental attributes in different parts of the facility reflecting the five parts-framework suggested by Ceccato (2016).
3. Places that people fear the most are the ones where the most respondents witness incidents.
4. Due to levels of fear, visitors plan their visits to the shopping centre and avoid particular places and/or times.
5. Visitors have different preferences with regards to improvements of safety conditions in the context of shopping malls.

Study Area

The shopping centre chosen as the study area is one of the Stockholm region's largest shopping centres with over 180 shops and the longest opening hours, 10 am–9 pm and for bars up to midnight. (This is the same retail establishment as the one analysed in Chap. 8 in this book.) This shopping mall has a large number of restaurants including a food court and leisure activities such as a movie theatre, a bowling alley and go-cart track; as well as a library, student housing and a hotel. The mall is located adjacent to a metro line in the outskirts of Stockholm, in an area with relatively high crime levels (BRÅ, 2016). When built in the late 1970s, the shopping centre was not planned with CPTED principles in mind, and it has been refurbished several times since the 1980s but CPTED principles have never explicitly been incorporated in the shopping centre's design. As a historical reference, Sweden has about 300 shopping centres, twice as many as the country had ten years ago (Swedish Trade Federation, 2015). The implementation of CPTED guidelines started in the late 1990s in Sweden, but it was not until 2005 that the National Housing Board incorporated some CPTED principles in their policies (Grönlund, 2012); yet even today these principles are not mandatory in new housing developments or commercial buildings.

In 2013, an overwhelming majority (71 per cent) of crimes recorded by the police at the address of the shopping mall consisted of thefts, including pickpocketing, shoplifting, other thefts, fraud, violence (including robbery) and physical damage/vandalism (Fig. 9.1). However, these figures should be analysed with caution since it has been estimated that only 10 per cent of the violence that occurred at the shopping mall's address is reported to the police (Johansson, 2016).

The official data from the security company show a different pattern. Out of 5768 records of crimes and events of public disorder from January 2014 to May 2015, 68 percent were acts of public disturbance and vandalism. There were also violent acts and/or threats, which composed 16 percent of incidents. Theft, robbery and shoplifting (16 per cent of incidents) were

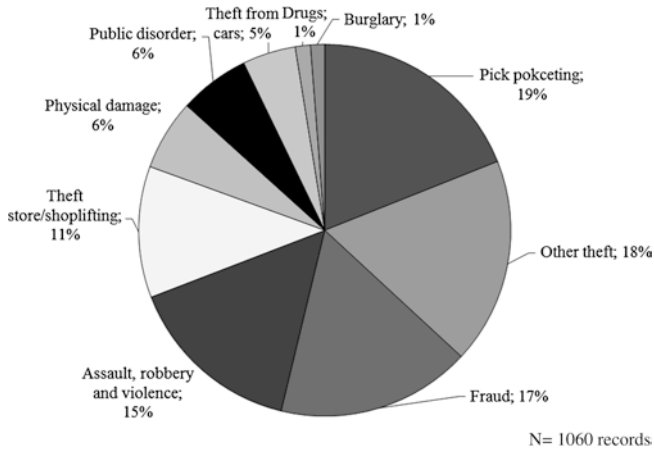


Fig. 9.1 Police recorded offences in the shopping centre, 2013. $N = 1060$ corresponds to 71 percent of offences recorded by the police in a single pair of coordinates at the shopping centre (lost and found and other minor types of crimes were excluded). Data Source: Stockholm Police headquarters statistics, 2014.

common in jewellery stores, electronic/mobile phone stores, clothing stores as well as supermarkets. For more details, see section ‘Results’.

Data and Methods

We first started with collecting official data from the shopping centre, followed by fieldwork inspection. We then moved to data acquisition through a face-to-face questionnaire and, finally, to analysing the different data sources and comparing and mapping the results.

The Fieldwork Inspection

A systematic and detailed ‘inspection’ of the shopping centre and surrounding areas (including photographic documentation) was performed between June and August 2016. Using CPTED principles, a template had been developed to check the conditions at these locations—illumination,

dark corners, hiding places, clear field of view, transparent materials, presence of objects/barriers, levels of maintenance, formal and informal social control, target-hardening features, social environment and the land use of the immediate environment—categorised by type of environment in the shopping centre according to Ceccato (2016).

The Questionnaire

A total of 253 people (visitors of the shopping centre) stratified by gender and age answered a questionnaire utilizing Google forms on a mobile phone. Perceived safety in the shopping centre was measured by different questions asking about: (a) the visitor's own previous victimization; (b) visitor's witnessing events of public disturbance in the shopping mall; (c) the safety of their families and friends (victimisation and perceived safety); (d) particular time and places the visitor felt unsafe in and near the mall; (e) the visitor's overall perceived safety in the shopping mall. The questionnaire was conducted between August 11 and September 7, 2016. When asked about crimes and events of public disturbance, people were asked to describe the places where they occurred and locate them on a map of the mall.

The respondent sample is as follows: 51 per cent female and 49 per cent male; 50 per cent 25 years old and younger and 50 per cent 26 years and older (22 per cent 26–35 years old, 11 per cent 36–45 years old, 10 per cent 46–55 years old, and 7 per cent 56 years old and above). As many as 40 per cent of respondents live in the same district or municipality as the shopping centre, but the majority (60 per cent) come from other places in the Stockholm region. 30 percent of the respondents visit the shopping centre every day, to eat, shop and/or work; a 25 per cent are frequent visitors, coming a few times a week for similar reasons; while 45 per cent visit a few times per month or less. As many as 66 per cent of respondents are native Swedes, 25 per cent were born outside Europe, with the rest born in Scandinavia or in another European country. Note that the sample also reflects the fact that the shopping centre is located in a highly multicultural residential area of Stockholm, with a student housing and a hotel close by.

The Analysis and Mapping

A database containing data from the questionnaire and maps was created as a basis for the analysis. The statistics are analysed using a standard statistical package (in this case IBM SPSS version 23) through descriptive statistics such as frequencies and cross-tables with Chi-square and risk diagnostics. A representation of where shopping visitors witnessed crime and where they felt unsafe on the main floor of the shopping mall was created by using mapping functions in a desktop mapping system (in this case MapInfo Professional version 11).

Results

The Perceived Safety of the Visitors

As many as 85 per cent of questionnaire respondents declare feeling safe in the shopping centre. The large majority are satisfied with supply of stores and restaurants, food court, cinema, library, and parking lots, but are less satisfied with places like toilets and corridors. Despite being satisfied with their own personal safety, respondents declare worry for the safety of their family and friends in the shopping mall (21 per cent declare feeling worried about them). Those who feel unsafe tend to be more anxious during evening hours. However, not all respondents are equally satisfied with perceived safety in the shopping centre. Chi-square analyses and risk estimates show that men are half as likely to declare feeling personally unsafe in the shopping centre compared to women ($\chi^2(1, N = 253) = 4.08, p < 0.05$) or feeling worried for their families and friends ($\chi^2(1, N = 253) = 6.45, p < 0.05$). Women are more likely than men to point out places where they feel unsafe in the shopping centre ($\chi^2(1, N = 253) = 9.44, p < 0.01$), but there are no differences between men and women in avoiding certain times of the day (or places) in the shopping centre. People born outside Sweden are less likely to feel safe in the shopping mall than the native born Swedes ($\chi^2(1, N = 253) = 4.76, p < 0.05$). The youngest visitors (25 years old and younger) are less likely to declare

feeling unsafe in the shopping centre than all other categories ($\chi^2(2, N = 253) = 3.87, p < 0.05$) and less worried about their families' and friends' safety in the shopping mall compared to older visitors ($\chi^2(2, N = 253) = 8.61, p < 0.01$).

Victimisation and Perceived Safety in the Shopping Centre

Only 5 per cent of respondents declare ever having been a victim of crime, with 1 per cent having been victimised more than once (Fig. 9.2a); often in the afternoon and evening; in functional or public spaces, such as stores, restaurants and the food court; and most commonly victims of pickpocketing, theft, violent conflicts and other types of crimes (Fig. 9.2c). Furthermore, slightly more than a fifth of respondents had already witnessed a crime happening in the shopping mall (Fig. 9.2b). Within the respondent group, shoplifting (theft from stores) is the most common type of crime witnessed, followed by fights, robbery (some heavy robberies in jewellery stores and money exchange stores), thefts and other types of violence and physical damage (Fig. 9.2d). These types of crimes fit well with the incidents recorded by the security company at the mall, but they do not mirror police records, especially because police records more often account for drug-related offences and many economic crimes, such as fraud (Fig. 9.1).

Crime victimisation and witnessing a crime in the shopping centre affects the visitors' declared perceived safety. Although only 5 per cent have previously been a victim of crime, 21 per cent declared witnessing one in the shopping centre. Moreover, 28 per cent of respondents declare having concerns about their personal safety and/or the safety of family and friends in the shopping centre (of which 59 per cent declare feeling unsafe in the evening). Customers who have previously been victimized in the shopping centre are more likely to declare feeling unsafe in the shopping centre in the evenings compared to those who have not been a victim of crime ($\chi^2(1, N = 253) = 4.79, p < 0.05$). Similarly, visitors who have previously witnessed crime in the shopping centre tend to declare themselves less safe compared to those who have never witnessed pickpockets, fights, vandalism or harassment ($\chi^2(1, N = 253) = 9.27, p < 0.00$).

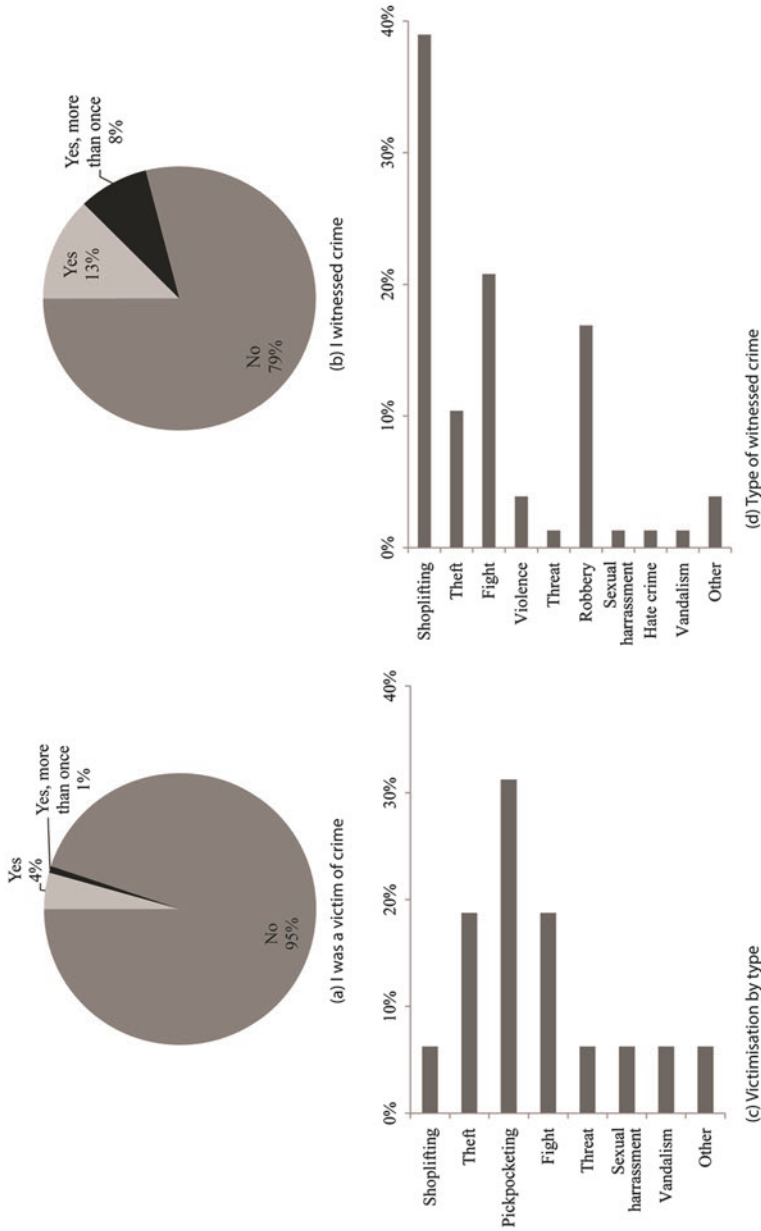


Fig. 9.2 (a) Crime victimisation in the shopping centre, (b) witnessed a crime in the shopping centre; (c) victimisation by type; (d) type of witnessed crime. *N* = 253

Places of Crime and Fear in the Shopping Centre

Different environments in the shopping centre affect individuals' perceived safety differently. For instance, visitors who have concerns about being victimized in the shopping centre are also dissatisfied with their wellbeing in the following environments: food court ($\chi^2(1, N = 253) = 11.25, p < 0.00$), entrances ($\chi^2(1, N = 253) = 2.96, p < 0.05$), corridors outside the stores ($\chi^2(1, N = 253) = 8.35, p < 0.00$), parking lots ($\chi^2(1, N = 253) = 6.45, p < 0.00$) and cinema ($\chi^2(1, N = 253) = 7.81, p < 0.00$).

Interestingly, the places that people fear the most are not exactly the same as the places with the most witnessed incidents (Fig. 9.3). Entrances are perceived as the most unsafe (35 per cent). Food court together with toilets and parking lots account for 17 per cent of those unsafe places. The most frequently declared unsafe functional spaces in particular are jewellery stores (39 per cent), electronic stores (31 per cent) but also banks, money exchange, restaurants and places of entertainment, such as the cinema (Fig. 9.3). The immediate surroundings of the shopping mall are also considered unsafe, in particular where the bus terminal is located. Potential reasons for this dissatisfaction with safety conditions in these places are that they are poorly lit, littered, and/or where 'youth and drunk/drugged people may hang around'.

Further evidence confirms that neighbourhood context has an effect on the perceived safety conditions of the shopping centre. Those who live close by or locally are more worried about safety conditions in the shopping centre than those visitors who live far away ($\chi^2(1, N = 253) = 111.09, p < 0.00$). This group of local visitors are particular fearful in the evening hours in the shopping centre ($\chi^2(1, N = 253) = 12.13, p < 0.00$). However, familiarity with the shopping mall also affects how people judge safety conditions. Those who go to the shopping centre less frequently are more likely to be worried for their safety in the shopping centre ($\chi^2(1, N = 253) = 45.91, p < 0.00$).

Only 4 per cent of the visitors declare that they fear being a victim of crime and that this fear makes them avoid certain places in the shopping centre. The main causes for place avoidance are crowded spots, groups of

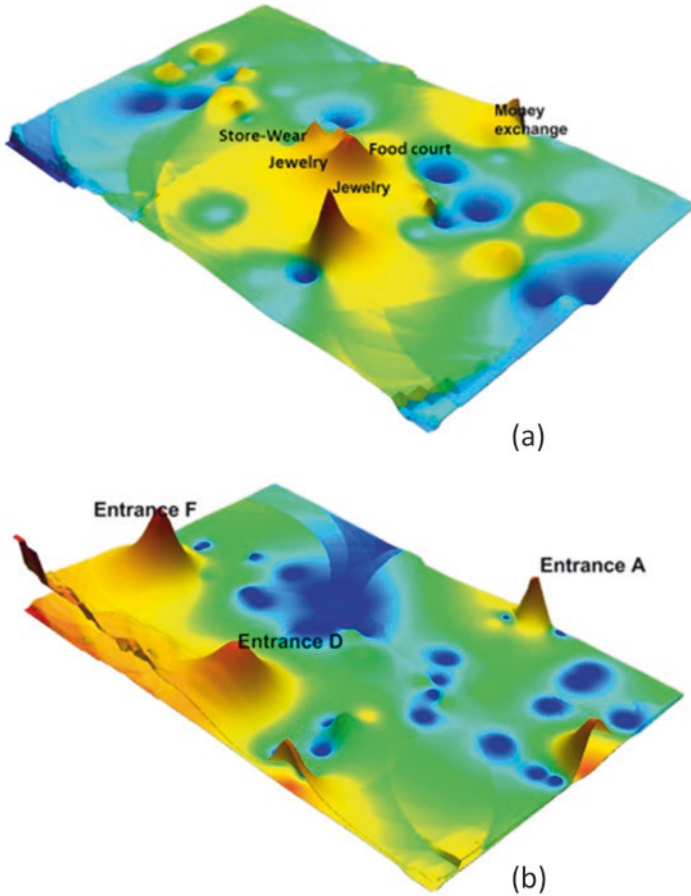


Fig. 9.3 Representation of (a) where shopping visitors witnessed crime and (b) where they felt unsafe in the shopping mall

people moving around in general and in certain areas in the shopping mall, poorly maintained places, poor illumination, knowledge that crimes had occurred at certain stores, witnessing fights. However, 44 per cent of respondents declare avoiding certain times of the evening, especially after 9 pm (or 21).

Perceived Safety by Place Type in the Shopping Centre

The shopping centre was split into five parts classified according to their relevance in relation to their situational conditions of crime and perceived safety (see Ceccato, 2016). *Functional spaces* are those spaces which have a defined function in the shopping mall, such as stores, restaurants, banks or toilets. Findings indicate that 30 per cent of the places perceived as unsafe in the shopping mall belong to the class *functional spaces* (note that only 44 respondent (or 17 per cent) indicate unsafe places in the shopping facility). In this shopping centre, they are composed of jewellery, electronic stores but also money exchanges, banks, restaurants and entertainment places (Fig. 9.4).

The *entrances/exits* are the second type of criminogenic environment as pointed out by Ceccato (2016). They can be of many types; for pedestrians, for cars, for access to the parking lot. In this shopping centre, 34 per cent of places regarded as unsafe are entrances (these entrances are only accessed by foot). It is important to note that when answering this question, some respondents had difficulty in separating the entrances/exits from the shopping mall's *immediate surroundings*; also an important criminogenic factor for what happens inside the mall, especially at this facility that is connected to a regional transportation hub with buses and underground. 11 per cent of places indicated by respondents as unsafe were related to the conditions found in the immediate surroundings, such as rowdy youth, drug-related activities, beggars, drunk people and overall problems of public disturbance.

As many as 17 per cent of the places regarded as unsafe belong to *public spaces*, and they play a key role in terms of safety as they are settings of convergence of people most of the time. Food court but also toilets are examples of these places. Food court concentrates all sorts of property and violent crimes (see Chap. 8). The inappropriate use of toilets by certain groups of visitors (e.g. washing clothes, smoking, noise) motivated respondents to call for personnel supervisors at toilets. Shopping centres also have *transitional areas*, such as corridors, stairs, elevators and paths. Length and width, location, types of materials, enclosure and design all affect how safe these transitional areas are perceived to be. In this

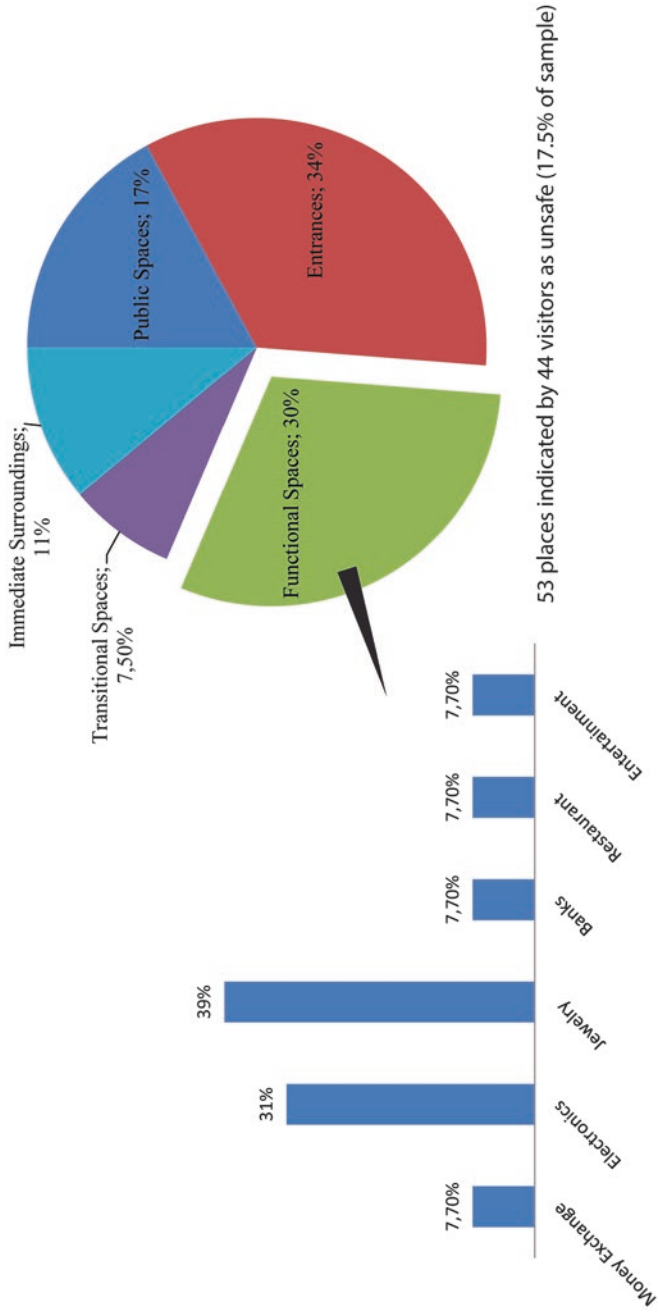


Fig. 9.4 Perceived safety in shopping centre by place types: Unsafe places

particular shopping centre, people complained about feeling ‘too crowded’ at particular times of the day. Others highlighted that some of these transitional areas felt desolate and unsafe (Fig. 9.4).

Suggestions for Improving Safety Conditions

Visitors have different preferences with regards to improving safety conditions in the context of shopping malls. When asked how the environment in the shopping mall can be changed to improve safety, the most popular answers were ‘more and visible surveillance’. Figure 9.5 shows all suggestions classified by type into four categories using situational crime prevention theory and CPTED principles as references. A summary of the main safety problems, indicated by the respondents, by type of environment as well as their suggestions for improvements are presented in Table 9.2.

Having toilet staff present at all times was suggested as an improvement in social control (for example, the toilets have been used for washing clothes and smoking) as well as mall hosts, particularly at the entrances. According to the respondents, better surveillance can be achieved by implementing more (and visible) surveillance cameras in public spaces and in stores as well as increased evening presence of security guards and the police. Walls with mirrors were also suggested in stores, supermarkets and restaurants; and in the general mall environment, displays with real time information showing what is happening in the mall as well as better maps to make it easier to orient oneself. Other suggestions included removing pop-up stores as well as temporary cafés in the middle of the corridors that negatively affect the movement of people and provide easy opportunities to steal. More guardianship could be promoted by providing seating options in the corridors, which is desirable for older adults and children. Crowded corridors were pointed out as a major problem but also entrances/exits, for example:

“Just at this café in the main corridor is extra crowded where there is a queue for the cashier on one side and the shop on the other side” (young woman, frequent visitor who lives close by),

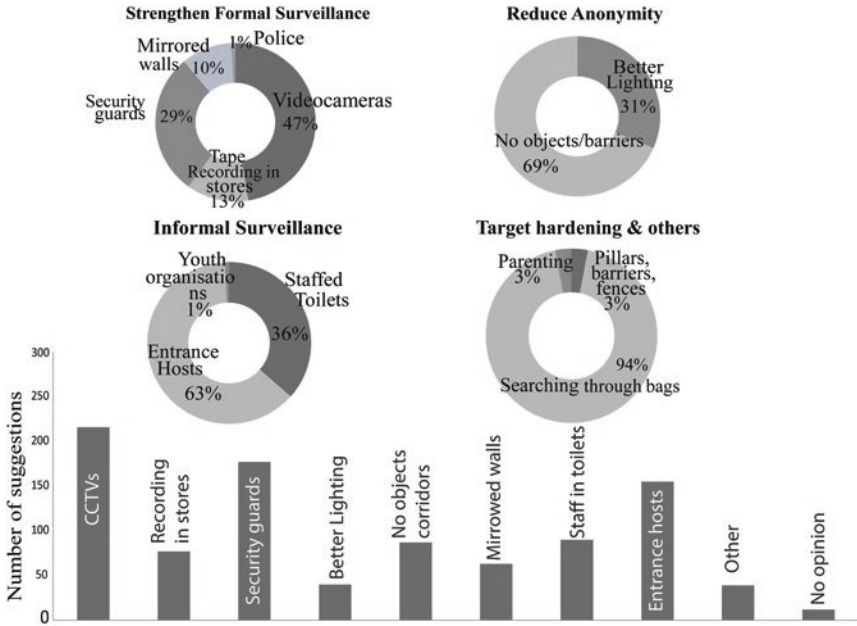





Fig. 9.5 Suggestions for improving safety conditions in the shopping centre according to visitors' preferences

which could potentially be mitigated by:

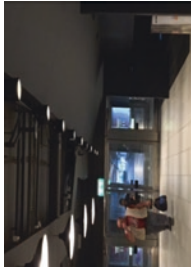
“More open spaces, wider walkways, enhanced entrances, with wider doors so it gets easier to get by” (middle age men who pass by the shopping mall on a daily basis).

Respondents suggested a number of target-hardening measures, including random bags checks at exits in stores and supermarkets. In order to make it easier to catch criminals, respondents also suggested changes in particular environments by improving lighting and reducing physical barriers and hiding spots, especially along corridors and other spaces to maximize natural surveillance. Problems of public disorder at entrances, particularly involving youths, could be tackled by involving youth organisations promoting, for instance, safety walks. A safety walk (or audit) is an inventory of the features of an area that affect individuals' perceptions

Table 9.2 Visitors' perceived safety issues and suggested solutions categorised by types of environments using Ceccato (2016)'s framework

Type of environments	Main perceived safety issues	Suggested solutions
(a) Functional spaces 	"It's stupid that there are two entrances in some stores, then it's easier to shoplift"; "Toilets are unguarded, therefore people misuse them"; "Just outside the restaurants is unsafe"; "Risk to be outside jewellery store"	"Video cameras in stores and restaurants"; "24-hours staff in toilets"; "More visible security guards"; "Mirrors in walls"; "CCTVs"; "Better trained guards"; "Bag checks"; "Relocate facilities that are heavily targeted by crime"
(b) Public spaces 	"Groupings of people staying on site"; "Too noisy"; "Too crowded, many people passing by in the food court, risk for theft and fights"; "Poor surveillance"; "Poorly lit place, poor managed, not clean in food court"	"More open spaces, wider walkways, enhanced entrances, with wider doors and easier to get by"; "More open area"; "Better materials to damp noise"; "More frequent cleaning"; "Presence of guards at rush hours"; "CCTVs"
(c) Transitional areas 	"Bad flow of people in the main corridors"; "Too many barriers"; "poor guardianship"; "Prohibit hover board indoors"; "Too loud music"; "No benches"; "Too narrow corridors; crowded, messy with pop-up stores"; "Poor signage"; "Too noisy"	"Remove 'the stuff' in the middle of the corridors, make them wider"; "Separation of people's flow"; "Visible CCTV"; "Better lighting"; "Use of real time display"; "More green, pleasant"; "An information desk"; "better materials to reduce noise corridors"

(d) Entrances/exits



"People sitting just outside the entrances"; "Poorly lit place, dirty environment, groupings of people staying on site"; "Fights"; "Desolated at certain times in the square and parking lot"

"More guards"; "Hosts at entrance"; "CCTVs"; "Engage (young) people in safety interventions"; "No 'hidden' secluded places"; "Better illumination in the walkways towards exits"; "More culture"

(e) Immediate surroundings



"Location of the mall is problematic and the highway makes worse"; "Homeless and drug addicts at entrances and bus terminal"; "Poor maintenance"; "Alcohol consumption"; "Little/no people in the place, secluded place, poorly lit place"; "Rowdy kids running around in the shopping and outdoors"

"Inspection of lighting"; "Interventions that improve safety along walkways from shopping to square, underground station and bus terminal"; "Take care of people outside entrances"; "More activities for kids and adolescents in the shopping and outside"; "better maintenance and management"

of safety (Ceccato & Hanson, 2013). In this particular case, safety walks could involve both youth and adults.

Other suggested changes involved major modifications to the shopping centre environment, including wider passageways. Others felt that the mall is too enclosed and suggested more open spaces within the mall as well as changes in the stores (one exit instead of multiple ones). Several suggested noise-reducing materials being used inside the mall, especially around the food court. Some suggestions even went beyond changes to the physical environment, such as working actively with social unrest in the surrounding area by creating activities for youths, especially with those who are at risk of offending.

Discussion of the Results

Shopping centre visitors vary in their declared perceived safety of the shopping centre. Following previous research (Box, Hale, & Andrews, 1988; Hale, 1996; Maxfield, 1984; Pain, 1997) and confirming Hypothesis 1, respondents who are familiar with the shopping centre felt safer than those who come to the shopping less frequently. There were also indications of altruistic fear (Trickett, 2009), where people fear for their family and friends. People born outside Sweden are more worried about their safety; younger people, as expected, are less worried; and those who declare feeling less safe are often female. There are several explanations as to why women feel less secure than men (for a review, see Pain, 1997). One explanation is that women are significantly more likely than men to be exposed to sexual violence, a fear that is transferred to other types of victimization. Women also tend to underestimate their own ability to defend themselves against physical attacks, whilst men often overestimate their ability. Another explanation is that media images depict women as vulnerable in a world where mobility and victimisation are also gendered (Ceccato, 2017).

Overall, respondents' perceptions of safety are also influenced by the mall's environmental attributes in different parts of the shopping centre, corroborating Hypothesis 2. Similar to Poyser's (2004) findings, the layout and design of transition areas (corridors, stairs), of public spaces (the

food court in particular), and of entrances and immediate surroundings (illumination, events of public disorder, public square and underground station) did affect perceived safety. Those who live close by are more worried about safety conditions in the shopping centre than those who live far away, perhaps because the shopping centre 'absorbs' (Bowers, 2014) some of the criminogenic conditions of the surrounding areas. However, visiting the shopping centre more frequently makes visitor feel safer, most probably because they become more familiar (Jackson et al., 2017) with the environment.

Very often people would declare feeling generally safe in the shopping centre (85 per cent) but still would point out places in the shopping centre that trigger unsafe feelings. This is probably because, as suggested in the literature of fear of crime, overall perceived safety encompasses additional triggers other than the individuals' experiences of the environment in which she/he spends time. Having been a victim of a crime (5 per cent) or a witness of crime (21 per cent) negatively affects declared perceived safety. Respondents had most often been victims of pickpocketing and theft, and had witnessed shoplifting, robbery and fights.

By comparing incident figures and visitors' perceived safety, one notices that there is a mismatch between where most crimes are recorded (entrances and public places) and where respondents declared witnessing the most incidents (functional spaces). This can be explained by the fact that visitors' perceptions are formed by more serious incidents (robbery with the use of a weapon) that happen in jewellery and electronic stores (functional spaces) and not by minor events at entrances or the food court (incidents of public disturbance in the restaurant area). Moreover, even if they had witnessed most incidents in functional spaces, the places they felt the most unsafe were entrances, overlapping to some extent the geography of crime records (see Chap. 7). Here, fear is triggered by the process of othering, or 'fear of others' (Sandercock, 2005); homeless people blocking the entrances, drug/alcohol addicts, and noisy youth trigger feelings of worry. Moreover, as expected in Hypothesis 4, visitors adopt behaviour avoidance (Riger et al., 1982; Skogan & Maxfield, 1981), either by avoiding certain areas in the shopping mall or certain times of the day, such as late evening hours.

Similar to findings by Kajalo and Lindblom (2016) in Finland, visitors have different preferences with regards to improvement of safety conditions in the context of shopping malls: surveillance, anonymity reduction measures and target hardening. However, they do not differ in all respects. Most suggestions relate to the improvement of formal and informal surveillance (by implementing CCTV cameras, security guards, mall hosts at entrances, staff in toilets, no physical barriers or disruption to the field of view).

Conclusions

Contributing to better knowledge of the perception of safety of shopping centre visitors, this exploratory study demonstrates that safety in a shopping centre, taken here as fear of crime, is dependent on multi-scale factors. Some of these are related to the characteristics of the individuals themselves, while others, are associated with the environmental conditions at work at various levels in the facility and its immediate surroundings, some of them varying over time. While this study is of limited generalizability due to its small sample size (respondents and area of study), it could serve as the basis for future large-scale surveys of shopping malls in Sweden and abroad.

Planning for a safe shopping environment is part of creating an entertaining shopping experience. In order to do that, as suggested by Kajalo and Lindblom (2016, p. 227), 'shopping malls should know their customers better'. However, customers are only one group of people who make use of these public spaces. When talking about everyone's right of access to safe public areas, it is important to ask ourselves as planners; for whom do we want to provide safety? As in many other public places, entrances to shopping centres accommodate groups that are often viewed as a security problem rather than as individuals who have a right to feel safe. In these circumstances, getting right who is responsible for what (e.g. delivering security services for whom, where and when) at shopping facilities and their surrounding areas is essential. Ekblom (1995) reminds us that despite these uncertainties, what remains is the fact that good design, including detailed attention to the layout and good management practices, can be the key to accommodating different interests and ensuring a safe environment for all.

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Note

1. In this chapter, the terms shopping centre, shopping mall, shopping premises and shopping facility are used interchangeably, as synonym.

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Part IV

Retail Crime and the Wider Context



10

Shopping Crime at Place: The Case of Tel Aviv-Yafo

David Weisburd, Shai Amram, and Maor Shay

Introduction

Our study focuses on shopping crime in Tel Aviv-Yafo.¹ We identify all property crimes that occur at shops or malls in Tel Aviv-Yafo between 1990 and 2010. We ask whether shopping crime is concentrated at place; whether such crime concentrations are stable over time; and whether there is strong heterogeneity in crime concentration within areas and across the city. Our research is the first we are aware of to examine the concentration at micro geographic units of shopping at street segments (but see also the analysis of crime concentration at shopping environments in Chap. 8 of this book).

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Over the last three decades there has been a growing interest in the study of crime concentrations more generally at micro geographic levels of analysis. Weisburd (2015) in an analysis of articles published in *Criminology* (the journal of the American Society of Criminology) found that empirical research on what has come to be termed the Criminology of Place or Crime at Place (Sherman, Gartin, & Buerger, 1989; Weisburd & Eck, 2004; Weisburd, Groff, & Yang, 2012) has doubled in recent years, going from less than three percent of research reported in the journal in the 1990s to over six percent in recent years. The impact of this area of work on public policies of crime control is even greater. Hot spots policing (Sherman & Weisburd, 1995) which applies policing strategies to micro geographic units, has been recognized as the crime prevention approach in policing with the strongest empirical support (Braga, Papachristos, & Hureau, 2014; Skogan & Frydl, 2004). There is evidence that it has been adopted in some form by the vast majority of larger American police agencies (Weisburd & Lum, 2005; Weisburd & Telep, 2014) and is widely used around the world (Adepoju et al., 2014; Alexander, 2014; Andresen & Malleson, 2014; Granath, 2014).

Key to the developing interest in crime at micro geographic units of analysis are a series of consistent findings in the criminology of place. Perhaps most important of these is what Weisburd (2015; see also Weisburd & Amram, 2014; Weisburd et al., 2012) terms “the law of crime concentration at places”. Since the late 1980s there have been a series of studies that show that crime is very concentrated at microgeographic units generally termed crime “hot spots” (e.g. see Andresen & Linning, 2012; Andresen & Malleson, 2011; Beavon, Brantingham, & Brantingham, 1994; Brantingham & Brantingham, 1999; Crow & Bull, 1975; Curman, Andresen, & Brantingham, 2015; Hillier, 2004; Jaitman, Santos, & Santos, 2015; Johnson, 2010; Johnson & Bowers, 2010; Kautt & Roncek, 2007; Mazeika & Kumar, 2017; Pierce, Spaar, & Briggs, 1988; Sherman, 1987; Sherman et al., 1989; Weisburd & Amram, 2014; Weisburd & Green, 1995; Weisburd, Bushway, Lum, & Yang, 2004; Weisburd, Morris, & Groff, 2009; Weisburd et al., 1992, 2012; Wheeler, Worden, & McLean, 2016). However, it is difficult to draw strong conclusions regarding the extent to which there are similarities in crime concentration across cities because of the varied nature of the units of analysis, types of data, and types of crime examined. Weisburd (2015) gathered

crime data on five cities coded at the same geographic unit (the street segment), using the same type of data (crime incidents), and the same measure of crime (a broad general measure). What he found was not just that crime was concentrated at specific places, but that the level of crime concentration was fairly constant. Stating the law of crime concentration for larger cities he found that between 4.2 and 6 percent of streets segments in the cities studied produced 50 percent of crime and between 0.8 and 1.6 percent of streets segments produced 25 percent of crime.

A second key finding in this literature is that crime concentration is consistent across time. Weisburd (2015) shows that the 50 percent and 25 percent concentration lines in the four cities studied stay fairly consistent across time periods ranging from just a few to 20 years. He argues accordingly that the law of crime concentration applies not simply across cities but also across time within cities. This finding is reinforced by Weisburd et al. (2012) using group based trajectory analysis. They show that it is not simply that crime concentrates at similar levels across time within a city but that street level trajectories across time are fairly stable. Indeed, they identify a chronic crime trajectory group of street segments that account for just one percent of the streets segments in the city but produce about 22 percent of crime across a 16-year period of time. The finding that crime hot spots are generally stable across time has been replicated in a number of studies (e.g. see Andresen, Curman, & Linning, 2017; Schnell, Braga, & Piza, 2017; Wheeler et al., 2016).

These findings reinforce the theoretical and policy implications of the study of crime at micro geographic units of analysis. For criminology, the law of crime concentration naturally leads scholars to ask what factors lead to such high levels of crime concentration. They also reinforce policy interest in this area of study. Because so much of crime is concentrated in a small number of places, and such places generally remain “hot” over time, it makes sense to devote significant policing and other governmental resources to crime prevention at hot spots of crime. But such focus both theoretically and in terms of public policies would not be appropriate if the crime concentrations observed are simply a rarefaction of community level crime trends. Importantly, research on the geographic concentration of crime at a micro geographic level has also shown that there is strong street by street heterogeneity in crime problems (e.g. see Weisburd et al., 2012). Streets vary greatly within communities in terms

of their levels of crime. Moreover, hot spots of crime are spread throughout the city, and even in so called “bad parts of town” most streets are free of crime (Weisburd & Amram, 2014; Weisburd et al., 2009, 2012).

These findings have been key to recent developments in the criminology of place. However, the studies conducted so far have generally examined crime as an overall social problem. In most studies crime is measured as a combination of the varied types of crime, ranging from disorder to violent crime to property crime. While some studies have begun to examine broad types of crime such as property crime, juvenile crime, or violent crime (Andresen and Malleson, 2010; Braga, Papachristos, & Hureau, 2010; Weisburd et al., 2009), and even some specific crimes such as gun violence (Braga et al., 2010), our knowledge so far has been dominated by a general evaluation of crime problems. There are reasons for this more general approach to crime in this literature. First, there is evidence that crime types cluster at micro geographic levels. At the most concentrated hot spots in the city, a wide variety of crime types are observed (Brantingham, 2016; Weisburd et al., 1992). Second, examining specific types of crime at a micro geographic level can lead to sparse data which create statistical barriers to analyses of trends (Bernasco & Steenbeek, 2017; Hipp & Kim, 2017). Finally, a strong policy focus has naturally led to identifying very high activity crime hot spots, often including a combination of crime types, for police attention. But whatever the reasons for a focus on crime generally, it is certainly important to study how the assumptions of the criminology of place are confirmed or challenged by studying specific crime types.

That is the focus of our study of shopping crime in Tel Aviv-Yafo. We ask whether the law of crime concentration applies to shopping crime; whether crime concentrations are stable over time; and whether there is strong heterogeneity in crime concentration within areas and across the city. Our key question accordingly is whether the key findings of the criminology of place are replicated when applied to shopping crime?

The Study

Our data are drawn from the city of Tel Aviv-Yafo, which is the heart of Israel’s largest metropolitan urban area. The city itself had a population of 404,400 for the year 2010 (the last year of our data collection), which

Table 10.1 The databases used in the study

Data type	Source	Variable	Year	Description	Unit	Average	Standard deviation
Crime	INP—Israel National Police	Crime	1990–2010	Crime rate per 10,000 inhabitants per year	Ratio	1188.29	204.18
			1990–2010	Property crime rate per 10,000 inhabitants per year	Ratio	668.49	121.92
			1990–2010	Property crime in shopping centers and malls rate per 10,000 inhabitants per year	Ratio	65.13	10.62
Land use	Tel Aviv–Yafo municipality	Land use	Until 2012	Street segment with shopping centers or malls	Binary		
Street segments	MAPA		2014	Street segments length	Meter	71.12	54.97

makes it the second largest city in the country behind Jerusalem. But the metropolitan area of Tel Aviv-Yafo includes a population of 3.3 million, nearly 43.4 percent of the total population of Israel. The city was established in 1909, and played a central role in the development of the Zionist movement in the country as the first new city in the country (then under British Mandate rule). It was the center of the political renaissance of Jewish institutions in the country, and of the new socialist labor movement of the twentieth century. It is today the economic and cultural capital of Israel. It is the home of the Israeli stock exchange and includes the corporate offices of many international companies based in Israel. It is also home to such key cultural institutions as the Israeli Opera, and Israel's most prestigious theater, 'HaBima.' And as a tourist attraction with entertainment available 24 hours a day, it is nicknamed in Israel 'the city that never sleeps'.

The city population is primarily of Jewish background (92 percent), though it includes a small minority population composed of Arab Muslims and Arab Christians and non-Arab Christians. The Arab population (3.9 percent) is concentrated in the old city of Yafo, incorporated into Tel Aviv-Yafo in 1948, and is primarily Muslim. Tel Aviv-Yafo, like other major cities around the world, includes an overrepresentation of older citizens, younger professionals, and students. The rate of elderly persons (aged 65 or over) in Tel Aviv-Yafo, for the year 2014, is 14.9 percent which is higher than the average number of elderly in the general population (10.8 percent). The rate of the younger population in the city aged 20–35 is 27 percent, while the national rate is 21.4 percent (Tel Aviv-Yafo Municipality center for economic and social research, 2016).

The city has emerged in recent years as a major urban center, which is reflected by the large growth of urban business towers and residences across the city. Tel Aviv-Yafo's average property crime rate for the study period is 668 incidents per 10,000 persons (see Table 10.1 for a description of the data bases used in the study). The average rate of property crime at shops and malls is 65 incidents per 10,000 persons.

Crime Incidents at Street Segments

We used computerized records of written reports, often referred to as ‘incident reports’ to examine property crime at shops and malls over a 20-year period (1990–2010). Incident reports are generated in Tel Aviv-Yafo by police officers after an initial response to a request for police service or as a result of a crime identified by the police. In this sense, incident reports are more inclusive than arrest reports, but less inclusive than calls for service. Incident reports have been used in a series of other studies examining crime at place (e.g. see Weisburd, 2015; Weisburd et al., 2004, 2012), thus allowing us to make direct comparisons to prior research. Tel Aviv-Yafo experienced a total of 32,046 property crime incidents at shops or malls during the research period. The overall geocoding rate for the entire research period was 74 percent, a relatively low rate of geocoding compared to other studies (e.g. Ratcliffe, 2004; Weisburd, 2015). The geocoding rate for crime more generally in Tel Aviv-Yafo was somewhat higher, averaging 77 percent across the study period. In 1990 only 60 percent of shopping crimes could be geocoded to a specific address. But rates improved considerably over time. Between 2005 and 2010 82 percent of the crimes could be assigned to a specific address. A total of 20,471 property incidents are included in our analyses.

The geographic unit of interest for this study is the street segment (sometimes referred to as a street block or face block) defined as the two block faces on both sides of a street between two intersections. It is important to note that the street segment approach fits easily to Tel Aviv-Yafo in part because it is a new city which was created using the street grid model. We follow Weisburd et al. (2012; Weisburd, 2015) in choosing this unit of analysis and also follow their general logic for its utility.

Scholars have long recognized the street segment’s relevance in organizing life in the city (Appleyard, Gerson, & Lintell, 1981; Brower, 1980; Jacobs, 1961; Taylor, Gottfredson, & Brower, 1984; Unger & Wandersman, 1983). Taylor (1997, 1998), for example, argues that the visual closeness of block residents, interrelated role obligations, accep-

tance of certain common norms and behavior, common regularly recurring rhythms of activity, the physical boundaries of the street, and the historical evolution of the street segment make the street block or street segment a particularly useful unit for analysis of place (see also Taylor et al., 1984).

Beyond the theoretical reasons for using street segments to understand crime at place, there are other advantages. Unlike neighborhood boundaries, street segments are easily recognized by residents and have well-defined boundaries (Taylor, 1988). Moreover, the small size of street segments minimizes spatial heterogeneity and makes for easier interpretation of significant effects (Rice & Smith, 2002; Smith, Frazee, & Davison, 2000), and processes of informal social control and territoriality (Taylor et al., 1984) are more effective in smaller settings such as street segments. Operationally, the choice of street segments over even smaller units such as addresses (see Sherman et al., 1989) also minimizes the error likely to develop from miscoding of addresses in official data (see Klinger & Bridges, 1997; Weisburd & Green, 1995). We recognize, however, that crime events may be linked across street segments. For example, a shopping center and problems associated with it may transverse street segments in multiple directions. Nonetheless, the street segment offers a useful compromise because it allows a unit of analysis large enough to avoid unnecessary crime coding errors, but small enough to avoid aggregation that might hide specific trends.

Following Weisburd et al. (2012; see also Groff, Weisburd, & Yang, 2010), we operationalized the definition of street segments by referring directly to the geography of streets in Tel Aviv-Yafo. Prior studies have often relied upon 100 blocks to approximate the geography of street segments (e.g. Groff, Weisburd, & Morris, 2009; Weisburd et al., 2004). In this approach, researchers assume that the actual streets in a city follow the overall rule that a street segment includes addresses ranging a hundred numbers, for example from 1–100, or 101–200. While this approach is common and identifies broadly the geography of street segments in the city, we wanted our study to match as much as possible the reality of the behavioral settings of streets between intersections. We defined 16,446 valid street segments in Tel Aviv-Yafo. We

excluded bridges, highways, entry ramps, tunnels, parking and other street types that did not have the potential for residential or commercial activities. The average length of a street segment was 205 feet, or 62 meters. The majority of the streets segments (roughly 75 percent) are between 82 and 230 feet (25–70 m). Using our definition, very few streets (less than 2 percent) ended up longer than 650 feet (200 m). 4443 streets segments in Tel Aviv-Yafo have shopping crime on them between 1990 and 2010.

Results

Shopping Crime in Tel Aviv-Yafo

We begin our discussion by examining some general trends in shopping crime during the study period. Figure 10.1 shows the overall crime trends in Tel Aviv-Yafo between 1990 and 2010. Figure 10.2 shows the shopping crime trend, which includes about 5 percent of crime in the city. While crime overall increases from 1990 until 2003, shopping crime increases only through 1998. After this it follows the general declining crime trend that is evidenced in the overall crime trend. One potential explanation for this trend in our data was the growth in the late 1990s of indoor shopping areas (see later), which provide greater security in and around stores.

Looking at shopping crime across days of the week and months of the year, our findings reflect the specific social rhythms of life in Israel as contrasted with other developed countries (Fig. 10.3). The day with the least shopping crime is Saturday, because Saturday rather than Sunday is the official day of rest in the country. The highest shopping crime days are Thursday and Friday, reflecting in part the increase in shopping as Israeli residents prepare for the Saturday Sabbath and also because most stores are closed on Saturday. The trend across months is fairly stable with a large spike in January. December in Israel is not a high shopping month, in part because Christians comprise only 2 percent of the popu-

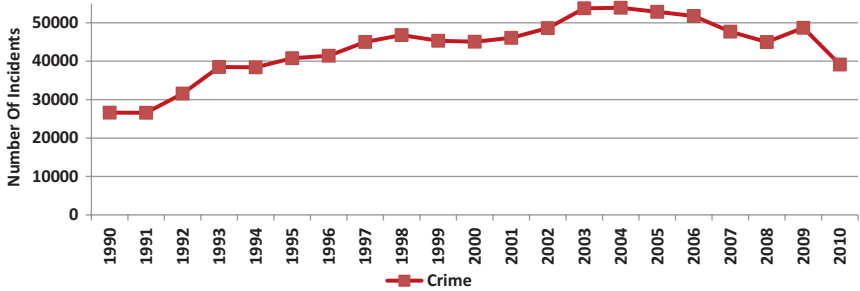


Fig. 10.1 Crime in Tel Aviv-Yafo 1990–2010

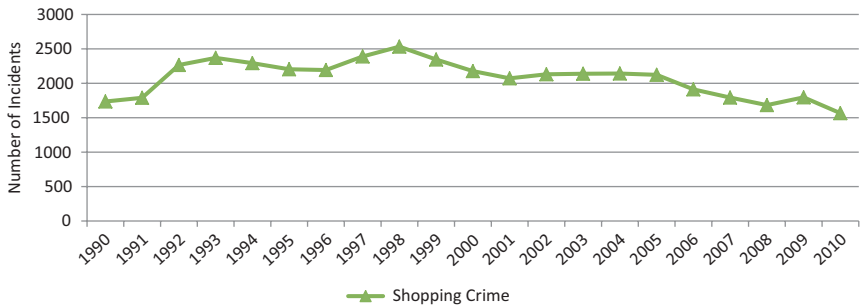


Fig. 10.2 Shopping crime in Tel Aviv-Yafo 1990–2010

lation. We could not find a specific explanation for the increase in shopping crime in January.

Finally, it is important to note that other types of crime besides “shopping crime” occur at shops or malls in Tel Aviv-Yafo. While shopping crime makes up about 70 percent of crime incidents in shops or malls, other types of crime incidents also occur. About 13 percent of crimes occurring at shops or malls are disorder offenses such as violations of public order. About 6 percent of crime incidents are violent crimes against persons. In our analyses we focus only on property offenses, including business burglary, theft, robbery and aggravated robbery.

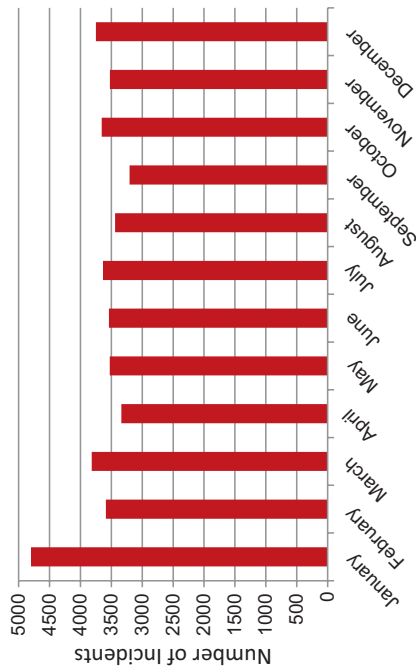
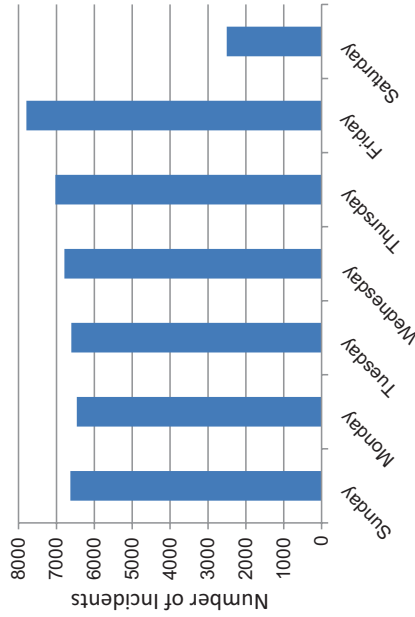


Fig. 10.3 Shopping crime across months and days of the year

Does the Law of Crime Concentration at Places Apply to Shopping Crime?

We began by asking whether the examination of a specific crime like shopping crime would yield results that reinforce or challenge key findings in the criminology of place. As we noted earlier the most important proposition in this area of study is the law of crime concentration (Weisburd, 2015; see also Weisburd & Amram, 2014; Weisburd et al., 2012). The law of crime concentration states that *for a defined measure of crime at a specific microgeographic unit, the concentration of crime will fall within a narrow bandwidth of percentages for a defined cumulative proportion of crime* (Weisburd, 2015, p. 138). Weisburd found that for larger cities, including Tel Aviv-Yafo, the bandwidth of the 50 percent concentration level was between 4.2 and 6.0 percent. For the 25 percent concentration level the bandwidth was between 0.8 and 1.6 percent.

The general idea of the law of crime concentration applies to shopping crime. Crime is clearly concentrated in a relatively small number of places. However, the rate of concentration is considerably higher than that found for crime generally in large cities (Weisburd, 2015). About 0.4 percent of streets segments produced 25 percent of crime between 1990 and 2010, and about 1.1 percent of the streets segments produced about 50 percent of shopping crime. This higher level of concentration is not surprising for two reasons. First, shopping crime events ($N = 20,471$) spread across 21 years represent sparse data spread across over 16,446 street segments. Even if shopping crime was not at all concentrated and we placed every event on a separate street, about 6 percent of street segments would produce 50 percent of crime each year ($20,471 \text{ crimes}/21 \text{ years}/16,446 \text{ streets segments} = 0.059$). Second, the fact that there must be a shop or mall for a shopping crime to occur further concentrates these activities. Irrespective, shopping crime concentrates at a rate much greater than a simple evenly spread distribution would predict.

Are Crime Concentration Levels Stable Across Time?

The principle of the law of crime concentration appears to apply to shopping crime. A second key question, is whether crime concentrations are stable across time. Our data follow generally those of prior studies.

The bandwidth for the 25 percent and 50 percent concentration lines are fairly stable across the 21-year time period studied (see Fig. 10.4). This stability is evidenced most clearly in the case of the 25 percent concentration line. It varies between 0.2 and 0.4 percent. There is greater heterogeneity in the case of the 50 percent concentration line. In this case the concentration levels vary between 0.7 and 1.4 percent. However, it is important to note that Weisburd (2015) observed larger variability more generally in crime concentrations in Tel Aviv-Yafo as contrasted with other cities he examined.

We also wanted to examine whether crime problems were primarily concentrated at specific street segments over time. Are there chronic crime hot spots for shopping crime? Prior research in the criminology of place has shown that a relatively small group of chronic crime hot spots produce a substantial proportion of crime over long periods of time. Weisburd, Groff, and Yang (2014), as we noted earlier for example, found that one percent of chronic crime hot spot streets segments accounted for about 22 percent of crime during a 16-year period, and that most street segments were found in relatively stable trajectories. We replicated this approach in the case of shopping crime applying group based trajectory analysis (see Nagin, 2005; Nagin & Tremblay, 1999) to our data (see Fig. 10.5). This approach provides the opportunity to identify common trends of crime at street segments over the 21-year observation period. “Group-Based Trajectory” analysis is designed to identify latent groups of individuals with similar developmental pathways.² In our case, it

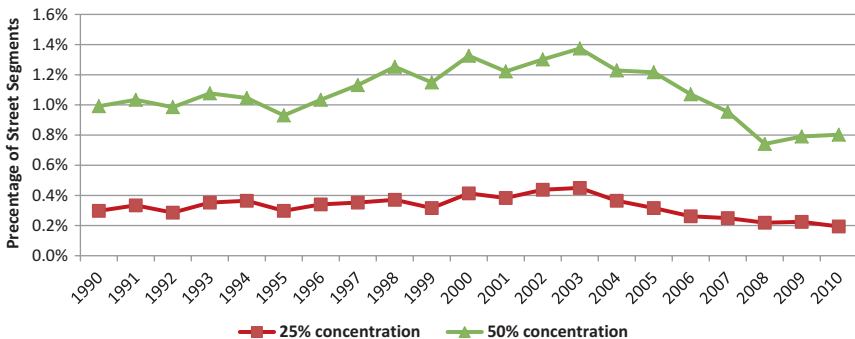


Fig. 10.4 Shopping crime concentrations across time

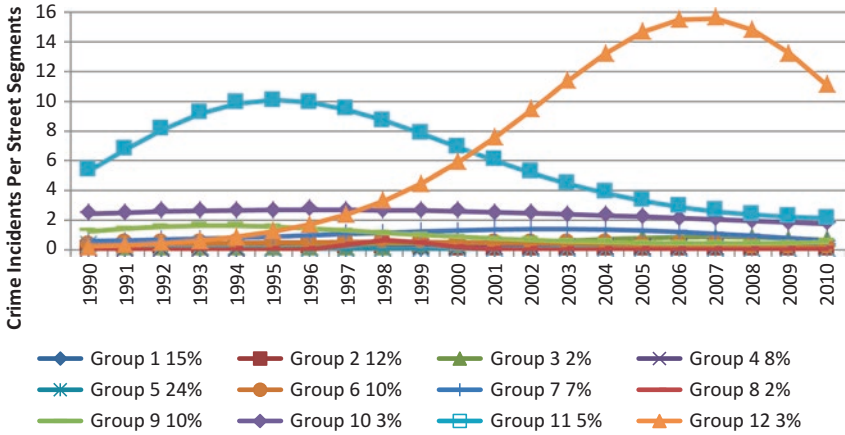


Fig. 10.5 Property crime trajectories

allows us to identify whether a small group of chronic crime hot spot street segments are responsible for a large number of shopping crimes in the city.

Overall, the trajectories of shopping crime follow prior studies of general crime (e.g. see Weisburd et al., 2004, 2012, 2014; Curman et al., 2015; Gill, Wooditch, & Weisburd, 2016) in that most of the streets segments are found in stable trajectories. In turn, as in prior studies there are a small number of streets in very high crime trajectories. Streets in trajectory groups 11 and 12 have starkly higher rates of crime than other streets segments in the city, though the two trajectories include only 14 street segments. But these 14 street segments account for almost 8 percent of the shopping crime during the study period. Trajectory 11 represents by far the highest shopping crime trajectory at the start of the study period but then declines to the level of Trajectory 10 which can be termed a moderate crime trajectory. In contrast, Trajectory 12 begins among the lowest average shopping crime streets, and by the end of the study period is clearly the most crime prone of the shopping crime trajectory groups.

Importantly, these trends appear to be related to a shift in the social structure of shopping crime during the period of study. As we noted earlier, large malls began to develop in Tel Aviv-Yafo in the late 1990s. Trajectory 12 which represents a sharply increasing trajectory pattern includes three “mega malls” with large numbers of shops. For example, the Azrieli Center, housed in the famous three towers of the Tel Aviv skyline is one of these sites. In contrast Trajectory 12 includes some of the largest outdoor shopping areas in Tel Aviv. To some degree, these two small trajectories reflect the general trend of shopping in Tel Aviv, with a move from traditional outdoor shopping areas to indoor malls. The Israeli press reports that shopping malls contribute 41 percent of the annual revenue of the entire retail industry, with profits of about two billion dollars a year (Marmor, 2015).

Looking at Trajectories 9 and 10, the idea of the concentration of shopping crime is further reinforced. These are the next highest trajectory groups, representing a stable and somewhat decreasing moderate pattern. Adding these groups to Trajectories 11 and 12 we include just 94 street segments but over 21 percent of all shopping crime. This reinforces our findings of crime concentration. But it also points to greater variability in shopping crime at high rate street segments than has been identified in studies of crime more generally. It is true that most streets have little or no shopping crime. But three of the four highest rate trajectories show a considerable degree of variability in trends over time. This may reflect the overall volatility of shopping pattern behavior, and of the changes as we have noted in the physical structure of shopping crime—for example from shops on the street to indoor malls.

Are Hot Spots of Shopping Crime Spread Across the City?

One of the key findings in the criminology of place is that hot spots of crime are spread throughout the city (Weisburd et al., 2004, 2009). While there may be more hot spot streets in certain neighborhoods, the idea that one bad area produces the bulk of crime problems has been challenged in this work. Figure 10.6 shows the street by street variability



Fig. 10.6 Shopping crime in central city areas of Tel Aviv-Yafo

in shopping crime in the central areas of Tel Aviv-Yafo. What is apparent from the figure is that trajectories with higher rates of crime (e.g. 9–12) are fairly spread out though they represent overall a relatively small number of streets. Streets without shopping crime are often adjacent to streets with higher levels of shopping crime. And there is great variability in the colors on this figure, suggesting the strong street by street variability of levels of shopping crime even for streets with some shopping crime.

Discussion

Our paper has examined a specific type of crime, shopping crime, in terms of key findings of the criminology of place. As we noted at the outset, the bulk of study of crime and place has used general crime measures. We looked at three key empirical regularities that have been observed in prior studies of micro geographic hot spots. The first is termed the law of crime concentration (Weisburd, 2015), and argues that a relatively small number of streets will produce a substantial proportion of the crime problem. The second argues that such concentrations will be consistent not only across cities but also across time. Finally, prior studies show strong heterogeneity within areas and spread of hot spots across the city.

Our first conclusion is that shopping crime follows a general law of crime concentration. Just 0.4 percent of the streets produce a quarter of shopping crimes. And 1 percent of the streets produce 50 percent of shopping crime. However, this means that shopping crime is much more concentrated than crime generally, a result that is predicted by the relatively small number of events to number of streets across the time period. But this level of concentration is also predicted by opportunity theories of crime (e.g. see Clarke, 1995; Cohen & Felson, 1979). Shopping crime requires that there are shops on streets. Though many streets in a highly concentrated urban setting like Tel Aviv-Yafo have shopping venues, this is not the case for a large proportion of the streets, as represented by the fact that only 4443 of 16,446 streets had any shopping crime during the 21-year study period.

We also found that shopping crime concentrations are fairly stable across time in the city. This again confirms the concentration of crime at place across time that has been observed in regard to crime more generally (Weisburd, 2015). But our study yielded a very interesting insight that did not follow prior analyses. Using group based trajectory analysis, we tried to identify whether there were specific developmental trends in shopping crime at streets in the city, and particularly whether we could identify chronic crime hot spots. As in prior studies we found that most streets are part of stable crime trajectories.

But our results regarding the highest crime streets yielded an interesting set of findings that depart from prior studies. On the one hand, we find again that a relatively small number of very high crime streets are responsible for a meaningful proportion of the crime problem. In this case, just 94 streets segments in the highest crime trajectories produce more than 21 percent of crime. But of this group many streets evidence highly variable crime trends. The two highest crime trajectory patterns evidence sharply divergent trends. These patterns are very different from the consistently chronic crime streets segments observed for example by Weisburd et al. (2004).

The idea of stable chronic hot spots has been particularly important in the development of hot spots policing. The finding of crime concentration is not in itself enough to justify hot spots policing efforts. It could be for example, that crime concentrates at a certain number of streets but that those streets shift considerably year to year. In this sense the law of crime concentration could be a function of regression to the mean. In such a scenario, the benefits of hot spots policing would be challenged because there would be a natural movement of crime to different places each year. Do our data challenge the idea that the police or other government agencies can get tremendous benefit by focusing on high crime streets that would continue to be high crime without intervention?

While our data do not contradict this key policy implication of hot spots research they suggest a nuance that is relevant for studies more generally in this area. What we observe is a shift in the highest crime streets that appears to follow a shift in shopping patterns more generally in the city. The development of malls was likely to have created a shift in where

shopping is concentrated in Tel Aviv-Yafo. Malls were not necessarily built on the same streets where shops are located. Indeed, large malls would likely be developed in large available open spaces in the city that were not centers for ordinary shopping activity. We think that the variability we observe in higher crime trajectories reflects these structural changes in shopping crime. We cannot be certain of these trends because we do not have hard data on shopping in the city at a micro geographic level. Nonetheless, these patterns do fit the development of malls as shopping venues in Tel Aviv-Yafo. More generally, our data suggest the importance of taking into account the dynamic development of places in urban areas. Shifts in land use and development can have dramatic impacts on the trajectories of crime at place in the city, as evidenced in this examination of shopping crime in Tel Aviv-Yafo.

Our final set of findings regarding the spread of shopping crime hot spots in the city, and the heterogeneity of crime also provide further support for the application of key principles of the criminology of place to specific types of crime. Shopping crime streets were found throughout the central areas of the city. In turn, there was also strong heterogeneity street by street in the levels of shopping crime. This heterogeneity is in some sense surprising, given the clustering of shopping areas in cities. We do not have data on this, but we would suspect that there is more variability street by street in levels of shopping crime than there is in actual shopping activity street by street in the city. What would lead to streets in nearby locations with shops for example, to having different crime levels?

John Eck (2018) provides important insight into this issue in a recent paper that examines the variability of resources for crime prevention. He argues that an important predictor of crime is the ability of place managers to exercise preventive crime prevention measures. His approach assumes that opportunities for crime are balanced against crime prevention. And the ability or motivation for engaging prevention approaches varies place to place. Following Eck we might imagine that the efforts that shops take to prevent crime will vary a good deal. Some will engage more stringent security tools such as alarms and others not. Some might have better locks or gates, or hire private contractors to “police” the shop on a regular basis. If we combine this variability with the variability in the value of goods and the ease by which they can be taken or fenced on the

illegal market, we can get a sense of the very strong variability in crime patterns that would develop even on streets that have relatively similar venues for shopping.

Conclusions

Our study is one of the first we know of to examine whether the key findings of the criminology of place are confirmed in study of a very specific crime category. We identified all property crimes that occurred at shops or malls in Tel Aviv-Yafo between 1990 and 2010. We asked whether the “law of crime concentration” applies to shopping crime; whether crime concentrations are stable over time; and whether there is strong heterogeneity in crime concentration within areas and across the city. Our answer in each case was that studying this specific crime category provides general confirmation of the research that has been carried out on more general crime categories. But we also observed differences that suggest that specific types of crime may lead to different concentrations and patterns. This is reflected by the much higher concentration of shopping crime than crime generally. It is also reflected in different developmental trends at street segments that appear to follow the development of malls generally, and in particular “mega malls” in the city. Our research accordingly suggests both the consistency of findings in the criminology of place, as well as the importance of recognizing the specific structural factors affecting specific types of crime.

Our findings also provide important information for policy makers and practitioners. It suggests that the idea of hot spots policing can be applied directly to shopping crime. A very small proportion of places produce most shopping crime. As in hot spots policing more generally, the police will gain greater efficiency by focusing on high crime places. But our results also suggest that the economics of shopping will affect the distribution of shopping crime. The development of large shopping centers and malls influenced the locations of high rate shopping crime places. The police and policy makers should follow closely such developments in constructing crime prevention practices.

Notes

1. This research was supported by a grant from the Israel Science Foundation (No. 793\14).
2. We started by testing three trajectory groups, then four, then five, six, and et cetera. To identify the best model, we began by comparing the Bayesian Information Criterion (BIC). At 13 trajectories the BIC did not decrease, indeed it increased at 13 trajectories. A second criterion we used was to examine the “posterior probabilities” of the group assignment for group membership. The validity of the 12 trajectory model is confirmed by the posterior probabilities for the different trajectories. Nagin (2005) suggests that posterior probabilities should be higher than 0.7 indicate of an accuracy of the group membership (Nagin, 2005). The value of the group posterior probabilities for our 12 group model was above 0.9 for each group.

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11

Crime at the Intersection of Rail and Retail

Andrew Newton

Introduction

This study is motivated by three factors. Firstly, there has been a growing research interest into crime on public transport (Ceccato, 2013; Ceccato & Newton, 2015; Marteache & Bichler, 2016; Newton, 2014). Secondly, with the exception of cyber-crime and fraud, shoplifting is one of the few crime types in England and Wales to have increased over the past decade. This increase is also evident at shops located inside rail stations. However, despite this identified trend, no known studies have explicitly explored shoplifting at rail station shops. Thirdly, it is evident that rail stations are becoming more diverse. They no longer exist purely as a form of transport. For example, large stations now contain entertainment facilities and shopping centres which might make them more susceptible to shoplifting. Taking these three factors together, it is therefore argued that research into shoplifting at rail stations shops is both timely and necessary.

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Aims and Research Questions

The aim of this research is to examine patterns of shoplifting at rail stations in England and Wales. In order to achieve this four research questions (RQs) have been identified.

- RQ1: Is shoplifting concentrated at particular rail stations?
- RQ2: What temporal patterns of shoplifting at rail stations are evident?
- RQ3: What type of shops are most victimised; and what types of merchandise are most commonly stolen from railway shops?
- RQ4: Is there any relationship between shoplifting at stations (rail station shops) and shoplifting in the vicinity of stations (non-rail station shops nearby)?

Theoretical Background

Definitions

For the purposes of this study, shoplifting is defined as ‘the theft of goods from retail establishments carried out by non-employees during an establishment’s opening hours’ (adapted from Smith, 2013, p. 5). Shoplifting is also referred to as ‘shop theft’, ‘shrinkage’ and ‘boosting’. For this study the term shrinkage is avoided, because in the transportation literature this term is also used to describe technological approaches to reduce travel time and increase journey efficiency (Newton, 2016). For consistency, the term shoplifting will be used hereafter.

Context

In England and Wales there has been a steady increase over the past 10 years in shoplifting recorded at rail station shops (Fig. 11.1a). Outside of the rail environment, a similar picture of increasing levels of shoplifting is evident (Fig. 11.1b). These increases have been identified

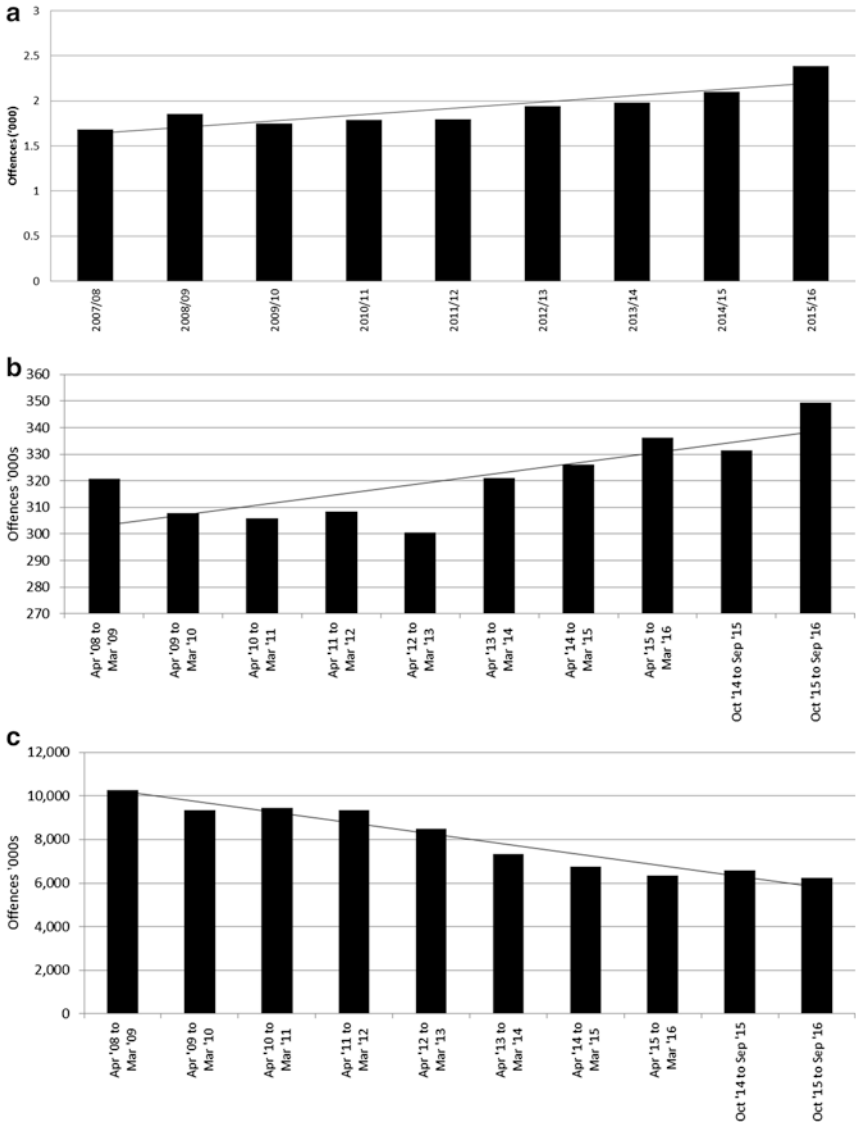


Fig. 11.1 (a) Theft at shops in rail stations in England and Wales (2007–2016). Source: British Transport Police Annual Crime Reports. (b) Shoplifting (all shops) in England and Wales (2008 to 2016). Source: Home Office Annual British Crime Survey/ Crime Survey for England and Wales (CSEW). (c) All recorded crime in England and Wales (excluding fraud and computer misuse) (2008 to 2016). Source: Home Office Annual British Crime Survey/Crime Survey for England and Wales (CSEW)

internationally, for example in Finland (Kajalo & Lindblom, 2015). This is not consistent with the more general crime trends in England and Wales. Over the past decade crime rates, excluding cyber-crime and fraud, have been steadily declining (Fig. 11.1c). This general decline in crime rates has also been observed on the rail environment (Newton, 2014). Therefore in England and Wales over the past decade, shoplifting in general, and shoplifting specifically at rail station shops, is increasing against a national and international picture of decreasing crime rates.

Theft at Rail Stations

Few studies have examined commercial victimisation at the intersection of rail and retail. Ceccato et al. (2013) examined theft at rail stations in Stockholm but their analysis aggregated three crime types, robbery, burglary, and theft, into a single category of property crime. They found shoplifting accounted for one fifth of thefts at stations. In contrast, Ashby, Bowers, Borrion, and Fujiyama (2017) found shoplifting accounted for 8 percent of thefts on rail in England and Wales. This difference may be a result of: differing recording practices; how shoplifting in rail environments is categorised; differing levels of reporting; or cultural differences between cities or countries. However, as few (if any) studies have explicitly explored shoplifting at rail stations, international comparisons are limited. Some studies have explored theft and transport more generally: Marteache and Bichler (2016) examined theft from baggage at US Airports; Sidebottom and Johnson (2014) investigated bicycle theft at stations; Gentry (2015) analysed theft of mobile phones; and Newton, Partridge, and Gill (2014a, 2014b) explored pickpocketing on the London Underground. However, for all these studies the victims are the rail passengers or staff rather than commercial business. Due to the paucity of studies that explicitly examine shoplifting at rail stations, and as shoplifting is perhaps different to other types of theft, it is therefore necessary to draw upon the findings of studies into shoplifting from outside of the rail environment.

Shoplifting Outside of the Rail Environment

Clarke (2012) and Smith (2013) highlight a range of key factors relevant to studying shoplifting including: the potential offenders involved; their Modus Operandi (MO); the geography of shoplifting including the spatial and temporal patterns of offending; the merchandise most at risk of being stolen; the type of premise from which items are stolen; the security and place management of shops; and the difficulties in accurately measuring and recording levels of shoplifting. As the data available for this research does not include MO data for shoplifting this is not explicitly discussed here, although is highlighted as an important avenue for further research.

Theoretical Explanations for Shoplifting: Offender Type

As with all crime types, no singly accepted theoretical explanation of shoplifting exists. Before attempting to distil possible explanations of shoplifting it is useful to consider the different types of shoplifters who may operate. Carmel-Gilfilen (2011) identified two types of shoplifter; 'experts' and 'novice' offenders; which Clarke (2012) expanded to three core types; 'petty' offenders, 'more determined' offenders, and 'organised gangs'.

Perhaps the most widely accepted explanation for shoplifting is that it is an opportunistic crime (Hayes, 1999). This is underpinned by studies linking shoplifting to routine activity perspective and rational choice theory (Salmi, Kivivuori, & Lehti, 2015; Smith, 2013). Tonglet (2002, p. 336) suggests shoplifting decisions are influenced by 'pro-shoplifting attitudes, social factors, opportunities, and perceptions of low risks of apprehension'. Here opportunity is explicitly stated as part of the offender decision making process. The study also ties in with rational choice perspective identifying both the low risks of being caught and pro-shoplifting attitudes. Smith (2013) suggests many shoplifting offenders are juveniles. The findings of these studies all support the notion of shoplifting as

opportunistic. This is perhaps most likely for 'novice' and 'petty' offender types, although it is acknowledged this is not all encompassing, for example not all juveniles will be 'novice' or 'petty' offenders.

However, there are criticisms of the opportunity model. Smith (2013) found alternative explanations for shoplifting included stealing to fund a drug habit, and to provide food for an offender's family. Katz (1988) identifies the 'sneaky thrills' of shoplifting and its 'seductive psychic and social rewards'. The previously quoted Tonglet study highlighted social factors as important, and there are motivational differences between shoplifting: 'to feed a family'; 'to feed a drugs habit'; and 'to make a profit'. Offenders who shoplift for the first two reasons may fall within the 'more determined' shoplifter type, and thus the 'rationality' of their decisions, a central component of the opportunity theory of crime, could be questioned. Katz's 1988 study also revealed alternative explanations of shoplifting included the social status associated with being a gang member. Whilst this supports Clarke's third shoplifter typology of 'organised gangs' the extent to which these offenders are opportunistic is also questionable. A central consideration here is whether any or all of these offender types may operate within the rail environment. It is suggested an argument can be made for all. However, to explore this further it is useful to consider the geographical patterns of shoplifting, the types of product stolen, and nature of stores present within rail stations.

Spatial and Temporal Patterns of Shoplifting

If shoplifting is accepted as mostly an opportunistic crime, then it is likely to be clustered at certain locations and particular times (Newton, 2014). A key question here is the extent to which shoplifting is concentrated at particular stations, the notion of risky facilities (Marteache & Bichler, 2016). One of the more comprehensive studies into the spatial and temporal distribution of shoplifting was carried out by Nelson (1996) in Cardiff, Wales. A key finding was locations with high levels of shopping activity in the busiest areas of city centre were more vulnerable to shoplifting. There were also clear temporal patterns to offences, both seasonal peaks (pre-Easter, pre-Christmas and Pre-summer) and an increase

in offences towards the end of week. When considering the spatial and temporal patterns of shoplifting at rail station shops, there are perhaps two critical questions. The first is the extent to which high passenger usage at rail stations is a factor in shoplifting. Examples of busy times include rush hour weekday peak travel times and holiday times. Another interesting dimension is whether shoplifters use stations as part of their day to day travel activity, and learn about opportunities to offend through this, or they visit rail station shops solely for the purpose of offending. The first links to the idea of crime generators and the second crime attractors, and both may be possible at rail stations (Newton, 2014). The extent to which rail station shoplifting is concentrated at particular stations and possible seasonal trends are explored in research questions 1 and 2.

Premise Types and At-Risk Merchandise

Smith (2013) argues that shoplifters are attracted to expensive and luxurious products, which supports the 'more determined' and 'organised gang' offender typologies. However, Smith also suggests that much shoplifting involves the theft of lower-priced 'everyday' products such as razor blades, deodorants, fresh meat, vitamins, and over the counter drugs. Offenders stealing these goods are perhaps more likely to be 'novice' and 'petty' offender although again these are not exclusive to each type. Table 11.1 adapted from previous studies (Bamfield, 2004; Clarke, 2012; Smith, 2013) highlights a range of products stolen by shoplifters and the stores from which these are commonly taken. The final adapted column of this table considers whether these shop types are generally present at rail stations. Research question 3 examines the vulnerability of different types of shops at rail stations to shoplifting, and the products more likely to be stolen. If the goods stolen and types of shops targeted at rail stations are comparable to those observed outside of rail stations, then an argument can be made that prevention mechanisms used to deter theft within stores outside of railway stations are potentially transferrable to the rail environment.

Within the crime and public transport literature an important issues is the extent to which crime at public transport stations is correlated with crime in the surrounding environment. This is termed spatial interplay

Table 11.1 High-risk products by shop type (adapted from Bamfield, 2004; Clarke, 2012; and Smith, 2013)

Shop type	Product	Stores frequently found at rail stations
Auto/car parts	Small accessories, dash covers, satellite navigation systems, driving gloves	No
Clothing shops	Clothing, shirts, dresses, handbags, shoes, purses and wallets, designer fashion, watches and jewellery, fashion accessories, socks, scarves, sportswear	Yes
Drug/pharmacy	Cigarettes, batteries, over the counter remedies, small electric items, shaving products and razor blades, perfumes	Yes
Hardware	Hand tools	No
Music/video/games/entertainment	CDs, DVDs, gaming devices, computer games	Yes
Mobile phone shops	Mobile phones, tablets, mobile phone covers	Yes
Theme parks	Key chains, jewellery	No
Supermarkets (local metro stores)	Food, over-the-counter remedies, health and beauty products, cigarettes, batteries, fresh meat ^a , alcohol, shaving products and razor blades, perfumes, chocolates, flowers	Yes
Stationers	CDs, DVDs, magazines and newspapers	Yes
Toy shops	Action figures	Yes

^aPerishable goods not always viewed as high-risk (see Smith, 2013)

(Robinson & Goridano, 2011). Newton (2014) showed most studies have found a positive correlation between crime at stations and crime in surrounding environments. However, the author noted this is not always the case. In Washington, DC, Metro, good design has been shown to be a protective factor at stations situated in high crime settings. Newton et al. (2014b) found that pickpocketing on the London Underground was correlated to pickpocketing levels in the surrounding environs of stations, but that pickpocketing and shoplifting were not correlated. Therefore a key question to be explored for this study is whether shoplifting at rail stations is related to shoplifting that occurs at shops in the nearby vicinity of stations.

The Measurement of Shoplifting

This study uses two sources of recorded crime, captured from the British Transport Police (BTP), and the 43 police forces of England and Wales. One of the limitations of using police records is they are known to underestimate levels of shoplifting; many offences are not reported to the police as businesses deal with them 'in house'. Other reasons for poor reporting of shoplifting are: poor record keeping and stock taking; and, or, the inability of a shop to determine whether missing stock can be attributed to shoplifting or not. All police-recorded shoplifting incidents would also require the apprehension of an offender, or at least the shoplifting act being witnessed even if the offender was not caught. Alternative measures to capture reliable shoplifting levels include the British Retail Consortium (BRC) Retail Crime Survey and the Commercial Victimisation Survey (2014 onwards). However, neither of these disaggregates data for rail stations. Carmel-Gilfilen (2011) suggests shoplifting data could also be captured from: self-reported offender surveys; store detective and retail loss prevention department records; and information gathered from apprehended shoplifters. These have been criticised as indirect measures and subject to possible bias and they may also therefore underestimate shoplifting levels (Farrington & Burrows, 1993). Other potential data capture avenues include systematic observation and counting and assessment of security-related products. As this study is thought to be the first to explicitly examine shoplifting at rail stations, it uses BTP recorded crime data on shoplifting which is collected on a station by station basis.

Data

Data on shoplifting at rail station shops was captured from the British Transport Police (BTP); the national police force for railways in England, Wales and Scotland. The data used in this study includes stations in England and Wales only, and excludes those on the London Underground, although London over-ground stations are included. Shoplifting records were captured for the period January 2012 to December 2012 using BTP crime

category J22; theft by shoplifting. Fields extracted included rail station name, date, type of premise, and description of the property. There were 1682 shoplifting offences recorded at stations for this time period.

To distinguish between very large stations and smaller rural stations which may not contain any shops, shoplifting data was combined with the Department for Transport's classification of rail stations. This categorises stations into six categories A to F (Table 11.2). Over 99 percent of shoplifting occurs at stations classed A to D, therefore all subsequent analyses in this chapter only includes shoplifting offences within category A to D stations (see Table 11.3). Thus the analysis presented hereafter examines 1670 shoplifting offences which occurred at 96 out of 588 over-ground rail stations in England and Wales.

Table 11.2 Station classification (England and Wales)

Station type	Number of stations	Type of station	Trips per annum
A	28	National hub	Over 2 million
B	62	Regional interchange	Over 2 million
C	236	Important feeder	0.5–2 million
D	262	Medium, staffed	0.25–0.5 million
E	591	Small, staffed	Under 0.25 million
F	996	Small, unstaffed	Under 0.25 million

Table 11.3 Shoplifting offences at rail stations by station type (2011/2012)

Station type					Sub total 1	Sub total 2		
	A	B	C	D	(stations A to D)	E	F	(stations A to F)
Number of stations	28	62	236	262	588	591	996	2282
Number of stations with at least one shoplifting offence	24	30	29	13	96	4	5	105
Percentage of stations with at least one shoplifting offences	85.7	48.4	12.3	5.0	16.3	0.7	0.5	4.6
Number of shoplifting offences	1259	206	114	91	1670	6	6	1682
Percentage of all shoplifting offences	74.9	12.2	6.8	5.4	99.3	0.4	0.4	100.0

Shoplifting at non-rail station shops was captured from police recorded shoplifting using open source (<https://data.police.uk/>) for the same 2012 time period. All BTP recorded crime was separated from this. Additional other non-station crime data was also extracted including burglary, violence, theft and criminal damage. The information extracted included month of offence and location, and geographical coordinates. This was aggregated to Lower Super Output Area (LSOA), aggregated census unit with an average of roughly 1500 residents and 650 households. LSOAs are clustered using measures of proximity to give a reasonably compact shape to encourage grouping of areas of similar social background.

Methods

The Pareto principle states for many events approximately 80 percent of the effect comes from 20 percent of the cause (Marteache & Bichler, 2016). Translated into shoplifting at stations, this suggests that 80 percent of shoplifting may be found at about 20 percent of rail stations. A Resource Target Table (RTT) was produced to answer research question 1; the extent to which shoplifting is concentrated at particular stations. Previous studies have found shoplifting has particular seasonal trends with increases just before and during typical holidays, and tends to happen towards the end of the week. Research question 2 examined shoplifting using two methods: by the day of week; and also by the week of the year (over 52 weeks) and descriptive frequencies were produced for each.

Research question 3 examined the shop types at stations which experienced shoplifting, and the types of merchandise stolen. This analysis required manual reclassification of free text fields into author-defined categories developed using categories found in the literature. In addition the value of merchandise stolen in each shoplifting offence was estimated and categorised to the nearest pound as: 'under £10'; '£10–20'; '£21–50'; '£51–200'; and '£201' or more. Whilst this information was provided in the product description field about 50 percent of the time, much of this has been manually estimated using the description of the items stolen.

Frequencies were then calculated for the types of premises victimised, the types of merchandise stolen, and the value of the goods taken.

In order to examine the relationship between shoplifting at rail station shops and shoplifting in the nearby vicinity of stores (RQ4) two methodologies were employed. At LSOA level, Spearman's rank correlations were used to explore if a relationship was evident between shoplifting at stores in the non-rail environment, with rail store shoplifting. Additionally a group comparison test was used for non-station shoplifting between LSOAs with shoplifting-affected stations and non-shoplifting affected stations.

Results

An analysis of shoplifting by station type revealed concentrations of shoplifting at particular rail stations. 28 stations are classed as category A and 24 of them (86 percent) experienced at least one shoplifting offence. Indeed 75 percent of shoplifting occurred at Category A stations. 30 out of 62 type B stations experienced at least one shoplifting offence, and 12 percent of all shoplifting occurred at type B stations. Thus, 87 percent of shoplifting occurred at class A and B stations. Approximately 12 percent of class C and fewer than 5 percent of class D stations experienced any shoplifting, and these stations together accounted for 12 percent of all station shoplifting.

Concentrations of Shoplifting

To explore these concentrations further an RTT of shoplifting by stations was produced which demonstrated this clustering of crimes at only a few stations (see Table 11.4): the top ten stations for shoplifting (1.7 percent of all stations) experienced 66 percent of all shoplifting (1109 offences); 9 out of 10 of these were type A stations and one type B; and 85 percent of shoplifting occurred at the top 20 stations, equivalent to 3 percent of all stations. All top 20 stations for shoplifting were type A or B. This demonstrates the applicability of the 80/20 rule of crime concentration

Table 11.4 Concentrations of shoplifting at rail stations (2011/2012)

Anonymised station number	Station category	Number of shoplifting offences	Cumulative			Cumulative		
			Number of stations	frequency of shoplifting offences	% of shoplifting offences	frequency of stations	% of shoplifting offences	% of stations
1	A	297	1	297	17.8	1	17.8	0.2
2	A	146	1	443	8.7	2	26.5	0.4
3	A	134	1	577	8.0	3	34.6	0.5
4	A	120	1	697	7.2	4	41.7	0.7
5	A	96	1	793	5.7	5	47.5	0.9
6	A	70	1	863	4.2	6	51.7	1.1
7	A	66	1	929	4.0	7	55.6	1.2
8	B	65	1	994	3.9	8	59.5	1.4
9	A	63	1	1057	3.8	9	63.3	1.6
10	A	52	1	1109	3.1	10	66.4	1.7
		20 to 50	10	1413	18.2	20	84.6	3.4
		10 to 19	8	1430	6.3	21	85.6	4.8
		5 to 9	7	1519	3.1	28	91.0	6.0
		2 to 4	24	1633	3.8	59	97.8	10.1
		1	37	1670	2.2	96	100.0	16.4
		0	492	1670	0.0	588	100.0	100.0
Total		1670	588	na	100.0	na	na	na

to shoplifting. The top station for shoplifting experienced 297 offences, nearly one fifth of all shoplifting reported in 586 stations. However, two category A stations and 37 category B stations did not experience any shoplifting. Thus shoplifting is not purely a function of larger or busier stations.

Temporal Trends in Shoplifting

Research question 2 examined the temporal and seasonal patterns of shoplifting. Figure 11.2 shows the distribution of shoplifting across the year across all A to D stations. There are three clear peaks: late February/early March around school half term; late April around Easter; and late June or early July at the start of the summer holidays. Surprisingly there was no peak at Christmas although there is a slightly reduced rail service at this time. After each peak, there is a distinct drop in shoplifting. Figure 11.3 depicts shoplifting offences by the day of the week. Patterns of shoplifting are fairly consistent during weekdays although slightly higher on Wednesdays and Thursdays. This rate is reduced on Saturdays when there is a reduced service, and the lowest rates of shoplifting are found on Sundays. This is reflective of rail patronage. The daily pattern of

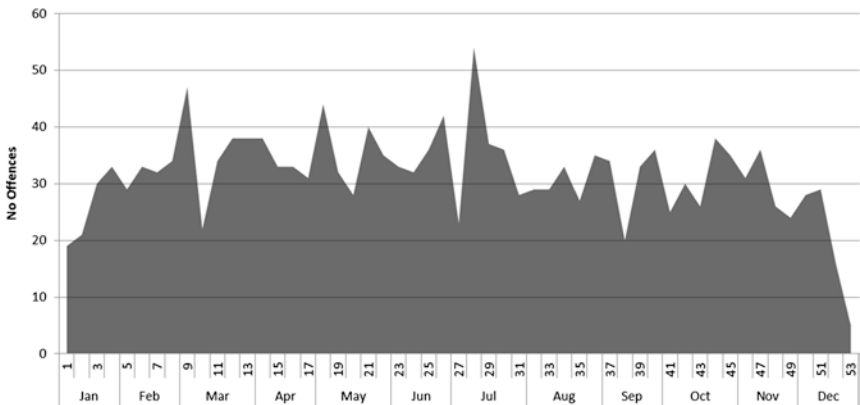


Fig. 11.2 Weekly shoplifting at rail stations in England and Wales (2012). Source: British Transport Police

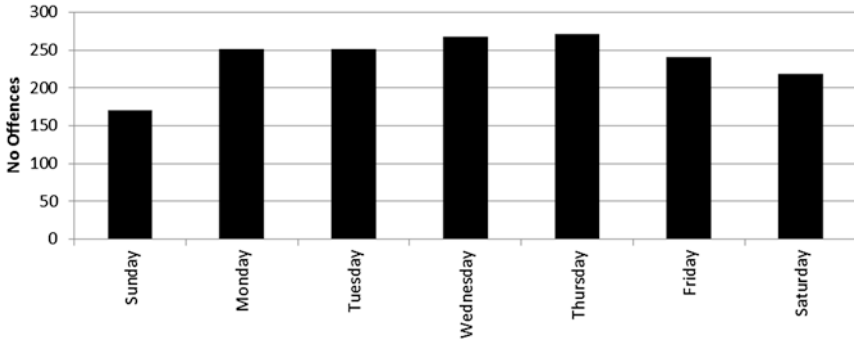


Fig. 11.3 Shoplifting at rail stations by day of week (2012). Source: British Transport Police

shoplifting at rail station shops is therefore slightly at odds with shops outside of the rail environment, where rates tend to increase towards the end of the week and Saturdays. These findings suggest the daily temporal patterns of rail store shoplifting are consistent with passenger levels and train operating times. This suggests shoplifters prefer busier shops when staff can be more easily distracted. It is not clear at busy times if offenders are present at stations as part of their usual journeys, or if they target rail station stores at peak hours and holiday periods deliberately.

Goods Stolen and Types of Rail Shops at Risk of Shoplifting

Research question 3 explored the types of premises at risk of shoplifting at rail stations (see Table 11.5) and the types of merchandise frequently stolen (Table 11.6). It is evident that the majority of shoplifting occurs at kiosk/shops/stores (83 percent). Unfortunately it is difficult to break this down further due to the nature of the recording by BTP. A limitation here is it is not clear how many of each type of shop is present within each station, or what volume of goods (possible available targets) are present within each store.

The analysis reveals the most commonly shoplifted products are food and alcohol. These products were stolen in 64 percent of shoplifting

Table 11.5 Premises that experienced shoplifting at stations (2012)

Premise type	Number of shoplifting offences	% of shoplifting offences
Kiosk/shop/store	1391	83.3
Tenant premises	92	5.5
Coffee shop	66	4.0
Other	35	2.1
Supermarket	27	1.6
Chemist shop/pharmacy	25	1.5
Station newsagent	20	1.2
Burger bar/fast food outlet	14	0.8
Total	1670	100

Table 11.6 Types and frequency of merchandise shoplifted at rail stations (2012)

Merchandise category	Number of shoplifting offences	Percentage of shoplifting offences
Food/soft drinks	722	43.2
Alcohol (no food)	350	21.0
Beauty products	173	10.4
Clothing	153	9.2
Stationary	61	3.7
Other	56	3.4
Alcohol and food	42	2.5
Electronics	35	2.1
Jewellery	32	1.9
Drugs (over-the-counter)	19	1.1
Flowers	15	0.9
Cigarettes	12	0.7
Total	1670	100.0

offences. Ten percent of shoplifting offences involved the theft of beauty products, a further 10 percent was clothing, and just over 3 percent stationary goods. Other items stolen include electronics, jewellery, over-the-counter drugs, flowers, and cigarettes.

Analysis of the value of stolen products found: 50 percent of shoplifting was for goods totalling under £10, 16 percent for £11–20; 18 percent for £21–50; 9 percent for £10–200, and 3 percent more than £200 (see Table 11.7). This suggests novice, more determined, and possibly

Table 11.7 Value and frequency of goods shoplifted at rail stations (2012)

Merchandise category	Value of shoplifted merchandise					Total	
	Under £10	£11–20	£21–50	£51–200	£200+		
Food and or soft drinks	<i>N</i>	577	71	53	19	2	722
	%	(79.9)	(9.8)	(7.3)	(2.6)	(0.3)	
Alcohol only	<i>N</i>	221	68	37	24	0	350
	%	(63.1)	(19.4)	(10.6)	(6.9)	(0.0)	
Beauty products	<i>N</i>	12	35	86	34	6	173
	%	(6.9)	(20.2)	(49.7)	(19.7)	(3.5)	
Clothing	<i>N</i>	5	27	59	44	18	153
	%	(3.3)	(17.6)	(38.6)	(28.8)	(11.8)	
Other	<i>N</i>	18	9	20	5	4	56
	%	(32.1)	(16.1)	(35.7)	(8.9)	(7.1)	
Alcohol and food	<i>N</i>	18	16	5	3	0	42
	%	(42.9)	(38.1)	(11.9)	(7.1)	(0.0)	
Electronics	<i>N</i>	1	5	8	8	13	35
	%	(2.9)	(14.3)	(22.9)	(22.9)	(37.1)	
Jewellery	<i>N</i>	1	6	14	6	5	32
	%	(3.1)	(18.8)	(43.8)	(18.8)	(15.6)	
Drugs (over-the-counter)	<i>N</i>	4	9	2	4	0	19
	%	(21.1)	(47.4)	(10.5)	(21.1)	(0.0)	
Flowers	<i>N</i>	6	5	4	0	0	15
	%	(40.0)	(33.3)	(26.7)	(0.0)	(0.0)	
Cigarettes	<i>N</i>	4	4	4	0	0	12
	%	(33.3)	(33.3)	(33.3)	(0.0)	(0.0)	

even organised gangs may all carry out shoplifting at stations. However, it is important to note that an increase in the value of the items stolen does not always equate to an increase in the expertise or determination of the shoplifter. When examining alcohol, food and soft drinks, over 60 percent of shoplifting was of goods valued at under £10. However, 3 percent of the shoplifting of food and soft drinks was of goods worth £51–200, and 7 percent of alcohol stolen was worth £51–200. This may indicate a mixture of both novice and more determined shoplifters. When considering more expensive products such as clothing, electronics and jewellery it was evident offenders focussed on goods at the higher price range. 37 percent of electronic items stolen, 15 percent of jewellery stolen, and 10 percent of clothing stolen was valued at more than £200.

Whilst no information was available on the MO used, the value of and types of good stolen are indicative of different types of offenders being active. In some instances entire shelves were cleared, which could, but does not necessarily suggest a high degree of planning and organisation. In other cases, sandwiches, stationary and soft drinks valued at less than £2 were stolen.

The final research question concerned the relationship between shoplifting at rail stations and shoplifting in the vicinity of rail stations. Shoplifting at stations (BTP) and non-stations (police crime) were aggregated by LSOAs to compare the relationship between the two. A Spearman's rank correlation between station-shoplifting and non-station shoplifting aggregated at LSOA revealed a weak but statistically significant correlation between the two ($N = 575$, $\rho = 0.131$, $p = 0.002$). There was a stronger correlation between station-shoplifting and non-station other crime ($N = 575$, $\rho = 0.264$, $p = 0.000$). This other crime variable included theft, violence, criminal damage and other theft. Thus station shoplifting seemed to be more likely in LSOAs with high levels of non-station other crime in general, rather than in LSOAs with high levels of non-station shoplifting. Given that many LSOAs experienced zero station-shoplifting offences the analysis was re-run to include only LSOAs with stations that experienced shoplifting. The results were: for station-shoplifting with non-station shoplifting, $N = 85$, $\rho = 0.97$, $p = 0.377$; and for station-shoplifting with non-station other crime, $N = 85$, $\rho = 0.442$, $p = 0.000$. Here the slight relationship between station-shoplifting and non-station dropped to non-significant. In contrast there was a stronger correlation between station shoplifting and non-station other crimes. Thus rail station shoplifting was higher in stations located in high crime areas (based on all crimes in the surrounding areas of a station). However, in places where non-station shoplifting was high, this did not necessarily correspond to stations with high levels of shoplifting.

To explore this relationship further, correlations between station-shoplifting and non-station shoplifting at LSOAs were examined by station type, 'A', 'B', 'C' and 'D'. The only significant relationship was found between type B station-shoplifting and non-station shoplifting ($N = 575$, $\rho = 0.128$, $p = 0.002$). No significant correlations were found with other station types. When comparing shoplifting at each category of station with other crime outside of the station, there were significant correlations for

category 'A' stations ($N = 575$, $\rho = 0.207$, $p = 0.000$), category 'B' stations ($N = 575$, $\rho = 0.159$, $p = 0.000$) and category 'C' stations ($N = 575$, $\rho = 0.091$, $p = 0.029$). This suggests that shoplifting in areas with high levels of non-station shoplifting is correlated, but this holds true for type 'B' mid-size stations. Where shoplifting occurs in the largest type 'A' stations, this is not correlated with shoplifting outside the station. In terms of general crime levels, there is a stronger correlation between larger size stations with shoplifting and other non-shoplifting crime outside of the station, and this decreases as station size reduces.

To test this further, group comparison tests were used to compare LSOAs with station shoplifting to non-station shoplifting, and LSOAs without station shoplifting to non-station shoplifting. The results of this showed a significant difference ($N = 575$, $U = 16,464.5$, $p = 0.002$) which suggest non-station shoplifting in LSOAs that experienced station shoplifting (mean rank = 339.3) was significantly higher than LSOAs where there was no station-shoplifting (mean rank = 279.1). However, when comparing non-station other crimes with station shoplifting, a similar result was found ($N = 575$, $U = 12,272$, $p = 0.000$). As 5 LSOA areas contained more than one station (four of these had two stations, and one had four stations), all the above analysis, both the correlations and the group comparisons were repeated excluding these 5 LSOA. However, no changes to the above reported significance results were found.

It is therefore suggested that although there is a correlation between shoplifting at stations and non-station shoplifting, this relationship is not straight forward. For type 'A' stations it is likely that they are a large enough attractor for offenders in their own right, irrespective of nearby shoplifting opportunities. In contrast for type 'B' stations, there is a correlation between station-shoplifting and non-station shoplifting. Thus the size of a station is important. The degree of connectedness of the larger and medium size stations may also have a role to play here. Large train stations may in their own right become a suitable target for shoplifting, but for medium size stations it seems evident that offenders may prefer opportunities where shoplifting opportunities are present both within and near to stations. Rail stations may form part of an offenders travel routine, and shops at rail stations may then form part of their awareness space. Alternatively, shops at stations may be considered a

suitable target for offenders who do not use stations to travel, or a combination of both may apply.

Discussion of Findings

This study, perhaps the first to examine shoplifting at rail stations, found shoplifting is concentrated at a small proportion of rail stations. Indeed the top 20 stations of nearly 2500 rail stations accounted for 85 percent of all shoplifting. The temporal pattern of shoplifting at stations suggested shoplifting follows busy travel periods with higher passenger numbers. Unfortunately data on the time of day of shoplifting was not available. Seasonal trends were evident, with peaks at the start of holiday periods when travel demand is high. The exception here is Christmas, when there is often a reduced rail service in operation. A range of different products were stolen consistent with those identified in the literature as high risk. Examples include food and alcohol, beauty products, clothing, electronic goods, jewellery, over-the-counter drugs, and flowers. The value of these items ranged from a few pounds to over £800. Stolen food and alcohol items included small snacks and sandwiches, but also premium and high value steaks and champagne. Similar patterns were identified between shoplifting at stations and outside of stations, including spatial and temporal patterns and the types of products stolen. This suggests lessons learned from reducing shoplifting outside of stations should be transferrable to shops within rail stations.

Whilst there were similarities between theft at station shops and theft at non-station shops, a key difference is the differing opening hours and busy periods. Shoplifting rates at stations are influenced by rail passenger volume which fluctuates based on peak and off-peak travel times and station opening times. This argument is supported by the reduced level of shoplifting found at stations on Saturdays, unlike shops in main urban shopping centres. It is not possible to determine using the available data whether shoplifters at stations use the station purely for shoplifting, or for the combined purpose of travel and shoplifting. The findings as to whether stations in areas that have high levels of shoplifting in general were mixed. Correlations were not found between BTP rail shoplifting and non-rail

shoplifting at LSOAs. However, the group comparison analysis found that stations which had experienced shoplifting had statistically significantly higher levels of police recorded shoplifting (non-rail) than those areas that did not. It may be that the smaller medium size category 'B' stations are more susceptible to shoplifting when they are in high crime areas. In contrast the larger stations 'A' may attract offenders to them on their own merit. A factor not considered in this analysis is how well a station is connected to other stations as how central or peripheral a station is, as in other studies this has been shown to influence crime levels.

Limitations of Study

There are a number of limitations to this study. The BTP and police-recorded crime data is subject to under-reporting as discussed previously. It is not clear if recording is better at some stations than others, or if certain stores report shoplifting more frequently, which may also account for the concentrations evident at stations. There is no time stamp so it is not possible to compare shoplifting between peak and off-peak travel times. There is no information on offender MO, and the classification of premise type and what is stolen was not recorded consistently and required manual cleaning and re-classifying. The study also does not include denominators of shoplifting; the results produced are frequencies or counts of shoplifting of offences. However, this may be influenced by the number of and types of shops present at rail stations, and the number of passengers who use a station. The proportion of different types of products available at stations may also influence shoplifting patterns. Thus standardising shoplifting as a rate (per product/per passenger/per shop) is particularly challenging. The spatial analyses disaggregated BTP and police-recorded crime at LSOAs. However, this may not be refined or disaggregated enough to pick up correlations between at stations and near stations. A more refined analysis using buffer analysis rather than using LSOAs may offer more robust evidence thus further research here is warranted. The study also does not take account of any prevention schemes already in place in stores to combat shoplifting.

Implications for Policy

The findings of this research suggest situational prevention measures successfully used outside of rail stations to reduce shoplifting could be transferred to shops within rail stations. These include: establishing a shoplifting policy and making all staff/customers aware; staff training; improved physical security including displaying dummy goods, using security cabinets for high value products, displaying warning notices, using mirrors and improving line of sight and visibility; establishing anti-shoplifting partnerships with other organisations; ensuring adequate staffing levels; not displaying high-value goods near entrances or exits; using customer greeting to interact with customers and ensure and to let potential offenders know you are being watched; enforcement of regular stock monitoring; banning known shoplifters; and using tagging devices and access control.

However, good design also needs to consider the shopping experience, key to a business's success. The introduction of new prevention measures should not affect sales, which means certain situational crime prevention measures such as keeping high-value items locked up and the use of display cases for products of high value goods, which then requires a staff member to access them for the customer can be problematic. Kajalo and Lindblom (2015) discuss the need to balance a secure shopping environment with one that is a pleasant environment for shoppers.

In addition it may be that the design and management of stations themselves, the routine policing, monitoring and surveillance carried out by BTP and station managers could potentially be tailored to reduce shoplifting. For example situational prevention measures can also be extended to rail foyers outside of shops, reducing blind corners and maximising surveillance opportunities for staff; posting clear messages that shoplifters will be prosecuted; and even hiring more and better staff who can interact with customers in a pleasant and friendly way.

Potential Avenues for Future Research

A range of future research has been highlighted by this study. An analysis of the MO used by offenders, combined with types of products stolen and from which premises, should enable a better profiling of the types of

offenders who shoplift at rail stations. Interviews with offenders may offer additional insights here. A better recording of premise type and more accurate information on value of products would also increase the reliability of the findings. More meaningful classifications are offered by Guy (1998), the UK government classification of retail goods, and the Business Statistics Office.

A clear challenge is how to develop consistent methods to account for denominators in shoplifting to compare rates. This could include passenger volumes, the number of customers in stores, and the proportion of different types of goods available. Rates of shoplifting by passenger levels might not be appropriate as many may not use rail station shops. Additional information on the types and size of shops at each station would allow further identification of station similarity in terms of measuring shoplifting opportunities. The spatial analysis should also be further refined. An alternative to LSOAs is to use buffer analysis around stations. A key question to be explored is whether large retail environments are at higher risk if they have stations near them. Similarly, it would be helpful to determine if station shops experience higher levels of shoplifting if there are several shops in the vicinity of the station.

Finally, this chapter does not include any analysis of interventions specifically introduced to reduce shoplifting at train stations. There is no assessment of the levels of security at stores within a station. Fieldworker observations of the security measures in place at stations would improve the reliability of the findings. This would aid our understanding as to the extent to which situational crime reduction measures at shops can be transferred explicitly to shops found in railway stations.

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12

Crime Against Trading: The Case of Cargo Theft in São Paulo

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Introduction

Cargo theft is a major problem throughout the world. Some countries have shown a continuous increase, among them, Brazil, which is one of the countries that presents the highest risk to cargo security in the world. Cargo theft imposes an estimated direct cost to the Brazilian economy of 442 million USD per year and this amount has been increasing in the last decade (FreightWatch, 2014).

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Although cargo theft is defined according to the Brazilian penal code as “subtraction of goods for resale when they are being transported” this offence, contrary to many other countries (see e.g. Burges, 2013, p. 17), is more than a crime against property. In Brazil, cargo theft is highly violent as many of these property crimes result in deaths, almost always with firearms. There are indications that this crime is not distributed homogeneously across the country, being concentrated in the most economically developed regions, especially in the state of São Paulo, where half of all cases currently take place (National Public Security System Information, SINESP, 2016). Despite the gravity of the problem, little is reported about this phenomenon in the international literature.

In this chapter, we make use of multiple datasets to investigate the overall nature of cargo theft in the country, and focus the analysis on the specific case of São Paulo state—for which there are reliable and recent data. This aim is achieved by reporting the nature of cargo theft and assessing its temporal and spatial distribution. More specifically, we detect areas where cargo theft increased the most in São Paulo state.

This chapter is organized as follows. Section “[Literature Overview](#)” presents a brief literature overview regarding cargo theft. Issues of data availability and quality as well as methods are presented in section “[Framing the Case Study](#)”. In section “[Results and Discussion](#)”, the nature and space-time trends of reported cargo theft and its potential causes are then discussed. In section “[Conclusions and Looking Ahead: A Research Agenda and Policy Implications](#)”, the chapter ends by proposing a research agenda and concluding remarks.

Literature Overview

This study draws from three complementary theoretical perspectives: rational choice theory (Becker, 1968), routine activity theory (Cohen & Felson, 1979) and situational crime prevention (Clarke, 1983). Their principles are discussed in the sections below, where we divide the literature overview on cargo theft into four parts: definition, nature, temporal dimension and spatial dimension.

Definition of Cargo Theft

In this study, we adopt the Brazilian definition of cargo theft, which is “subtraction of goods for resale when they are being transported” (Law number 8.072 of 25th July of 1990). It is important to note that despite the use of the term ‘cargo theft’ throughout the chapter, the study involves both cargo theft and robbery. This is because the Brazilian penal code does not distinguish between cargo theft and cargo robbery and, consequently, most of institutions follow the Law to collect and standardize the data. The theft of cargo includes, according to the FBI’s reporting system, as goods, “chattels, money, or baggage that constitutes, in whole or in part, a commercial shipment of freight moving in commerce, from any pipeline system, railroad car, motor truck, or other vehicle, or from any storage facility or wharf, or from any aircraft ... any freight consolidation facility” (Coughlin, 2013, p. 8).

The Nature of Cargo Theft

The targets are usually products considered as CRAVED goods (Clarke, 1999). Some of the key attributes of hot products are their value, size and portability. These attributes are summarized by CRAVED, an acronym referring to hot products that are concealable, removable, available, valuable, enjoyable and disposable. They can easily be sold for a high price on the black market, guaranteeing an attractive returns. In Brazil from 2006 to 2009, these include electronic equipment, designer brands of clothes and shoes, perfumes, jewels, cigarettes and pharmaceutical products. Cargo thieves from all over the world seem to be unanimous in their interest in these items (Burges, 2013). Besides the high return, Burges (2013) reports that less than 4% of cargo stolen is recovered in the United States. According to Moreira and Carvalho (2011), this recovery rate is around 10% to 20% in Brazil. It is noted that cargo theft is an attractive criminal activity since it combines a high return and low risk of failure. In these circumstances, the economic theory proposed by Becker (1968) can help in providing some interpretation.

The *rational choice theory* postulates that the potential offender evaluates his or her own risk before making a decision to commit a crime. According to the economic theory of crime, this alternative essentially depends on two factors: monetary return from crime and the probability of failure. Assuming mobility of criminals and economic rationality, crimes occur in localities where there is higher expected utility. It is hoped that the two determinant factors of the decision to commit crime from an economic angle can significantly differ among places and help explain its geography. This may explain why the *modus operandi* of cargo theft varies significantly from one country to another (Burges, 2013; Ekwall & Lantz, 2015). Ekwall and Lantz (2013) showed that in Europe, the Middle East and Africa, these crimes are often opportunist in nature, occurring when vehicles are parked in unsafe regions and with no contact with the driver. Burgos (2013) suggests several examples of how this crime is carried out in the world. In the United States, cargo theft is almost never associated with violence. In Europe, however, violence is more common, in the form of intrusion, pilferage, and hijackings. In Mexico, this is an extremely violent crime, which is carried out by gangs. Brazil, Guatemala and Venezuela are the countries where the operating methods are most dangerous, with the use of heavy arms and corruption; it can also be linked to international organized crime (Oliveira & Martins, 2014).

Temporal Dimension of Cargo Theft

Cargo theft only happens when the necessary conditions are present in a particular place and at a particular time—for example, where unattended loaded trucks parked in an isolated area are detected by motivated thieves. According to *routine activity theory*, most crimes—including cargo theft—depend on the interrelation of space and time of offenders' motivation, suitable targets and absence of responsible guardians (Cohen & Felson, 1979). People's activities and daily habits are rhythmic and consist of patterns that are constantly repeated. Variations of crimes during weekdays, weekends, and throughout the seasons reflect these changes in people's routine activity. Thus, knowing when cargo theft occurs is important information to all involved in retail, specifically operators of supply chain companies, since it indicates when more resources are required to prevent the theft of goods that are left unattended.

Situational Crime Prevention involves crime prevention strategies that are used to reduce the criminal opportunities (Clarke, 1983). Such strategies include ‘hardening’ of potential targets, improving surveillance of areas that might attract cargo theft, and deflecting potential offenders from settings in which crimes might occur (e.g., by limiting access of such persons to storages, harbors or where cargo might be placed). Yet, locking down facilities is not the biggest challenge, Coughlin (2013) suggests that the biggest challenge appears during the release of the freight for transit, while in transit, and during receipt at arrival. As far as the time of day that these events occur, Rick (1995) found that in England, Scotland and Wales, cargo theft occurs mainly between midnight and 8:00 am, when drivers are elsewhere and their trucks are parked in company warehouses or places that are unsafe. This, however, seems to be specific to the region, as using data for Europe, Middle East, and Africa, Ekwall and Lantz (2013) showed that the majority of cases occurred during business hours. In Sweden, theft of trucks was concentrated in afternoon hours, while theft of cargo from trucks in the night hours (Ceccato, 2015).

There is also a weekly variation as to when these events occur. Here, the literature converges to the fact that these crimes are concentrated on weekdays—Tuesdays, Wednesdays and Thursdays (Burges, 2013; Ekwall & Lantz, 2013; Rick, 1995). The low level found at the weekend is related to the fact that few vehicles operate during this period. In Sweden, Ceccato (2015) reports that a quarter of all events happen on Fridays and that overall, cargo theft from trucks was concentrated on weekdays. However, in the United States, researchers found a concentration of cargo theft on the weekends but also in three-day holiday weekends (Burges, 2013; Coughlin, 2013). With regards to seasonal variations, Ekwall and Lantz (2013) found that cargo theft was concentrated in the winter in 82% of the regions in Europe, Middle East and Africa. Another observed seasonal effect is the steep fall in cargo theft after Christmas. This is because sales tend to fall significantly after this date, meaning there is a lower demand for goods. In Sweden, for instance, differences were observed between summer and autumn; summer had 23 thefts from trucks a day while in the autumn, an average at 32 (Ceccato, 2015).

Spatial Dimension of Cargo Theft

Cargo theft has long been thought of as a crime that knows no geographic boundaries. In the United States, Coughlin (2013, p. 13) showed evidence that cargo theft “is predominately concentrated in populated areas (big cities and metropolitan areas) within those states as a result of the routing of state freeway networks through major hubs”. California has by far reported the most cargo theft activity in North America followed by Texas, New Jersey, Georgia between 2009 and 2011. In other words, cargo theft takes place essentially in more dynamic economic regions, where many industries and logistics operators are found (Burges, 2013; Ekwall, 2009). In Sweden, Ceccato (2015) found clear differences in the spatial pattern of cargo theft, especially along the main road networks/hubs: 61% of cargo theft in trucks happened in larger urban areas (Stockholm, Gothenburg and Malmö), 23% in accessible rural areas and 16% in remote rural areas. Municipalities with ‘resting areas’ for trucks are more targeted by cargo theft. This location has also been common in cargo thefts within the United States. For example, Coughlin (2013) found that truck stops, carrier facilities and parking lots concentrated most cargo theft locations in that country.

Historically, criminals operate mainly in their own areas. Nevertheless, there is some evidence of migration into regions where this activity offers a greater probability of success. This has also been observed by Ekwall (2009) in Sweden. A number of methods exist for moving cargo that has been stolen, from e-fencing and exporting to reproducing it into the legitimate supply chain (Burges, 2013). On analyzing the spatial distribution of this crime, Burges (2013, p. 58) argues that “... increased pressure from law enforcement agencies and increased security-hardening measures by the supply chain industry have caused gangs to operate across larger geographical regions”. In other words, there is a displacement effect when there is increased law enforcement and other crime preventive measures are in place—a factor that might help explain changes in the geography of cargo theft over time.

Framing the Case Study

The Study Area

Figure 12.1 shows the study area in Brazil: the state of São Paulo. It is worthwhile emphasizing that São Paulo is the namesake of a state composed of 645 municipalities, a metropolitan region, the Greater São Paulo (composed of 39 municipalities including the state capital) and the São Paulo municipality, which is the state capital. According to Brazilian Institute of Geography and Statistics (IBGE, 2016), São Paulo municipality, which is the state capital, has 11.2 million inhabitants and accounts for about 12% of Brazil's GDP and 36% of the state production of goods and services. São Paulo metropolitan region is one of the ten largest metropolitan regions in the world (United Nations, 2014).

The state of São Paulo is the largest economic and industrial hub in the Southern hemisphere, the largest business center in Latin America and also the capital of innovation and technology in the region, generating alone about a third of all the wealth produced by Brazilian economy (IBGE, 2016). Historically, São Paulo is the state with the highest GDP in Brazil. The state has a wide range of activities, varying from the most traditional to the modern and sophisticated technology activities. The state of São Paulo has 42 million citizens and 35% of the industry and 34% of the services of the Brazilian market (IBGE, 2016). According to the Federation of São Paulo's State of Commerce (2016), the retail sector generated 2.5 million jobs and a revenue in 2015 of 512.8 billion Reais (\$ 155 billion), accounting for 30% of total sales in the country. A third of this revenue comes from food sector followed by car dealership with 12%, and then pharmaceuticals 8% and 7% are electronics.

A large part of the cargo in Brazil is transported using roads. The roads with higher quality in the country are also located in the state, which has 34,000 kilometers of paving, as well as the largest and most modern Brazilian port (Harbor of Santos), located 80 km from the capital. In the state there is also the largest Brazilian air cargo terminal, 90 km from the capital, in Campinas. About 40% of all cargo imported in the country comes through this terminal (São Paulo Global, 2016).

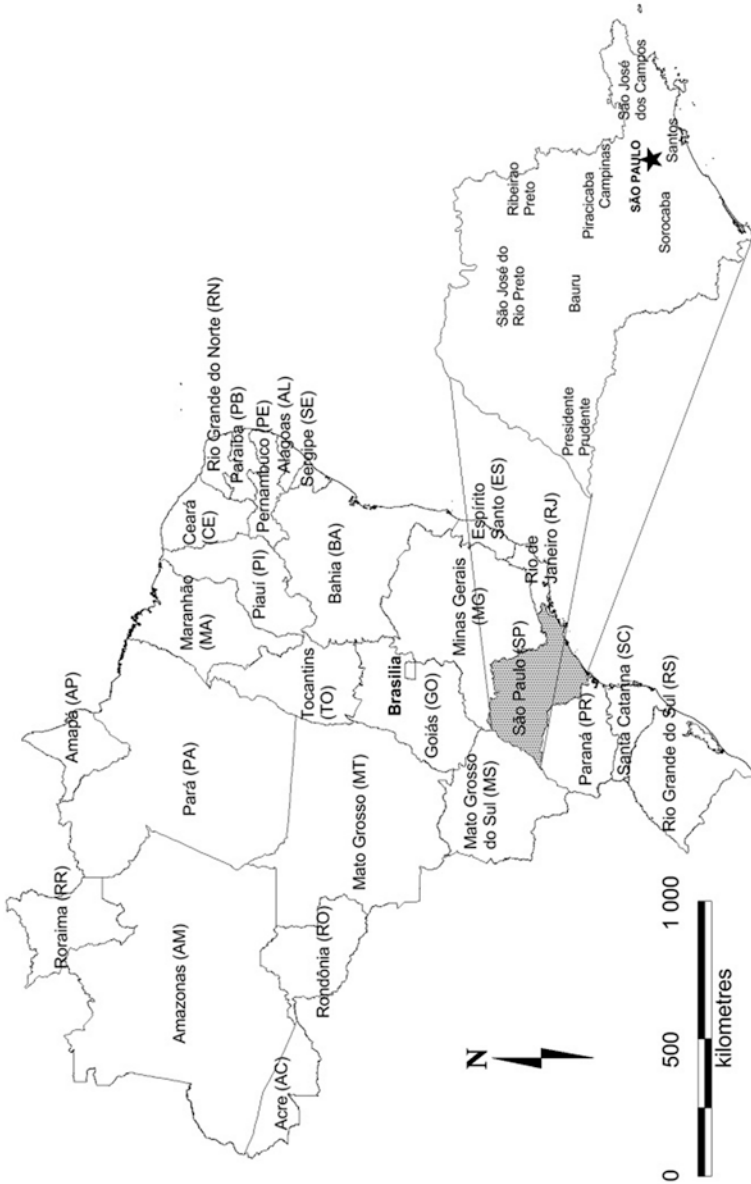


Fig. 12.1 Map of Brazil and the study area

Cargo theft is not an isolated security problem in São Paulo state, where almost 500,000 crime occurrences were registered in the second quarter of 2016 by the SSP-SP – Public Security Secretariat of São Paulo (SSP-SP-2016). Of these, 62% were crimes against property and 26% were crimes against people. As far as the crimes against property are concerned, 88% referred to theft or robbery, giving a total of over 250,000 occurrences. The most commonly used *modus operandi* is theft where there is no contact with the victim, which accounts for 61% of the cases. During this period, there were 2,246 occurrences of cargo theft in the state, representing around 0.74% of property crimes and 2.3% of thefts.

Data and Methods

As anywhere in the world, long term and reliable statistics of cargo theft are problematic. In Brazil, cargo theft statistics are rare and have started to be more systematically collected across the country since the 2000s. The total number of cargo thefts is available yearly for the whole country between 2008 and 2015 from SINESP (National Public Security System Information). However, the data quality is limited since the information contained in this database lacks systematic recording both temporally and spatially. Better data quality is found at state level. São Paulo state for instance stands out by having one of the most reliable and complete databases on cargo theft in the country (see SSP-SP, 2016). The most reliable time period for these data is between 2006 and 2011, as the dataset was created as a result a collaborative agreement established between the FETCESP (São Paulo's Federation of the Cargo Transportation) and SSP-SP (Public Security Secretariat in São Paulo State). This database contains information about the type of product stolen, the value of the stolen cargo, where it happened (name of motorways), and the time the cargo theft occurred (hour, day and year).

As a complementary source, information from a technical report elaborated by *Coordenadoria de Análise e Planejamento da Secretaria de Segurança Pública de São Paulo*—CAP/SSP (2009) was used as reference.

Data contained 27,000 reported cargo thefts from 2006 to 2009, with more detailed information such as the type of crime, *modus operandi*, the amount of cargo, and type of stolen goods.

It is noteworthy to emphasize that because they refer to statistics derived from police records, official data only reveal crimes actually reported to the competent authorities and duly recorded, meaning that they underestimate the actual crime level. Underreporting of crimes can be more or less pronounced according to the features of the locations where they take place, and it is usually more common for crimes such as theft and extortion. Cargo theft is a good crime indicator due to the relatively high value of the stolen goods, possible vehicle robbery aside the stolen cargo, and their insurance coverage (cargo and/or vehicle). Therefore, most of such occurrences result in a police report. Even so, we have to assume that the underreporting of cargo theft is time and cross-section invariant. Another relevant issue is that cargo theft should be ideally measured in relation to the amount of cargo transportation vehicles (truck, pickup trucks etc). However, there are no available data to make such standardization. Thus, as the measurement of cargo theft rate per population is not appropriate, we analyzed the absolute number of occurrences reported to law enforcement agencies.

We performed a descriptive analysis of cross-section data and time series of cargo theft. The goal of the analysis has been to identify time-space patterns in cargo theft, and then by comparing the Brazilian case with those found in the international literature, suggest potential mechanisms behind cargo theft. Based on these diagnostics, we suggested directions for future studies. The lack of detailed and systematic data of cargo theft has limited a more quantitative approach to the analysis. In order to support the temporal analysis, we used data from FETCESP from 2006 to 2011 and SSP-SP database from 2012 to 2015 to build a monthly time series of cargo theft in São Paulo state. Moreover, quarterly observations for state of São Paulo between the 2005 first quarter and the 2016 second quarter from SSP-SP were also used. It is worthwhile to emphasize that for our proposals we considered the state divided in three regions: The Greater São Paulo excluding São Paulo city (henceforth 'Great Sao Paulo' – GSP), São Paulo municipality ('city'), and non-metropolitan municipalities of the state. With the SSP-SP data, we calculated an index

based on the first quarter of 2005 (2005Q1). The aim was to assess the evolution of this phenomenon from the beginning of our series. The index for the period t is defined as:

$$\text{cargo theft index}_t = \frac{\text{cargo theft reported}_t}{\text{cargo theft reported}_{2005Q1}} \times 100.$$

In the following analysis, we made a logarithmic transformation of cargo theft data. According to Morettin and Toloï (2004), this transformation is useful to stabilize variances over time. To analyse the temporal movement of cargo theft in the main regions of the state we used time series from 2006Q3 to 2016Q2 on nine of ten police divisions (Bauru, Campinas, Presidente Prudente, Piracicaba, Ribeirão Preto, Santos, São José dos Campos, São José do Rio Preto, Sorocaba) composed by 606 no-metropolitan municipalities. Data from SSP-SP were used in this exercise. Figures presented in this chapter were created using statistical packages (the Stata, R and Gretl)¹ and desktop Geographic Information Systems (GIS) (Mapinfo 11.0). A georelational database was created linking data to each municipality, which facilitated the spatial analysis of cargo theft across the state.

Results and Discussion

The Nature of Cargo Theft: Brazil and Focus in São Paulo State

In this section, we use data from SINESP, FETCESP (2006–2011) and the technical report elaborated by CAP/SSP (2009) as a basis for the analysis. Data from SINESP indicate that, for 2015 alone, at least 17,852 cargo thefts occurred in Brazil, with São Paulo state ranking the highest for cargo theft in the country and accounting for 47.5% of the total reported incidents. The state of Rio de Janeiro was second in rank with 40.5% of the total crime reported, and Minas Gerais represented 3.4% of total theft reported in the same year. Therefore, only these three states located in southeast region—the richest Brazilian region—accounted for 91.4% of all cargo thefts. São Paulo, Rio de Janeiro and

Minas Gerais are the top three because they are places where highways have the greatest movement of cargo in Brazil. Consequently, demand for cargo insurance is higher in these states than the other Brazilian states (Gameiro & Caixeta-Filho, 1999).

In Brazil, the most targeted product types for cargo theft are foods (e.g., all sorts of meats), drinks, electronics, tobacco and pharmaceuticals. These goods are easily sold to consumers in legitimate stores or on the black market, sometimes beyond the national borders (Oliveira & Martins, 2014). This is an indirect connection between cargo theft and retail. Since the cargo is a product of commercial transaction between two or more economic agents, then the cargo theft can be approached as a type of crime against trading and service activities. Ekwall (2009) and Burges (2013) indicate that there is a unanimous preference for so-called “hot products” which are high-technology goods with a high black market value. These are, however, certain targeted products that are particular to Brazil, when compared to the rest of the world. Moreover, regional differences create different demands for different products and the needs of each market have a bearing on the process. For example, Rick (1995) found that the majority of stolen products in Sweden in 1994 were materials used in civil construction, brought about by the real estate boom in the country. These demands also vary over time. In Sweden, high-technology goods but also fuel from trucks are common in Sweden than in the past (Ceccato, 2015).

About 70% of cargo theft in Brazil results in ‘express kidnapping’ of the driver and other people such as driver’s assistants, which means that they are kept captive as the crime takes place. It is also observed that the *modus operandi* of criminals depends on where the theft is committed. Compared to the cargo thefts that occurred in the city, crimes on highways are mostly characterized by frequent use of big guns, vehicle robbery aside the stolen cargo, and greater number of criminals and vehicles in the action. Arguably, these features are present in organized crimes, in other words, crimes which are executed by criminal organizations (CAP-SSP, 2009). The use of severe violence is a phenomenon that more often occurs in Brazil, Venezuela and Guatemala (Burges, 2013).

An illustration of the *modus operandi* in Brazil can be seen in news published by local magazines. For example,

Criminals from the slums (favela) closed down the road on Monday afternoon to steal a cargo of cigarettes, valued at 15 million Reais. There was a firefight between the traffickers and security guards who were part of the convoy. Two people driving along the road at the time of the robbery were grazed by shots (Extra Journal, 2016).

A cellphone cargo estimated at around 150,000 Reais was stolen on Wednesday night in Campinas. The driver and security officials were held hostage by five men heavily armed with machine guns and rifles. In addition to stealing the cargo, the bandits also took guns and vests of the security officials (CBN Campinas, 2016)

In Europe, Burges (2013) reports that the use of violence is positively related to the cargo value. Spain is the country with the most varied methods of cargo crime. In other countries, such as the United States and the United Kingdom, violence is seldom used in combination of cargo theft (Rick, 1995). Once again, regional differences bring particular features to this crime's *modus operandi*. Burges (2013) argues that these depend primarily on each country's crime culture, as well as on law enforcement for violence and use of weapons.

In São Paulo state, almost three quarters of cargo theft are carried out by three or fewer people (CAP/SSP, 2009). From 2006 to 2009, almost 80% of cases were performed by kidnapping the driver while he was driving the vehicle. As in England, cited by Burges (2013), the use of violence and large weapons tend to be proportional to the cargo value.

In the urban area of São Paulo state, from 2006 to 2009, the most common stolen goods are food cargo. Although not of the highest value, foods account for approximately 25% of total goods stolen during the period. The second most stolen goods are electronics—around 10.4%. The third highest cargo theft risk is for pharmaceutical products, which account for about 7.6% throughout the four years. On highways (outside an urban area), the most targeted goods by cargo thieves were metallurgical products, machines and equipment, stationery goods and vehicle parts. Regarding the values of the stolen cargos, average values were smaller and greater for crimes which occurred on urban areas and highways, respectively. In general, the value of thefts on highways is much higher than the values stolen within cities. Moreover, the values are greater in non-metropolitan cities than the values

in the GSP (CAP-SSP, 2009). In the next section we discuss more in detail the geography of cargo theft as well as its temporal signature.

Temporal and Spatial Trends in Cargo Theft in São Paulo State

Almost three-quarters of cargo thefts in urban areas are concentrated during business hours. However, cargo theft on highways has a distinct pattern. Two-thirds of highway crimes occurred from 20:00 to 8:00, especially between 22:00 and 6:00. The most risky hours were between 4:00 and 6:00, when the circulation of cargo is at its peak. Concerning the days of the week with the highest risk of cargo theft, most incidents occur during weekdays on which most retail and service establishments are operating. Tuesday, Wednesdays and Thursdays account for about 60% of total crimes (Fig. 12.2). On the contrary, Monday is the day of the week on which least crime occurs, around 2% of cargo thefts. This evidence is corroborated by the results reported by Rick (1995), Ekwall and Lantz (2013) and Burges (2013). These studies also observed that most the cargo theft occurs on Tuesday and Thursday. In Brazil, there is no drop in number of cargo theft on Saturday. This fact can be related to the work regime of drivers in Brazil with regard to the hours of work. In general, they work 4 hours on Saturday, when most retail and service

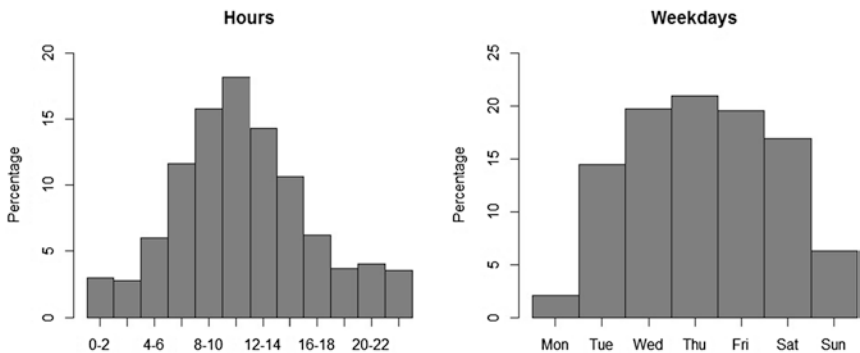


Fig. 12.2 Percentage of cargo theft reported in São Paulo by time of day and weekday from 2006 to 2011. Data source: FETCESP data

establishments are operating too. The news from Brazilian magazines illustrates this fact. For example,

Criminals stole a load of beer valued at 14,000 Reais on Tuesday. No one was arrested. Five trucks have left the company around 2:40 a.m. and were approached around 3:50 a.m. The drivers were surprised by some cars that parked across the highway. About 15 armed men came out of the vehicles and announced the robbery. (G1 News, 2016)

Cargo thefts are often committed between March to May and between October and December (Fig. 12.3). There is an average of 634 events per month, compared to an average of 586 events per month for the rest of the year. There are, therefore, troughs during the months of June to September, and January and February. This seasonality corroborates the results of Ekwall and Lantz (2013), who found the same temporal cargo theft dynamic in Europe, the Middle East and Africa. In addition, this Post-Christmas hypothesis has also been confirmed in Brazil. Cargo theft falls during the months after this date, reflecting the lower demand for goods.

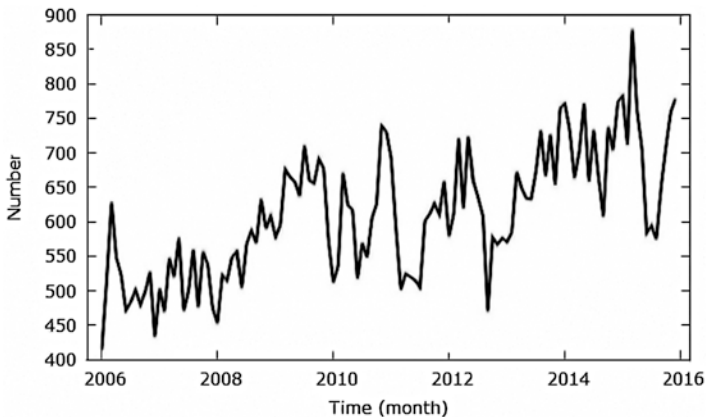


Fig. 12.3 Number of cargo theft reported, state of São Paulo, from 2006 to 2015. Data source: FETCESP (2006–2011) and SSP-SP (2012–2015)

The Overall Spatial Pattern of Cargo Theft in São Paulo State

Cargo theft in São Paulo is concentrated in urban centers, often in the most economically dynamic areas (Fig. 12.4). Approximately 82% of the crimes from 2006 to 2009 occurred within cities, while about 18% occurred on highways around the cities of the state. The most targeted cross-country highways in São Paulo are the Dutra, Anhanguera and Régis Bittencourt. Together, these highways account for about half of cargo thefts within São Paulo. However, although less frequent, cargo thefts on highways are very distinct from the crimes that occur in urban areas where retail activities and population also are concentrated (CAP-SSP, 2009). Figure 12.4 shows the average percentage of total cargo theft by municipalities of São Paulo state from 2013 to 2015. The area in dark blue is the state's capital accounting for 59% of the average number of cargo theft reported in the state.

The state's capital and other 38 municipalities, which formed the GSP, together account for about 77.4%. Clearly, there is a cluster of cargo theft



Fig. 12.4 Percentage of total reported cargo theft in the state of São Paulo (2013–2015). Data source: SSP-SP, 2017

around the São Paulo municipality. Figure 12.4 also indicates signs of two possible underlying factors behind the spatial distribution of cargo theft in the state of São Paulo. First, the majority of crime occurs around the main highways and around the ports of the state. Second, there is a suggestive relationship between cargo theft, urbanization rate and high level of economic activity, especially around the São Paulo city. The incidence follows the route of main highways, which connect the São Paulo city to other major urban centers of the state, but also to other state capitals such as Rio de Janeiro (Brazilian Southeast) and the state of Paraná (Brazilian South). Tietê-Paraná Waterway (with 2400 kilometers) is a link from important areas of the non-metropolitan areas of São Paulo state to other Brazilian states and to neighboring countries. It is connected to the state's highway and railroad networks. Thus, there are more transport facilities, especially for cargo, making easier the national and international trade. Obviously, more cargo means more opportunity for goods to be stolen by motivated criminals. A positive relationship between cargo theft and high economic dynamic of regions also was found elsewhere (e.g., Ekwall, 2009; Burges, 2013).

Intra-state Patterns of Cargo Theft

In this section, intra-state patterns of cargo theft are analyzed using data from SSP-SP divided in three areas: The Greater São Paulo (GSP) – the whole metropolitan area (39 municipalities), São Paulo city (São Paulo municipality only) and non-metropolitan municipalities (606 municipalities). By building an index based on 2005Q1 (Fig. 12.5a), we observed that reported cargo theft increased over time in São Paulo, specifically after 2008. However, the increase is higher in the 606 non-metropolitan municipalities.

More interestingly, as soon as the number of reported cargo theft was transformed in logarithm (Fig. 12.5b), a *convergence tendency* of levels of cargo theft seems to have occurred after the last quarter of 2010 in the series of the GSP and non-metropolitan municipalities. São Paulo city (the municipality alone) has, as it could be expected, a different and independent path of cargo theft increase and/or temporal variation from the rest of

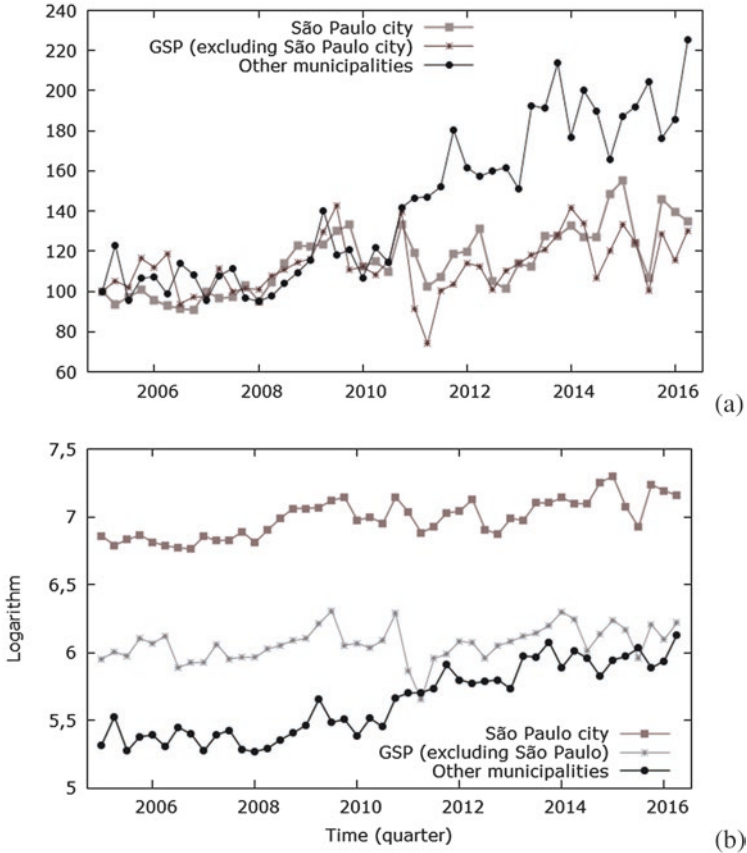


Fig. 12.5 (a) Index of cargo theft reported, state of São Paulo, from 2005Q1 to 2016Q2 (2005Q1 = 100); (b) logarithm of number of cargo theft reported, state of São Paulo, from 2005Q1 to 2016Q2. Data source: SSP-SP, 2017

the municipalities of São Paulo state. Following Justus and Santos Filho (2011), based on the economic theory proposed by Becker (1968) it is possible to suggest an economic interpretation for this *convergence tendency* of theft levels in the GSP and other non-metropolitan municipalities. According to Justus and Santos Filho (2011) assuming perfect mobility of factors in criminal activities among localities—GSP and other non-metro-

politan municipalities—it is possible that a portion of the convergence can be the result of displacement to commit crime. The theory of rational choice predicts an unequivocal positive relationship between the magnitude and value of crimes and the expected return. Concerning the cost of planning and committing crime, the theory predicts an inverse relationship with the quantity of committed crimes. As to the risk of failure, the theory suggests that this becomes higher when the efficiency of laws and police increase. Note that the perception of greater risk of failure is determined by the awareness of the risk of being caught, convicted and paying for committed crime (Justus & Scorzafave, 2014). In sum, these two determinant factors—*monetary return* from crime and *the probability of failure*—can significantly differ among regions of the state analyzed in this study.

In order to better understand these variations, the non-metropolitan municipalities were assessed in more detail. Most cargo thefts are concentrated in areas characterized by large distribution centers or commercialization of goods and, consequently, with a larger number of cargo vehicles circulating daily. Figure 12.6 shows the time path of the series in nine departments (or divisions) from 2006Q3 to 2016Q2. Most of the cargo thefts occur in the municipalities of Campinas, Santos and Piracicaba, which indicates two opposite axis, one for the interior of the state (Campinas and Piracicaba) and the other towards the most important harbor of the country (Harbor of Santos). In this period, the three regions altogether account for approximately 74.6% of total reported cargo thefts within the state (35.2%, 19.2%, and 20.1%, respectively) and are concentrated where the major transportation infrastructure is located. For example, in Campinas are found the most modern highways in the state and also Brazilian territory. The largest cargo airport in Latin America (Viracopos International Airport) is also located in this region. Furthermore, there is a railroad network connected to the Santos harbor. The region has an important technological center in Latin America and it is in this region (especially in Campinas city) that the subsidiaries of some of the largest multinational companies in the world are located, and that producing and/or selling the goods most craved by cargo thieves. The Department of Santos boasts South America's largest port named Santos Port, which historically handled about one quarter of Brazil's trade flow. São Sebastião harbor, which account for about 7.3% of total cargo theft

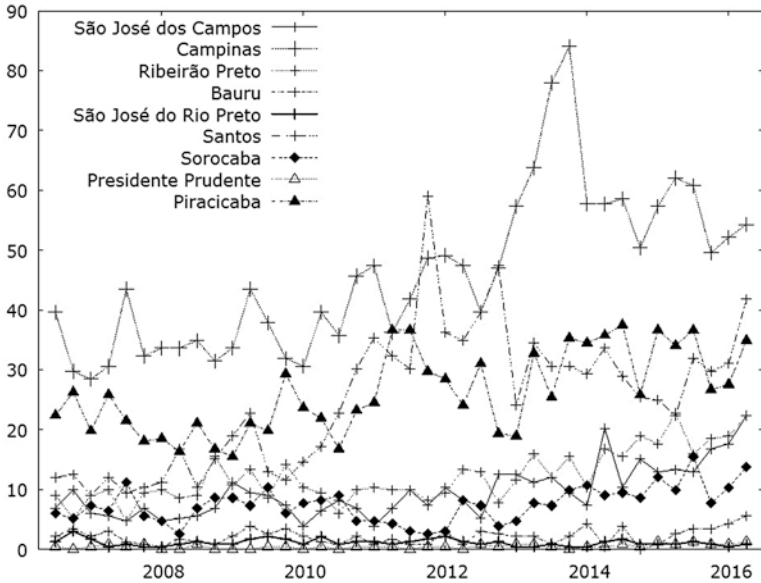


Fig. 12.6 Number of cargo thefts reported in nine police divisions composed of 606 non-metropolitan municipalities 2006Q3–2016Q2. Data source: SSP-SP, 2017

from 2005Q1 to 2016Q2, is also an important channel to national and international trade. It is noteworthy that these ports also serve the states of Minas Gerais, Mato Grosso, Mato Grosso do Sul, Goiás, Paraná and Rio de Janeiro. In sum, such regional infrastructure and supply of targets have created the necessary conditions for a rise in cargo theft in non-metropolitan areas.

This development has multiple causes but can certainly be associated with inherited high economic growth rates experienced by non-metropolitan municipalities during this period in comparison with GSP and São Paulo capital (IBGE, 2016), leading to a supply of potential targets. Yet, this is of course an empirical question worth exploring further. A complementary hypothesis is that carriers which work in the metropolitan areas, where there is higher number of cargo theft started during this period to adopt more efficient preventive cargo theft strategies, such as “target-hardening”: tagging goods, chips geolocation hidden in goods, armed escorts, cargo fractionation. These precautions have decreased the

attractiveness of targets for theft because the risk to be caught becomes higher. Ekwall (2009) noticed a similar process in Sweden. Cargo theft in Sweden had been displaced from urban areas to less urban areas, mainly because more effective prevention methods had been adopted in big cities. Burges (2013) also suggested that implementation of safety preventive measures and intensification of law enforcement was forcing agents to operate in other geographical regions. Moreover, it is also possible that police actions targeting the GSP have contributed to the displacement of cargo thefts to non-metropolitan municipalities, facilitated by high quality system of roads and highways, including by the inauguration of express ring roads around the São Paulo municipality.

Conclusions and Looking Ahead: A Research Agenda and Policy Implications

Cargo theft is concentrated in the most economically dynamic regions of Brazil, as the states of São Paulo, Minas Gerais and Rio de Janeiro. Half of these crimes occurred in the São Paulo State, which accounts for one third of the national GDP. In this state, in turn, 60% of cargo theft occurred in São Paulo municipality between 2005 and 2016. Most cargo thefts in urban areas occur on weekdays and working hours, when trade is in operation and there is a greater flow of vehicles on roads. However, cargo theft on highways has a distinct pattern, where two-thirds of crimes occurred from 20:00 to 8:00. Moreover, there is a lower incidence of this crime after Christmas—between January and February. In this region, the prevailing *modus operandi* is to approach the driver in groups of three people and then kidnap them and the cargo. The use of violence and of large arsenals of weapons is generally proportional to the cargo value and occurs most often on the main state and national highways.

This study provides evidence of the nature of cargo theft, the recent space-time trends in the country and with especially focus on the state of São Paulo. Its main contribution is that of shedding light on the potential causes of the convergence process in levels of cargo theft between metropolitan and non-metropolitan areas.

Although São Paulo capital shows the highest levels of cargo theft, it is in non-metropolitan areas that records of this offence are on the rise. This fact was observed especially in three areas: Campinas, Santos and Piracicaba—these areas together consist of a strong economic corridor that canalizes products from inland towards the foreign market and vice-versa through the international harbors, especially the most important one in Santos. There is a clear change in the time series behavior after the 2010 fourth quarter for this corridor. A possible reason is that cargo theft increased more in non-metropolitan municipalities because of higher cargo circulation on the state's highway (more targets in transit, more cargo theft opportunities). Another alternative is that cargo theft increased more in non-metropolitan cities because the risk of failure of theft operations in the GSP increased as a result of implementation of effective crime prevention initiatives. Although there is still no empirical evidence in the literature giving support these hypotheses, we believe that this study contributes to the subject as a first step in this direction. Data permitting, future studies are essential particularly to empirically test the above stated hypotheses.

Drawing from the combined set of theories used in this study, we can conclude that cargo theft criminals rationally choose the places on the highways where escape is easier and more products circulate (rational choice theory). They act armed to lessen the risk of failure. Routine activity theory has helped to explain the fact that these criminals may also act opportunistically, as they identify time windows and particular places where the driver can be vulnerable of an attack. Situational crime prevention was used here to understand the motivations of policymakers to adopt preventive actions in order to reduce cargo thefts. These actions have included the more intense policing on high risk highways and use of road intelligence in cargo theft prevention along the major targeted routes through cooperation of multi-scale security actors across the country.

For future research there is a need to match types of thefts with the situational conditions of crime at detail level. It is desirable that studies combine evidence from offenders' *modus operandi*, cargo type and situational conditions of cargo theft. This is particularly important when multiple criminal organizations are set up to commit a sequence of different crimes, having cargo theft as the ultimate goal. A relevant question to be

answered here is whether goods from cargo theft vary by destination. It is also fundamental to learn from freight companies that work with supply chain-preventive safety measures; whether and how technology are being put in practice to prevent cargo theft. In terms of situational conditions, more than identifying regions and particular time windows that crime happens, the next step should include analysis of particular environments where high concentrations of cargo thefts by road segments are found, followed by identification of factors that help explain these cargo theft concentrations at micro-level.

There have been examples of interventions based on situational crime prevention principles, which have potential to reduce the high number of cargo thefts in Brazil, especially in São Paulo. One example is the so-called “Safe Roads Operation” (“Operação de Estradas Seguras” in Portuguese), which is an initiative to fight the incidence of crime on the country’s main highways, by the Federal Highway Police and Military Police of São Paulo. The main objective was to reduce the cargo thefts and international smuggling. Thus, since 2016 more control and enforcement on the highways where there were a greater cargo thefts and reception of stolen goods were implemented. More recently, another program devoted specifically to cargo theft “Operation Safe Route” (“Operação Rota Segura” in Portuguese) started in Sao Paulo covering also the Brazilian states of Sergipe, Mato Grosso and Mato Grosso do Sul, which are common known routes of cargo thefts. This operation relies heavily on the cooperation between the Federal Highway Police, Military Police and Civil Police (Penaestrada, 2016). Interventions are based on systematic inspections in key locations to combat theft of cargo, in some of the most known routes. These situational crime prevention initiatives are intended to make cargo theft more difficult (e.g., offenders have to choose routes the police patrol is not inspecting), more time consuming (e.g., in case they have to take longer routes), more risky (e.g., if criminals are stopped by police patrols) and even less rewarding (e.g., more resources are spent to plan the crime) to commit crimes. The main goal is to make cargo theft difficult at the point that offenders simply do not think it is worth the effort.

If these sets of efforts show evidence of reducing cargo theft in Brazil, policy makers can in the future allocate resources more efficiently in simi-

lar situational crime prevention programs, particularly in the most targeted routes at the most critical periods of time. They can improve current systems of interventions (e.g., the ‘Safe Roads Operation’ or ‘Safe Roads Operation’) by making sure these initiatives are extended using control areas throughout the country, including border regions. Furthermore, if cargo theft continues to rise, it is because there is an expanding demand for these products on the black market. Crime prevention has to go beyond the roads and focus also on the supply chain of products (some of them, already show signs of being linked to organized crime), for instance, more extensive enforcement in trade regulations, mainly in electronics and food sector could also inhibit the number of cargo theft. A good example of this has been the creation in Brazil of Law 15.315 of the 2014, in which the company that buys, distributes, transports, stocks, resells or exposes stolen products (or which are the result of any other crime) is to be punished with prohibition to engaging in future commercial activity.

The analysis presented in this chapter shares limitations with other analyses of this kind. First, the study is based on cargo theft statistics that until recently was rare in Brazil but that have begun to be collected more systematically across the country since 2000s. At the national level, data quality lacks systematic recording both temporally and spatially. Better data quality is found within state level and São Paulo state stands out by having one of the most reliable and complete databases on cargo theft in the country, yet it is not problem-free. Second, the in-depth analysis of São Paulo state cannot be taken as representative of the whole Brazil. Data permitting, future research should try to replicate this analysis to other states to assess whether the rise in cargo theft and related crimes can be found in other Brazilian contexts. Third, this analysis fails in elucidating detailed links between cargo theft in the supply chain of products and links to retail sector in Brazil, which constitutes an important frontier for future research but a key for success in preventing this type of crime. Despite these limitations, we believe that this chapter contributes to a better understanding of the current nature of cargo theft and its temporal-spatial distribution in one of the most economically dynamic regions of Brazil and South America.

Note

1. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP; R software is available for download at <https://www.r-project.org/>; and Gretl is a free and open-source software package, available for download at <http://gretl.sourceforge.net/>

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13

Theft of Medicines from Hospitals as Organised Retail Crime: The Italian Case

Ernesto U. Savona, Marco Dugato,
and Michele Riccardi

Introduction

According to recent judicial and investigative evidence, theft of medicines is emerging as the new frontier of pharmaceutical crime (Council of Europe, 2015; Interpol, 2014; Pharmaceutical Security Institute, 2017). The aim of this chapter is to furnish better understanding of the drivers, actors, and *modi operandi* behind this criminal activity. To do so, it presents the results of a pilot study carried out by Transcrime on the theft of medicines from Italian hospitals (see Riccardi, Dugato, & Polizzotti, 2014; Riccardi, Dugato, Polizzotti, & Pecile, 2015), which covered the period 2006–2014, and integrates it with further case studies and investigative evidence.

Theft of medicines from hospitals may be considered a specific type of retail crime for two main reasons. First, because it occurs at the very end of the supply-chain, i.e. where products (in this case, medicines) are dis-

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pensed to consumers (in this case, patients). Second, because, at first glance, it follows the same *modi operandi* of other crimes against commercial activities—i.e. theft from depots and shops, burglary against transport couriers, involvement of employees (in this case, nurses, doctors and hospital staff). This chapter goes somewhat further by exploring two hypotheses:

1. that stolen medicines are ‘laundered’ through fictitious wholesalers and then resold on the legal market, exploiting the asymmetries of the pharmaceutical supply-chain;
2. that this crime requires a high level of organisation, and that organised crime groups are directly involved in the activity.

In this regard, theft of medicines is presented as a paradigmatic example of organised retail crime carried out with traditional methods but conducted—especially in the ‘product laundering’ stage—by structured organisations of professional thieves supported by white-collar criminals able to infiltrate legitimate businesses and to operate on a transnational basis.

The chapter is structured as follows: section “Theft of Medicines as Pharmaceutical Crime” introduces and defines the theft of medicines; section “Why Theft of Medicines Is Attractive for Criminals” discusses the factors on the demand and supply sides which make theft of medicines attractive to criminals, and it illustrates the theoretical background and the research questions of this research; section “The Present Study” describes the methodology, the data and the results of the analysis of thefts of medicines from Italian hospitals; section “Conclusions” discusses research and policy implications.

Theft of Medicines as Pharmaceutical Crime

Theft of medicines is only one of the many offences subsumed under the concept of illicit trade (or trafficking) of pharmaceutical products. The Medicrime Convention, which is the reference text at international level

in this field, does not provide a definition of illicit trafficking. Rather, it lists a variety of illicit conducts ranging (Articles 5 to 8) from the manufacture and brokering of counterfeit medical products to the falsification of documents. The list is vast and covers, *de facto*, any sort of production or exchange, in violation of applicable laws, of products intended for public health—then also the marketing of stolen medicines (Council of Europe, 2015, pp. 34–38).

Theft is explicitly mentioned in Interpol’s definition of pharmaceutical crime as the “manufacture, trade and distribution of fake, stolen or illicit medicines and medical devices” (Interpol, 2012) or, in a later definition, as “the manufacturing and distribution of counterfeit or falsified (spurious/fake/falsely labelled) pharmaceuticals or medical devices, through licit and illicit supply chains, involving: (a) theft; (b) fraud; (c) diversion; (d) smuggling; (e) illegal trade; (f) money laundering; (g) corruption” (Interpol, 2014, p. 6).

However, until recently, most studies on pharmaceutical crimes have focused only on counterfeiting, while they have not paid particular attention to theft. The reason may be related either to the lack of data on theft or the greater importance given by both industry and policy-makers to counterfeiting. This is evident when considering the global debate on the IPR of certain medicines (like anti-malaria and anti-HIV drugs) in developing countries, or the massive marketing of counterfeit drugs on the Internet (World Health Organization (WHO), 2010; UNICRI, 2012).

It has then become apparent that also theft plays a crucial role in the illicit trade of pharmaceuticals, and that it often occurs simultaneously with counterfeiting and illicit diversion (Pharmaceutical Security Institute, 2017). As noted by the Council of Europe, each instance of pharmaceutical crime is now “likely to involve two or three of the offences established in Articles 5, 6 and 7 [of the MEDICRIME convention], and possibly in some cases, Article 8” (Council of Europe, 2015, p. 34). In recent years, theft of medicines (especially from cargo and hospitals) has become a priority on the agenda of the pharmaceutical industry and of public agencies, and a number of investigations have targeted the phenomenon—but the amount of research is still scant.

Why Theft of Medicines Is Attractive for Criminals

There are numerous reasons why theft of medicines is attractive for criminals. From a theoretical point of view, the identification of these factors belongs mainly to the crime opportunity approach, suggesting that criminals act as rational players in identifying and taking advantage of the opportunities generated by the structure and the dual nature (legal and illegal) of the market. This view follows the main opportunities theories such as the routine activity approach, for which crime happens when an offender, a target and the absence of guardianship converge in time and space (Cohen & Felson, 1979), and the more general rational choice perspective (Cornish & Clarke, 2008), stating that offenders balance benefits and risks before deciding if and how to commit a crime.

Also the specific nature of the products according to the definition proposed by Clarke (1999), medicines are a perfect example of a 'CRAVED' product (Concealable, Removable, Available, Valuable, Enjoyable and Disposable). Increasing their attractiveness to the criminals. Moreover, criminals and the flaws in the design and management of the storage facilities or the supply chains. The medicines are often stored in large and vulnerable structures (i.e., wholesaler warehouses or hospitals' pharmacies) that are hard to manage from a security perspective, especially due to the high number of personnel employed, and that are often poorly designed or protected.

Consequently, a number of risk factors can be identified on both the demand and the supply sides of the market. The analysis of these risk factors is crucial for identifying potential pitfalls and criminal opportunities and for designing more effective counteracting strategies in line with the situational crime prevention approach (Clarke, 1995). The specific risk factors influencing the demand for and supply of stolen medicines are reported in Table 13.1 and discussed below.

Table 13.1 Risk factors influencing the demand for and supply of stolen medicines

Factors influencing the <i>demand</i> for stolen medicines	Factors influencing the <i>supply</i> of stolen medicines
<ul style="list-style-type: none"> • Inelastic and growing demand • Restricted and difficult access • Differentials in reimbursement regimes • Illegal use of legal medicines (e.g. doping) 	<ul style="list-style-type: none"> • Low volume and weight • High price • Price differentials • Opportunities offered by wholesale and parallel trade • Lack of traceability • Vulnerabilities of transportation and hospitals • Internet and new technologies

Stolen Medicines: Vulnerabilities on the Demand Side

Inelastic and Growing Demand

Medicines are primary goods which cannot be easily replaced (Transcrime, 2010; Vander Beken, 2007). As well as being inelastic, the demand for and the consumption of medicines are also growing. This is due to various factors, in particular the ageing of the population (Eurostat, 2012), with a growing worldwide life expectancy rate; the growth of incomes, which give people greater access to medicines; changing habits in consumer lifestyles, with an increasing concern for well-being and beauty (OECD, 2009). The growing consumer base may be exploited not only by legal companies but also by illegal traffickers.

Restricted and Difficult Access

Not all medicines can be easily accessed on the free market. Depending on the characteristics of the national health system (henceforth NHS) and of the medicine itself (e.g., risk of toxicity, addiction, abuse), some categories of pharmaceuticals can only be distributed under the strict control of a medical practitioner. In Italy, for example, Class H medicines can usually be only be administered by doctors within hospitals

(OsMed, 2012). Difficult to access are also the so-called *contingentati* (i.e., rationed) pharmaceuticals (Fornaro, 2014).

In other cases, the access to medicines may be difficult for external reasons like NHS defaults or bankruptcy of wholesalers. There is evidence that the recent financial crisis has obliged some countries to reduce their healthcare budgets (The European House-Ambrosetti, 2012, pp. 110–112). In Greece, for instance, some important pharmaceutical companies have apparently decreased their shipments of medicines due to delays in payments by hospitals and the NHS (Sukkar & Smith, 2013; Tamburini, 2013). In all these circumstances, consumers may be induced to obtain the medical product on the black market, thus boosting the illicit trade of pharmaceuticals and the theft of medicines.

Differences in Reimbursement Regimes

In most countries, the cost of medicines is not directly borne by consumers; rather, it is covered, totally or partially, by a third party, either a private entity (e.g., an insurance company) or a public one (e.g., the NHS). Reimbursement mechanisms affect both the legal and the illegal demand for medicines: in legal markets, the higher the coverage, the greater the incentive to consume medicines (Espín & Rovira, 2007, p. 30). By contrast, in illegal markets the lower the reimbursement, the greater the incentive to resort to the illegal trade in order to acquire pharmaceuticals at lower prices.

Although cost-sharing regimes apply in almost all EU MS (Espín & Rovira, 2007, p. 34; Mrazek, 2002), reimbursement regimes vary widely among countries depending on the NHS, the type of medicine (e.g., cancer or diabetic drugs may be reimbursed at 100 per cent), and the type of patient/consumer (e.g., low-income people may usually benefit from higher reimbursement percentages). On average, reimbursement accounts for 75 per cent of the total pharmaceutical market (Mrazek, 2002). In some cases, the reimbursement regime may even vary within the same country—as in Italy, where the ‘ticket’ system differs significantly from region to region.

Illegal Use of Legal Medicines

Medicines may be stolen also for illegal purposes or activities. The most common example is doping in sports: exogenous erythropoietin (EPO) is used in healthcare treatment, but it can also serve as an agent to stimulate erythropoiesis and hence enhance sporting performance. Although still controversial, EPO usage has been endemic to some sports (e.g., cycling) for the past 20 years (Lodewijkx & Brouwer, 2011). Less well-known, but very widespread, is doping among non-professionals in gyms, who often purchase stolen or counterfeit products (e.g., steroids or integrators) to enhance muscles and performance.

Besides doping, legal medicines or legal active ingredients may be used as illegal drugs or in the synthesis of illegal drugs (e.g., morphine, benzodiazepines, codeine), to produce counterfeit pharmaceuticals, or in other illicit activities (e.g., nitroglycerine as explosives). As an example, the use of fentanyl, a potent opioid analgesic for the treatment of serious diseases including cancer, to lace heroin has been increasingly reported by the media and law enforcement agencies, especially in the United States, and it is often related to overdose deaths. See for example (Mohney, 2014). Moreover, the Pharmaceutical Society of Ireland has advised members to be cautious about people who ask for significant quantities of cough syrups, warning that they could be abused and used to make methamphetamines, including crystal meth (Reilly, 2012).

Finally, although it is not an illegal behaviour per se, there is wide evidence that consumers of psychopharmacological drugs or of 'lifestyle' drugs (e.g., medications used to treat erectile dysfunction, baldness, overweight or wrinkles. See Møldrup (2004) for a review) may prefer to access the illegal market through web pharmacies for many reasons, including the need to conceal their consumption habits or avoid embarrassment (eCrime, 2015; IMPACT, 2013).

Stolen Medicines: Vulnerabilities on the Supply Side

Vulnerabilities on the supply side are related to characteristics of the medicine itself or of the pharmaceutical supply chain.

Low Volume and Weight

Owing to their small size and low weight, medicines can generally be easily concealed, moved and transported (Transcrime, 2010, p. 22). This is a crucial requirement for those illegal organisations that traffic stolen medicines on a transnational scale. Indeed, medicines are among the products, together with diamonds and some precious metals, which concentrate the highest value in the lowest volume. A bag filled with certain (stolen or counterfeit) medications such as anti-cancer or anti-rheumatic drugs may be more valuable than even a bag full of cocaine or firearms.

High Price

Pharmaceuticals are generally characterised by high commercial value, especially those used in the treatment of severe diseases (e.g., cancer, multiple sclerosis, etc). By way of example, the retail price of a single package of Rebif® (interferon beta-1a used to treat relapsing forms of multiple sclerosis) has been fixed in Italy at about 1300 EUR (Riccardi et al., 2014). The high commercial value of medicines may generate huge profits for those operating on the illegal side of this market (Vander Beken, 2007).

Price may influence the decision concerning what medicines to counterfeit, steal or traffic. In line with rational choice theory, it can be hypothesised that traffickers opt for high-priced medicines that can guarantee a higher return on risk than cheaper ones. Assuming that the risk of being arrested and the effort required to steal aspirins and interferon are the same, criminals would prefer the latter, since, when resold, it would most likely produce higher profits.

Price Differentials

Besides price itself, also price differentials are key drivers of both the demand for and supply of stolen medicines. Although, at least in the EU, pharmaceutical companies are now interested in having similar prices in order to minimise the parallel trade (Espìn & Rovira, 2007, p. 173), and although the use of international pricing benchmark, sometimes referred to in the literature as “external price referencing”, still prevails in most countries (Espìn & Rovira, 2007), price differentials still remain. As a result, low-priced countries (e.g., Italy, Greece, Spain) act as exporters to high-priced ones (e.g., Germany, UK, Nordic countries) in the parallel trade (ÖBIG, 2006). This feature does not exert a direct effect on the theft or counterfeiting of medicines themselves, but it implies the existence of a parallel network of distribution to other countries that may also be exploited by pharmaceutical criminals.

Wholesale and the Parallel Trade

According to some estimates, 80 per cent of medicines in Europe are distributed through wholesalers (Vander Beken, 2007), with drugs on the parallel market being subject to 20–30 intermediary transactions before reaching the final patient (UNICRI, 2012). Pharmaceutical wholesale companies are very numerous: more than 55,700 are registered in Europe alone (Riccardi & Proietto, 2017). The figure refers to the number of companies registered in European countries in the NACE sector G.46.46—Wholesale of pharmaceutical goods, and which are listed in the Bureau van Dijk ORBIS database. The number may be higher if also individual companies (not fully covered by the ORBIS database) are taken into account.

Some of them act also on a transnational basis in the parallel trade: this consists in the trade of medicines across EU member states outside the manufacturer’s or licenced distributor’s formal channel. It is driven by price differentials: products are transferred by brokers (authorised as parallel traders) from a low-priced country (source) to another country (destination) at higher prices. This trade is both legal and desirable (socially

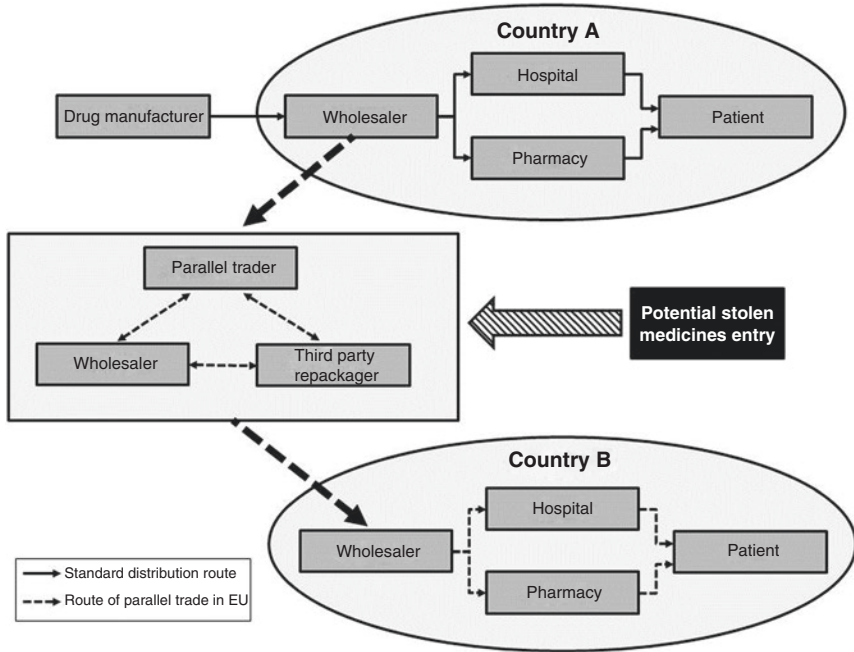


Fig. 13.1 Vulnerabilities of the pharmaceutical parallel trade system

as well as economically) because it produces savings for both third-party payers and consumers.

But, as mentioned, the parallel trade is also one of the most significant risk factors in the illicit trade of medicines: corrupted brokers may falsify documents to acquire counterfeit or stolen products and then re-sell them on the legal market (Fig. 13.1). In particular, the vulnerabilities are related to:

1. the high number of brokers, which makes it difficult to monitor all the companies active in the wholesale trade;
2. the fragmentation of the authorisation process: whilst for certain medicines (CAP—centrally authorised products) parallel traders are checked and authorised directly by the European Medicine Agency (EMA), for other products the authorisation is provided at national level, with many differences across EU MS (EMA, n.d.);

3. the lack of publicity of the lists of parallel traders;
4. the difficulty of verifying the authenticity of brokers' authorisations and foreign licences.

All these vulnerabilities make it easier for criminal organisations to enter the legal supply-chain and to disguise and 'launder' the illicit origin of stolen medicines (Riccardi et al., 2014).

Lack of Traceability

At present, there are various medicine identification systems, including RFID (radiofrequency identification), data matrix and/or bar codes. Although numerous countries and manufacturers have implemented traceability systems, this has often happened with incompatible proprietary coding and identification requirements (Grimald, 2012, p. 4).

In Europe at present there are several traceability mechanisms. They vary from country to country and are characterised by different code structures and bar codes content (see Fig. 13.2). Although common safety features on the packaging (including a unique 2D bar code ID, and an anti-tampering device) have been introduced by Regulation (EU) 2016/161, they will be effective only in 2019, and even later in some EU countries (i.e., Italy, Belgium and Greece). The different traceability systems impede the activity of investigators while they favour criminals, especially those involved in the trafficking of stolen products across borders and jurisdictions.

Vulnerability of Transportation and Hospitals

In the case of theft, hospitals and delivery are the stages most vulnerable to robberies of medicines, while manufacturers and retail pharmacies seem less exposed (Riccardi et al., 2014). The delivery stage has high risks of theft for a variety of reasons. First, there is evidence that Italy is highly affected by cargo crimes (TAPA EMEA, 2014). Second, the transportation sector in Italy is very exposed to infiltration by organised crime

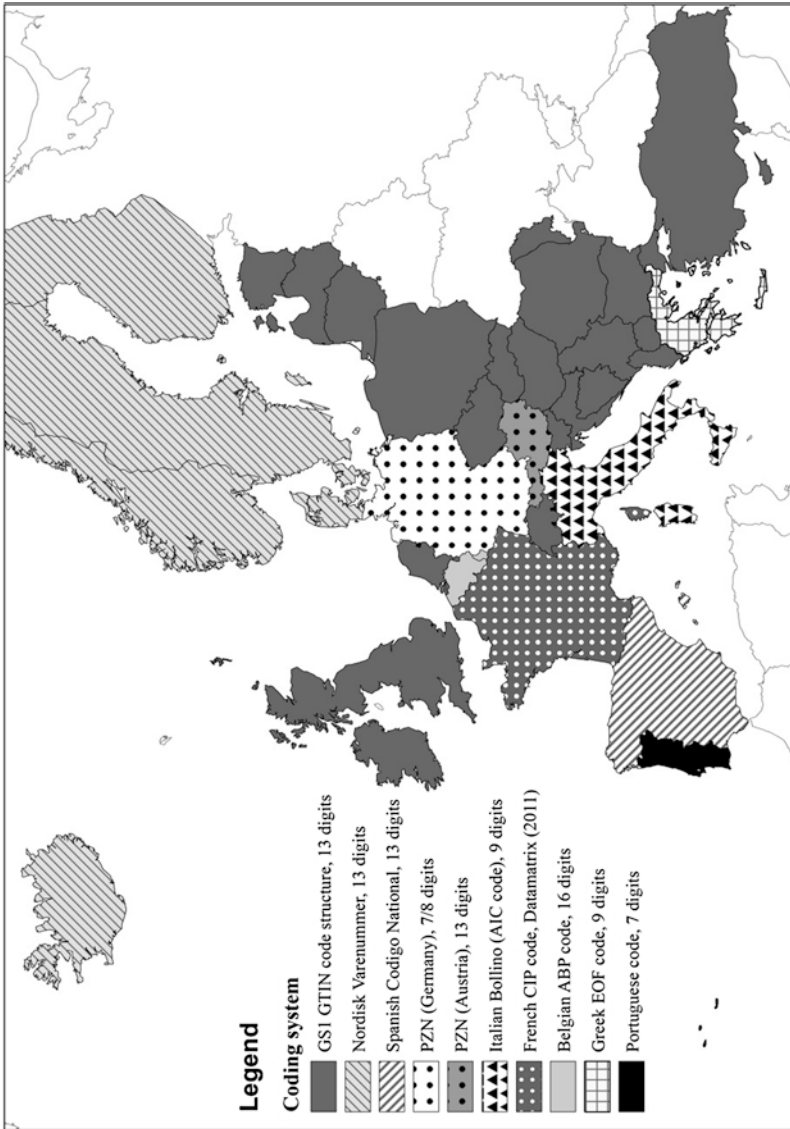


Fig. 13.2 Differences among coding systems of pharmaceutical products in Europe. Source: EFPIA

groups (Riccardi, Soriani, & Giampietri, 2016; Transcrime, 2013), and this may lead to the involvement of courier companies in the theft or illicit diversion of medical products. The same occurs, for example, in the Netherlands (Ferwerda & Unger, 2016; Kruisbergen, Kleemans, & Kouwenberg, 2015) in Spain or Latin America (Palomo, Márquez, & Laguna, 2016). Moreover, the fragmentation of the sector itself (with a large number of small single-owner transport firms—the so-called *padroncini*) makes it difficult to monitor suppliers and sub-contractors.

Hospitals are also very vulnerable to theft. They are generally weakly monitored structures characterised by a high turnover of medical staff (nurses, doctors, etc.), which may again decrease control and increase the risk of thefts and losses. According to a recent study by the Italian Association of Hospital Pharmacies, Italian hospitals are characterised by both a lack of security risk assessment and poor application of protective systems. Only 10 per cent of the sample observed by researchers had a sufficient security risk level; 66 per cent of the sample were inadequate; 24 per cent of the sample were seriously insufficient (both basic passive and active protection systems were missing) (Turchetti, Pani, Cannizzo, Antonel, & Rossi, 2016).

Internet and New Technologies

The emergence of new technologies and skills has simplified both the production and the distribution of fake or stolen pharmaceuticals. On the distribution side, the Internet has made it possible to set up online pharmacies which are exploited by criminals to place counterfeit or stolen medicines anonymously (Europol, 2011; Interpol, 2011; UNICRI, 2012). The difficulties in regulating virtual pharmacies make it difficult to trace the origin of the marketed products (eCrime, 2015; EFPIA, 2012; IMPACT, 2013).

According to 2013 estimates by the US National Association of Boards of Pharmacy, 97 per cent of all online pharmacies used by US citizens do not operate within US laws and regulations (Safemedicines, 2013). Many of these websites mimic the appearance of licenced sites from Canada, but the FDA has warned that these pharmacies are not what they purport

to be. According to the World Health Organization, more than 50 percent of the medicines purchased on the Internet from illegal sites are counterfeit (2010). In 2008 a report of the European Alliance for Access to Safe Medicines concluded that more than 60 percent of the drugs sold by online pharmacies are counterfeit or substandard.

Research Hypotheses

In light of the foregoing discussion, it can be hypothesised that criminals exploit the asymmetries in the pharmaceutical supply chain—and in particular the loopholes in the parallel trade and the differences among traceability systems, pricing and reimbursement regimes—to place stolen medicines on the legal market. The ‘product laundering’ strategy would make it possible to benefit also from the sale of high-price medicines (such as anticancer or other reimbursed drugs) which are difficult to sell on the black market, but which guarantee the highest return on risk. The second hypothesis is that this criminal activity requires a high level of organisation that only certain criminal groups (like Italian or Eastern European mafias) possess. This involves the ability to infiltrate hospitals and transportation couriers, and to link with pharmaceutical wholesalers and brokers set up in foreign countries which are used to ‘launder’ the stolen products with the production of fake invoices and certificates of origin. The two hypotheses described above are tested by analysing a specific case study: the theft of medicines from Italian hospitals.

The Present Study

This chapter is based on the study carried out by Transcrime in 2014–15 (Riccardi et al., 2014, 2015). In recent years, Italy has experienced an exceptional increase in the number of thefts of medicines from cargos, warehouses and healthcare facilities, and it has become one of the main European ‘hot spots’ for this type of crime (Ekwall, Brüls, & Wyer, 2015). According to the Transported Asset Protection Association (TAPA), Italy represented about 83 per cent of the pharmaceutical thefts from cargos

recorded between January 2012 and February 2014 in the European, Middle Eastern and African region (TAPA EMEA, 2014).

Despite this alarming situation, research on this topic is still scarce, and no official data on theft of medicines are available from LEAs, other public authorities or private associations. Due to lack of official data, the analysis by Transcrime had to rely on the information on thefts of medicines from Italian hospitals retrieved from a systematic review of articles published in the main Italian online newspapers from 2006 to May 2014. The search was conducted on the web, in newspapers online archives through specific search engines (e.g., Lexis Nexis, ANSA) and relevant keywords, controlling for synonyms (e.g., “*medicines*”, “*farmaci*”, “*prodotti*”) and word combinations (e.g., “*furto*” + “*ospedali*” OR “*furto*” + “*cliniche*”).

This search resulted in the identification of 110 cases. The following list summarises the main information collected for each case and the number of cases reporting that information:

- Name of the hospital involved ($N = 110$)
- Place of the theft (municipality, province and region) ($N = 110$)
- Date of the theft ($N = 102$)
- Approximate hour of the theft ($N = 83$)
- Types of medicines stolen ($N = 93$)
- Economic value of the theft ($N = 93$)
- Details about the criminals’ *modus operandi* ($N = 79$)

The collected data showed a dramatic increase in episodes, with 81 per cent of the thefts occurring in the last 17 months considered (Fig. 13.3).

The authors are aware of the potential bias related to the use of open source data (for details see Riccardi et al., 2014, p. 34). However, this is at present the only accessible source of information for a study on theft of medicines. In particular, the authors acknowledge that the actual number of thefts occurring in the timeframe considered is likely to have been higher than the number retrieved. This is due to the lower visibility of smaller-scale thefts in the media and the propensity of hospital managements to reduce any publicity of the crimes committed in order to avoid reputational damage.

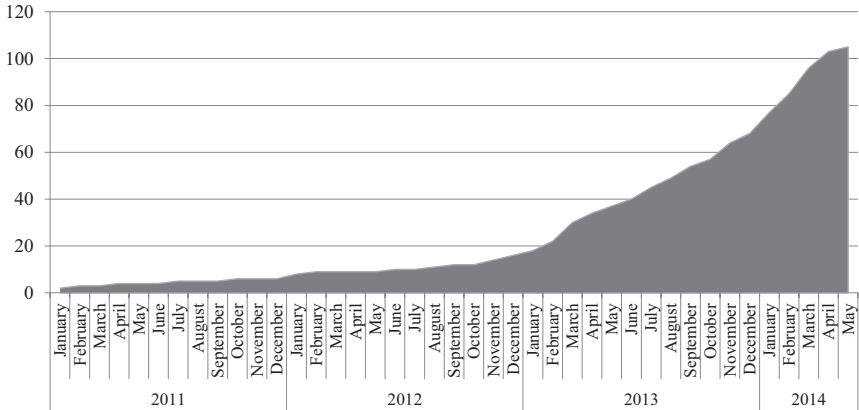


Fig. 13.3 Cumulate number of thefts of medicines from Italian hospitals

Results

Hypothesis 1: Stolen Medicines Are Resold on the Legal Market

Information on the types of stolen medicine can suggest their possible destinations and use. In the Italian cases, most medicines are oncologic or other Class A or H drugs (Fig. 13.4). Class A includes essential products and medicines intended for chronic diseases. Class H includes products that are administered in hospitals (Folino-Gallo, Montilla, Bruzzone, & Martini, 2008).

Two conclusions can be drawn from this information. On the one hand, all these are high-priced medicines that can yield high profits to the criminals (e.g., a single vial of an anticancer medicine can be priced up to 2000 euros). The high profitability may have induced some criminals to switch from other illicit activities (e.g., drugs or human trafficking) to theft of medicines due to the lower risks (e.g., lower sanctions) (Bate, 2008). It was estimated by the authors that, on average, each theft yielded more than 250 thousand euros in value (calculated as the packaging price of stolen drugs).

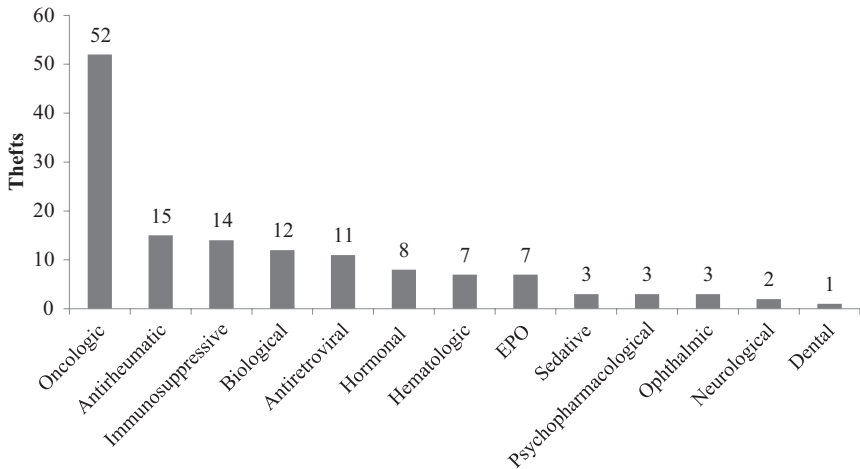


Fig. 13.4 Number of thefts by type of stolen medicine. Source: Authors' elaboration of data collected from Italian newspapers, 2006–2014

On the other hand, class H medicines (like anticancer ones) are usually fully reimbursed by the NHS in Italy and, similarly, in many other EU MS (Folino-Gallo et al., 2008; Pauwels, Huys, Casteels, De Nys, & Simoens, 2014). This seems to exclude the possibility that stolen drugs are sold on the black market (i.e., why should patients resort to illegal products if they are fully reimbursed?), but it suggests two scenarios:

- stolen medicines may reach foreign countries' markets where reimbursement regimes are weaker or where the legal supply is insufficient—for instance Eastern Europe or Greece (Sukkar & Smith, 2013; The European House Ambrosetti, 2011; Zlatareva, 2015);
- once stolen medicines have been 'laundered' through fictitious wholesalers, they are sold back on the legal market, either in Italy or abroad.

Various elements support the second hypothesis. First, it should be noted that these medicines can usually be administered only in specialised medical structures with complex procedures. It is consequently unlikely that stolen products are directly sold via the black market (as happens for 'lifestyle', doping, or recreational medicines). Second, there is a large

amount of investigative evidence that wholesalers, brokers and pharmacies are widely involved in ‘laundering’ stolen products and re-selling them to other wholesalers or to healthcare structures across European countries, often relying on the parallel trade.

For example, in 2015 the *PharmaLab* operation by the Italian Guardia di Finanza revealed that thousands of packages of stolen expensive medicines (including interferon, antibiotics, anticancer drugs) were stocked in unsafe and unhealthy conditions in an illicit depot before being resold to the legal market by wholesale and retail pharmacies connected to the criminal group (Guardia di Finanza, 2015).

Another example is the *Vulcano* investigation of 2015, which dismantled a criminal network that was reselling stolen medicines to legal dispensers in several EU MS through fictitious wholesalers set up in Cyprus, Romania, Hungary, Slovakia and Slovenia. During this operation, numerous vials of Herceptin®, a breast-cancer treatment drug, stolen from Italian hospital pharmacies, were found in the warehouse of an Italian broker. They had apparently been legally acquired from an Eastern European wholesaler and were ready for shipment to Northern Europe through the parallel trade network. The stolen anticancer drug had been already sold in hospitals in Germany, Austria, Finland and the United Kingdom (AIFA, 2015; Riccardi et al., 2015).

All this evidence confirms the hypothesis that criminal organisations—by exploiting the loopholes in the wholesale and parallel trade system, and taking advantage of the lack of traceability of medicines across countries—are able to steal medicines in the most vulnerable areas (e.g., hospitals and cargos in Italy), to launder them for resale on the European legal market.

Hypothesis 2: Organised Crime Groups Are Involved in Theft of Medicines

Organising a theft from a hospital and then the transport, storage and placement of the stolen medicines on the legal market involve a high level of complexity and organisation. The collected evidence supports the idea that thefts are not (only) conducted by individual criminals or temporary gangs, but rather by complex organisations with advanced skills, defined

roles and networks that can be activated at different stages of the products' theft and laundering.

The first evidence supporting the hypothesis of the involvement of OC groups is the geography of the thefts. Although episodes occurred throughout the entire country, the southern regions of Campania and Apulia represented about 43 per cent of the cases (with respectively 28 and 19 thefts) These are areas where Italian organised crime groups are historically present and very active (Transcrime, 2013) (Fig. 13.5).

To further test the link between OC groups and thefts, the correlation between the number of events recorded and some indexes of presence of Italian mafias was calculated (Table 13.2). In particular, the Mafia Presence Index (MPI) is a composite indicator measuring the presence and activities of the Italian mafias across Italian regions. It results from the combination of data on mafia-related crimes (e.g., mafia homicides and people reported for mafia conspiracy); municipalities and public authorities dissolved for mafia infiltration; assets confiscated from organised crime groups; and the number of active groups reported by the Italian Direzione Investigativa Anti-mafia (DIA) and the Italian Direzione Nazionale Anti-mafia (DNA). The other indexes differentiate the intensity of the Mafia presence distinguishing by different Mafia types (i.e., Cosa Nostra, Camorra, 'Ndrangheta, Apulian OC and Other Italian OC). They are based on the DIA and DNA reports. All these indexes were originally developed by Transcrime in the framework of a project for the Italian Ministry of the Interior and then further updated (for details see Calderoni, 2011; Dugato, Favarin, & Giommoni, 2015; Transcrime, 2013). The correlation with the MPI was positive and significant. Even higher was the correlation with Camorra groups only. The correlation with Apulian OC was also significant, while that with the 'Ndrangheta and Cosa Nostra was not.

Camorra and Apulian OC groups have long-standing connections with Eastern European and Balkan criminal organisations related to contraband (e.g., tobacco products) and illicit trafficking of drugs and human beings (Transcrime, 2013). These agreements and trading channels could have been exploited to move stolen medicines through foreign countries or to establish fictitious pharmaceutical brokers to launder and resell them on the legal market. Evidence of a partnership between Italian and

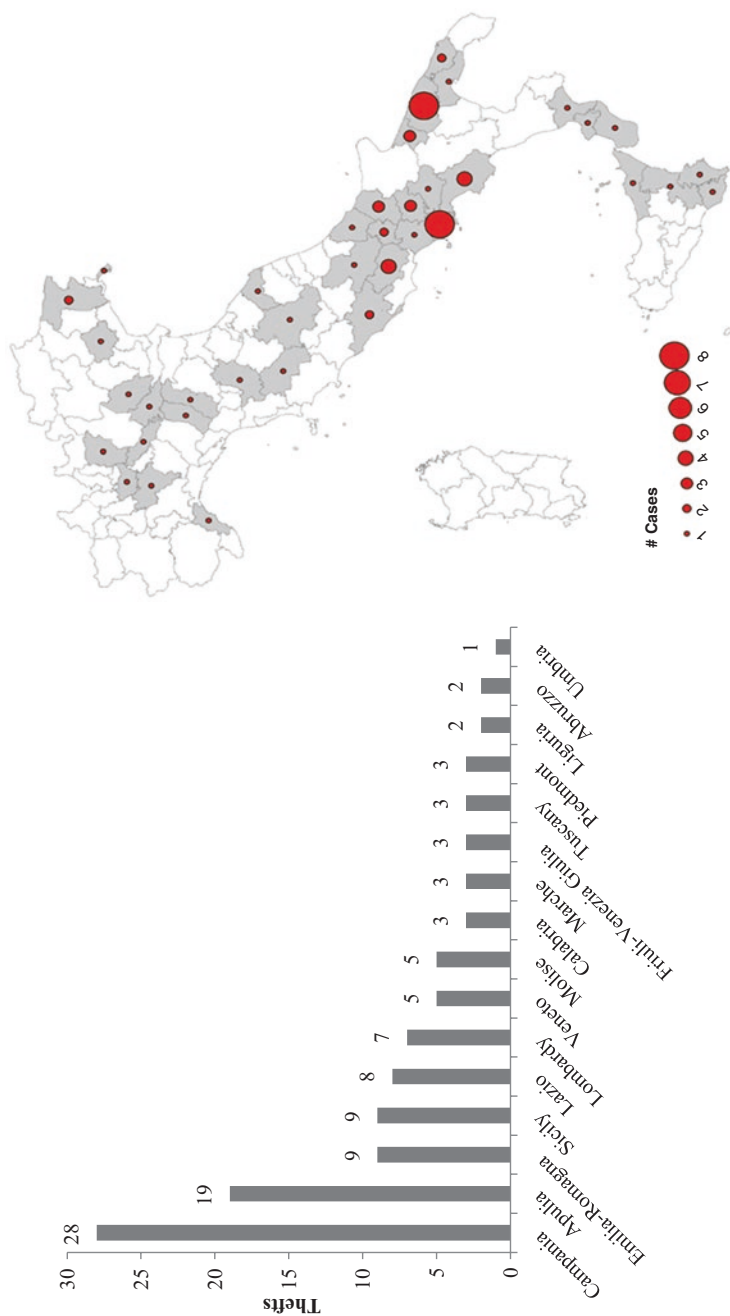


Fig. 13.5 Geographical distribution of the thefts of medicines from Italian hospitals. Source: Data collected by the authors from Italian newspapers, 2006–2014

Table 13.2 Pearson correlations between number of thefts and OC presence by type ($N = 107$)

	Mafia presence (index)	Cosa nostra (index)	Camorra (index)	'Ndrangheta (index)	Apulian OC (index)	Other Italian OC (index)
# Thefts	0.47*	0.08	0.61*	0.04	0.42*	-0.01

Years 2006–2014 (May)

* $p \leq 0.001$

Eastern European groups emerges also from investigative evidence (AIFA, 2015; Guardia di Finanza, 2015; Riccardi et al., 2015). Moreover, Camorra and Apulian OC are notoriously active in other organised theft activities, such as cargo robberies (Europol, 2013), which may suggest that these OC groups have the skills and the resources necessary for successful management of thefts from hospitals and the placement of stolen products on the market.

In addition to these results, an analysis of the thieves' *modus operandi* provides further evidence on their connections with local criminal organisations. In particular, criminals accessed in several ways the pharmacies or warehouses where medicines were stored, but only a half of the thefts were conducted by forcing or breaking the accesses to these areas (i.e., by breaking the door locks) (Fig. 13.6). About 42 per cent of the thefts involved fake personnel (i.e., criminals disguised as doctors or nurses) or entrance without breaking (i.e., the thefts found the doors opened or had the keys). These options clearly implies that criminals may rely on insiders or corrupt medical personnel within the targeted hospital able to provide information and means (i.e., keys or badges) for conducting the thefts. Indeed, several studies demonstrate the high degree of infiltration of mafia groups in the healthcare system, and this network may have assisted with the theft of the pharmaceuticals from hospital pharmacies (Becucci, 2014; Riccardi et al., 2016; Sciarrone & Storti, 2013). Another small portion of the thefts occurred by knocking a hole from the outside of the building through the rear or side walls of the rooms where the medicines were stored. This latter *modus operandi* suggests two considerations. First, cutting a hole in the wall requires specific skills and tools.

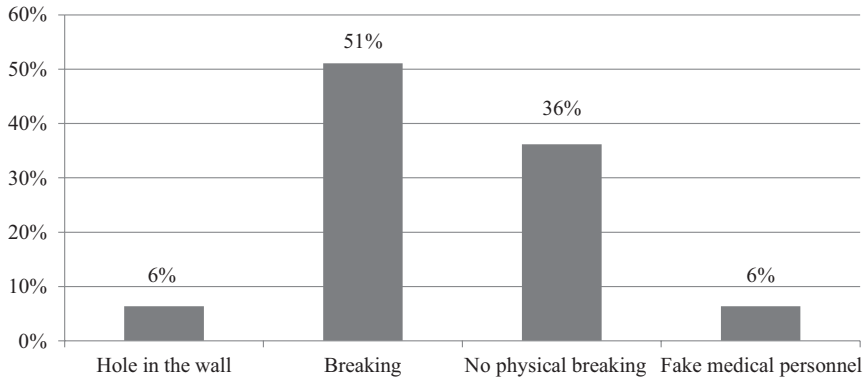


Fig. 13.6 Percentage of thefts by type of entry ($N = 79$). Years 2006–2014. Source: Authors' elaboration of data collected from Italian newspapers, 2006–2014

Second, it implies that the criminals had some insider knowledge of the hospital structure, especially regarding areas usually not accessible to the public (i.e., internal pharmacies and warehouses). Both these considerations confirm the hypothesis that these thefts are highly planned and conducted by organised groups.

Conclusions

The cases presented above highlight that theft of medicines is emerging as the new frontier of pharmaceutical crime and as a new form of retail organised crime. Demand for expensive medicine is high, their costs are hard to be tolerated either in Italy or in other European countries and these factors have created increasing opportunities for crime. Evidence confirms that transnational organised crime groups (like Italian mafias or Eastern European OC) are very much involved in this criminal activity, and that stolen products are not only destined for illegal markets (e.g., through e-pharmacies) but, once laundered with the cooperation of fictitious wholesalers, they may be resold on the legal market—and again end up in hospitals and pharmacies.

This has a strong impact on patients' health (because stolen drugs may be kept in unsafe and unhealthy conditions, or adulterated), pharmaceutical

companies' revenues and reputation (because if medicines damage patients, they may be withdrawn from the market), and governments' costs (because of the losses suffered by the NHS). It is clear that in order to tackle the problem, interventions should address a variety of loopholes in the pharmaceutical sector. Remedies are in the direction of limiting illegal demand and criminal supply. For example, they should reduce the asymmetries between regulations and harmonise parallel trade authorisations across EU MS, which, at least for most products, are still very diverse. This remedy will reduce the existing opportunities in terms of price differentials and insurance costs.

Moreover, the traceability of medicines across EU countries should be harmonised and improved, and pharmaceutical wholesalers (especially those involved in parallel trade) should be better monitored. After having reduced the opportunities on the supply-side, the improvement of security of hospitals would be necessary. The current awareness of the risks is low and the costs of this crime are high. Security controls to pharmacies in the hospitals should be strengthened, and access be limited to patients and the hospital personnel.

These remedies could be better addressed increasing the knowledge of the phenomenon (scale and *modus operandi*). Public available data are lacking both because thefts of medicines are not seriously perceived, both because often unreported and/or confused in the wider category of thefts. The lack of knowledge on this crime brings to non-specific remedies. In this direction, it is necessary to analyse other data sources, such as police statistics and proprietary data provided by hospitals and pharmaceutical companies; and to extend the analysis to other targets, in particular trucks and cargos. The interaction between medicines trafficking and parallel trade should be further investigated, as well as the loopholes in the traceability and authorisation mechanisms which may be exploited by OC groups.

Although there is close cooperation among all the institutional actors involved (government, police, industry), stronger public-private partnerships (among researchers, law enforcement agencies, supervisory bodies, pharmaceutical companies and industry representatives) could engage in the wider sharing of perspectives, data, and information in order to enhance understanding of this almost unknown phenomenon.

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Part V

Retail Crime Prevention



14

The Challenges to Preventing Losses in Retailing: Views from Retail Loss Prevention Managers and Directors

Martin Gill

Introduction

This chapter focuses on the ways in which those who manage crime in retailing determine the most appropriate measures to respond to the threats they face. This is important because scholarly evaluations typically take a long time, and often do not lead to definitive conclusions about how best to deploy them.

The academic study of crime prevention has paid serious heed to quality evaluation to determine ‘what works?’ (see, Manning, 2014; Tilley, 2009). There is some evidence of success (van Dijk, Tseloni, & Farrell, 2012; see also, Gill, 2007; Hayes & Grottini, 2014; Welsh & Farrington, 2009). There are of course a variety of methodologies in evidence as researchers seek to achieve a gold status to show with as much degree of certainty as possible which measures work in what circumstances against various types of crime-related problems (for discussions in the context of security/crime prevention, see: Eck, 2017; Smith & Brooks, 2013).

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There is a plethora of theories about how to meaningfully impact on crime although this ‘does not mean that all theories and all practices reflecting these theories are equally good’ (Tilley & Sidebottom, 2017, p. 3). In simple terms it is a prerequisite for determining what works that there is a clear articulation of what a measure is supposed to do, followed by an understanding of how that is to be achieved, leading to an outcome (Tilley, 2009). However, crime is complex and inevitably crime prevention is too (see, Leclerc & Savona, 2017), and despite approaches which have been designed to make it easier for practitioners to follow it is still in practice not easy (Ekblom, 2011); ‘crime problems, require complex solutions’ (Bjorgo, 2015, p. 240). So how do those charged with responding to crime in business assess and act upon responses?

There is arguably more research on retail loss than in other sectors, at least about what goes missing (see, Bamfield, 2012; Beck, 2014). This is in part a reflection of the fact that loss is relatively easy to identify in retailing via the shrinkage rate (discussed below). And where studies have shown losses to be high, cost conscious retailers have probably been better than many other organisations in other sectors in committing to identifying causes and trends and the effectiveness of different measures with a view to increasing savings and improving profits. That said, in the commercial sector generally and retailing specifically relating less loss to more profit cannot be treated simplistically. One case is where a change in product display led to the rate of loss increasing considerably but sales grew at an even faster rate—an example of increased losses being more than compensated for by improved sales (see Beck, 2015). Certainly losses can be extremely high, exceeding \$200 billion in 2014–5 (Global Retail Theft Barometer, 2015) with follow on consequences for local communities in the lack of some goods available for purchase (because of theft) (Hopkins & Gill, 2017). So how do retailers decide crime prevention priorities? Does it amount to a ‘pack mentality’ in that retailers follow what others are doing? (Beck, 2016). What is their view on the range of measures at their disposal and what influences them? This chapter provides an insight into what retail loss thinks about itself.

Gill (2014) in a broader context, and Beck and Hopkins (2017) in a retail environment are amongst those that have argued that organisations largely choose how much crime they wish to tolerate evidenced by the approaches they adopt. There is often a contradiction between what

is good for the customer (being able to handle and inspect goods for example) and what is good for theft prevention (keeping goods under some sort of close supervision and limiting access to points where they can be overseen). Moreover, sometimes crime prevention measures can cause more problems than they solve (see, Gill, 2017) and new technologies can add to this (Beck & Hopkins, 2017).

The Present Study

This chapter is based on interviews with twelve loss prevention managers/directors, of major high street retailers. Unlike many other studies which are conducted on line and focus on levels of loss and contributing factors, the interviews were conducted one to one (a mixture of face to face and telephone interviews) and focused much more on a qualitative understanding of the current state of loss prevention. The research was conducted in the latter part of 2015 and the early part of 2016. It was sponsored by a high street retailer but undertaken independently. So all interviewees were approached by the author, who conducted all the interviews and analysed the results. In all but three cases, interviews were conducted with the senior member of the loss prevention team. Given that these were all heads of major retailers they had a wealth of security experience between them, and were in a good position to address the objectives of this study. In all but two cases the interview was conducted face-to-face, the exceptions involved telephone interviews. One interviewee supplemented the face-to-face interview with notes taken as part of the process of thinking about the issues. In another case some brief answers were sent ahead of the interview. These data have also been included. Interviews lasted from approaching one hour to nearly two. Notes were taken. These were then analysed, themes were identified and then written up (see, Cresswell, 2013). Interviewees were guaranteed anonymity and shown a draft copy of the output both so they could assess findings but ensure confidentiality had not been breached; this process did not lead to any substantive changes. The retailers chosen were all large ones (similar to the sponsor) and chosen because of this; so they all had a dedicated person/unit managing loss.

Given the approach, the findings should not be interpreted as being typical or representative, that was not the purpose, rather it was to generate insights from those involved in diverse retail environments about the issues under study.

The Way Loss Prevention Is Organised

The use of the word ‘loss’ to describe activities that conventionally fall under the umbrella term ‘loss prevention’ can be controversial. Indeed, it is far from clear what loss means in the context of retail shrinkage as there are various definitions in common parlance (see Beck, 2016; Beck & Peacock, 2009; Chapman & Templar, 2006a, 2006b). Three further overlapping reasons were suggested by interviewees as to why the words ‘loss prevention’ to describe activities undertaken could be misleading.

The first was that they did not accurately convey the work the department undertook where loss prevention was just one part of its activities. So one retailer used ‘loss and safety’ and another ‘safety, security and resilience’. Some interviews highlighted a range of activities they were responsible for that were not best encompassed by the words ‘loss prevention’, including investigations and risk/crisis/continuity management for example. A second factor was that ‘loss prevention’ was seen as out-dated and a negative term; some preferred titles for activities that conveyed a more positive image such as ‘profit protection’ which had the added advantage of more obviously aligning with the explicit aim of retailing, namely being focussed on profit.

A third factor, and potentially a growing one, was the interest in ‘Total Loss’ which highlights the benefits in bringing together all types of loss in retailing rather than the purely malicious form that has characterised most loss prevention roles over the years (see, Beck, [Forthcoming](#); Beck & Peacock, 2009). Total Loss though can be confusing where it involves malicious and non malicious loss but only in a specific area or part of the retail operations. Indeed, many noted they were not responsible for all areas relating to (total) losses such as stocktaking, the delivery processes and any discrepancies relating to loss within them, fraud, logistics, and the tender process.

That point made, some retailers specifically chose ‘loss prevention’ often because it was the most easily understood.¹ One interviewee reported that work had been undertaken by the retailer’s Human Resources Department concluding that ‘loss prevention’ rather than ‘security’ was entered into search engines when people looked for employment and so to attract recruits the name was changed from the latter to the former.

What is clear is that loss prevention is often called by other names and incorporates a range of activities that are common to only some retailers. A variety of factors influenced what was covered. History was one—it had always been called that and no-one was campaigning for change and of course the views of senior management and the Board another, other factors included whether the function was part of a group as opposed to a single retailer (there were more roles and views to take account of), the types of goods sold, the methods of operation and whether on line losses were covered and whether any aspect of the prevention involved third parties. In some cases the loss prevention lead acted as an advisor to the various departments and had limited or no operational responsibility, in other cases he/she not only led but were responsible for large internal teams and sometimes security suppliers (for a broader discussion of this issue see, Security Executive Council, [2011](#); Walby & Lippert, [2013](#)).

The Support of the Board

Interviewees reported, in general, feeling very well supported by Boards which can be important in determining its overall effectiveness or at least its level of integration into the business (Cavanagh, [2005](#), [2006](#)). Indeed, when asked to mark on a scale of 1–10 where 10 reflects very high support seven of the 11 gave a score of at least 8 (In all such questions in this report 10 was ‘very high’ and 1 ‘very low’). The lowest score given was a 5, principally because in that case the department was new and still establishing itself. When asked to explain why they felt support was high most pointed to their personal success in reducing losses and general high-level performance. As evidence they referenced requests for funding being approved, and by being able to access Board members and/or the

MD whenever needed. That said, others reduced the mark they gave because they felt distanced from the Board. Some noted that support varied amongst Board members. Some typical comments here included:

‘There is a big drive to reduce stock loss, so very supportive, but for ‘supportive’ read ‘demanding’ which does put a different slant on it. It does not feel nice, it is not arms around shoulders, it is challenging.’ (C)

‘Our MD is committed, we asked for 1 million and we got it. He said we are one of the important priorities, but because I am so far removed from the Board what I propose can get stopped.’ (I)

‘Very high, very keen and take a personal interest ... and we can have direct contact at any point.’ (J)

Overall Effectiveness

Interviewees were asked what evidence they used to show they had been successful, and this threw up something of a conundrum. While on the one hand there was an easy measure of success through various revenue stream losses (shrinkage figures were mentioned in particular), on the other hand operational responsibility for managing loss fell outside the work of the loss prevention department. Moreover, (and as noted above) changes in retailing, and the tendency to reduce the number of staff on the shop floor was cited as an example of where a move that may have benefited general store operations (at least in terms of reducing costs) was often counter to the interests of loss prevention.

Yet despite this conundrum, measures of loss were generally deemed an important determinant of success or failure. Stock loss results were a key measure for some, and retailers regularly collected their own data. Some use was made of survey findings, such as the British Retail Consortium (BRC) survey although there was scepticism expressed by some about the methodology (some doubted retailers reported accurate figures and some felt there were variations in the definitions of loss used). For example, when the measure of shrinkage is as a percentage of retail sales, which is common, then the level can be hugely affected by the amount of retail sales; a good way to reduce losses is simply to sell more.

While findings for some offence types such as burglaries and online fraud could be compared to official statistics, most stressed caution in relying too much on the data here too. In some cases a different type of measure was deemed more applicable, for example, qualitative assessments (sometimes backed up by statistics) such as how well a person conducts a particular task. Sometimes success was judged in terms of retaining resources, not least headcount, against a wider commitment to reduce these. Comments reflecting these views included the following:

‘Stock loss is something over which you only have partial control, is this appreciated?’ (B)

‘Our objective is to reduce stock loss and reduce risk but we don’t get the recognition, we don’t get hardly any recognition. If it goes up we don’t get called before the CEO as I am a support function, the brand will get called up. If we went down all over the company it would be seen as the business not LP specifically was going down.’ (H)

‘KPI delivery, penetration tests and mystery shopping validation and especially contract KPIs reviewed every month.’ (K)

While benchmarking sometimes takes place it is often an internal process comparing internal measures (for example shrink) with the previous year. The following two quotes are from one interviewee noted that benchmarking took place against other parts of the group operating in other countries, and another said that there was a comparison against peers, but this was seen as problematic because roles differed:

‘We are benchmarked against other countries within our business and against previous years. Also benchmarked in percentage and real terms, so on the value of loss independent of the performance of the company.’ (G)

‘... Only against peers. It is unfair because we work in different areas but we use the same skills and management tactics, your acumen your delivery and how you do it are all similar, because measuring loss is different to sales. A large part of the bonus is on behaviour rather than output.’ (I)

When interviewees were asked to assess the overall effectiveness of loss prevention the scores ranged from a low of 4 to a top mark of ‘a high 9’.

The mean was 6.9. The mark of 4 was the result of an interviewee perceiving that the department was being decimated by a ‘cull’ on staff:

‘The number of staff has been cut by a half ... I like being part of successful team and a cull like that can leave you with the worst. It all makes life harder.’ (C)

There was also a mark of 5 (the next lowest was a 7), because a relatively new head of function was still implementing change:

‘We are still on the journey from reactive to proactive, engaging in cultural change and we have not yet got our resources aligned to our risks.’ (I)

The higher marks reflected the view of interviewees that they had met objectives, reduced losses (usually continually over time) and were seen as competent by stakeholders across the company. Some typical comments here included:

‘Because we have been so successful in reducing stock loss and wastage ... and our online business has increased and we have not seen any increases in loss in key areas.’ (E)

‘We have never not achieved our objectives and the more we are doing the more we are exceeding all, and it is industry leading ... show me RFID where loss prevention is managing it.’ (F)

‘Look at what we have done and it is very good. But good, not perfection.’ (J)

During the research information was gleaned on the perceived effectiveness for specific types of measures, starting with guarding.

The Effectiveness of Guarding

There is relatively little research on the effectiveness of guarding in a retail setting albeit amongst what does there is some evidence that effectively deployed they can have a positive impact (see, for example: Tonglet 1998, 2000; and a review by Beck, 2016). There has been a tendency to replace

the word 'guard' with something like 'security officer' to denote the greater credibility that attaches to a well prepared and motivated uniform presence. Certainly, in the UK (Button, 2007; Wakefield, 2003) and around the world (Nalla & Wakefield, 2014; van Steden & Sarre, 2010) perceptions of the work undertaken are often positive and far less negative than is sometimes assumed to be the case. That said, in the absence of evaluations, there were question marks about the effectiveness of security officers not least in a retail context.

In general there were three main reasons why security officers were not seen as central to the loss prevention approaches the retailers adopted' and that two respondents gave a score of 2 and one a 3 indicates perceptions can be very negative. The first was the cost of labour and its management although ironically one interviewee highlighted the problem that some suppliers avoided retailing because of the notorious low fees that are paid. The second related to the limited role security officers played in tackling theft. Some felt frontline store staff were at least as good at deterring thieves as guards. Some retailers had adopted a policy of not arresting thieves—to deter them and invite them to pay rather than make an arrest—and it further lessened the need for, and value, of a guard. Third, it was also noted that the presence of guards was not compatible with the type of image some retailers sought to portray as a key aspect of their approach to attracting customers. Some typical comments here included:

'We have a few, I think they are a complete waste of money, they don't seem to have any impact on stock loss. I can express this best by saying that if we had those that did make a difference we couldn't afford them anyway.' (E)

'We use the store front and use the look and feel of the store to attract customers. Guards can detract from that.' (G)

That said, one interviewee gave guards a top ranking of 10, and there were some key benefits noted to good security staff. First, and in stark contrast to a view expressed above as a reason for not valuing guards, it was noted that they act as a deterrent and in this way can contribute directly to reducing loss. Second, they encourage staff in the store to

think about security and can be a focal point for security advice; in short they keep security on everyone's agenda. Third, they are present to reassure staff, particularly where there has been, or is a likelihood of, some type of aggression, and in these circumstances they can play a key role in promoting staff safety. Some typical comments include:

'Effective guarding can be good. With an effective team, with a good store manager, with store engagement, then yes, guards are important but you need all these.' (J)

'A visible deterrent, multi-faceted, can enhance customer experience, can become an integral part of store operations beyond physical security, provide links with police and provide in store activity driving perceptions of safety. A physical person [that] criminals perceive as a threat and I think that does reduce and inhibit theft.' (K)

'We do a lot of work with offenders and the feedback we get is a guard is a deterrent, if we have a good one it is, but a poor one is not worth it. Also removing guards causes issues with stores which suggests they value them. The main benefit is deterrence.' (L)

It is important to emphasise a point made by many that the effective use of guards was dependent on more than having just good people; they need to be managed effectively and integrated into store operations against a set of well defined expectations. The use of technology was being explored to keep security officers informed of things such as the presence of known offenders or other threats. Some respondents said they were exploring the idea of pooling resources with other retailers and deploying guards in zones or areas as opposed to stores. Amongst the potential benefits noted here were savings on costs; being more easily able to deploy resource to risks (through economies of scale); benefiting in other ways from operational collaboration such as more and better shared intelligence; and being more easily able to include part-time workers broadening the potential personnel pool. Representative comments here included the following:

'If you walk down Oxford Street they are all doing the same thing, pass a store and you will often see a guard, so you could pool the cash and create

a much better shopping experience. And we could perhaps do this with our own stores where they are co-located and we can use guards in proportion to risk.’ (A)

‘We do have guards, but it will change and we are looking at city patrols and our aim is to join a city patrol, and we wont have any in store.’ (F)

The Effectiveness of CCTV

CCTV takes many forms (Taylor & Gill, 2014) and is omnipresent in (at least larger) retail settings and has been shown to have a number of benefits (Gill, Bilby, & Turbin, 1999), although overall the jury is out on the effectiveness of CCTV (but see, Welsh & Farrington, 2009). Much depends—amongst other things—on its aims; the quality of systems and how modern they are; the level of monitoring and response to images generated (see for example, Gill & Spriggs, 2005; La Vigne & Lowry, 2011; Piza, Caplan, & Kennedy, 2012; and for a general overview, Taylor & Gill, 2014). CCTV also received a somewhat mixed reaction, albeit the general view was that CCTV was more useful than having guards and particularly because the existence of a good image was often a precursor to generating meaningful police engagement in responding to an incident. When asked how effective it was one interviewee noted, ‘8 where it is good, 4 where it is not good,’ (B), and another, ‘In the right market, in a large store where cameras are monitored very effective 8. In smaller store 5.’ (H). The average was 6.9.² So effectiveness depended on a number of factors.

Prime amongst them was the type of CCTV system that was deployed. Respondents discussed the benefits of more advanced cameras incorporating the latest technology facilitating integration with other systems. Overlapping this interviewees also noted that CCTV had uses beyond loss prevention, the information gleaned could inform marketing (how long people stopped at points in store) and operations (the length of queues at tills), which could make cameras a more attractive spend than other measures:

‘It is a tool in the tool box but has to be managed and must be utilised, cameras are often not managed, manned and operated properly, and often they are in the wrong places, badly maintained and have no responsible people using them.’ (K)

‘The main issue around the CCTV is evidential value. I am thinking in terms of the police and the first thing they ask for is CCTV. If it is not there then they are reluctant to take things further so a main purpose of CCTV is to influence the police. For colleague safety it is massively helpful in that they feel safer and that it is a good deterrent.’ (H)

Looking forward one interviewee summed up the potential going forward:

‘Smart CCTV would be good but we don’t have much of that. My vision would be for better facial recognition and being able to automate when you know a specific person has walked in. The challenge will be how you protect data and overcome the difficulty of collecting a good image in a chaotic real environment but if that can be done then there is a real opportunity.’ (D)

The Effectiveness of EAS

While EAS (which in practice takes many forms) has been seen to have had an important effect on retailers, not least in facilitating more goods being placed on open display (see, DiLonardo, 1997, 2014a, 2014b) there is relatively little independent evidence assessing the effectiveness of EAS (Beck, 2016). Those that had EAS (and most did in at least some stores) generally saw benefits in terms of deterring opportunists and offering some sort of challenge to even persistent thieves: it increased the perceived risks. There was a mixed reaction to the noise created when alarms were activated (Shapland, 1995). For example, one respondent expressed this as a benefit in raising awareness of a potential theft, and another as a negative in being irritating (not least when tags from other stores activated alarms). Another negative was that many thieves were accustomed to tags these days and knew how to get around them, and one interviewee mentioned that it can create a false sense of security if too much reliance is placed on them. Some typical comments here included:

‘Most shoplifters have found a way to overcome this, it is almost symbolic, we try to disguise the fact that it is there with advertising and that sort of thing.’ (D)

‘It is very effective for us in preventing opportunists. From dye tags to EAS we reduced stock loss by 30 percent. If they come in more equipped they don’t care.’ (E)

In a majority of interviews the discussion turned to RFID, and this was viewed positively and by some as the next planned area of expenditure. The attraction was that it offered a range of product management advantages albeit that it was felt more research was needed on claims made about the links between RFID and security. Certainly some of the good points were matched by concerns about some aspects of how RFID worked as a security measure. Some typical comments here included:

‘RFID, is incredible ... it give us a wealth of data on losses... Managers can tell what was lost, whether higher or lower than the week before with store comparisons, so the managers know how to manage it.’ (G)

‘The problem with RFID is that it struggles with metal and with water, so physically using it at a site level on foods is a challenge. It can be dealt with, for example by putting a barrier between the product and the tag. If we get complete RFID visibility it will be great but as a security tool it is easily compromised by water and metal and by being in close proximity to a number of tags.’ (K)

The Value of Crime Partnerships

The overall view of partnerships was that they too were variable (see Prenzler & Sarre, 2014), one interviewee felt that while up until now many partnerships have been poor they had the potential to be good in the future. That noted, the majority view was that partnerships were wanting. Interviewees argued that it was often difficult to know why some were effective and others were not, although interviewees reported that they were often poorly structured and managed; they needed police support to work and they frequently didn’t receive this, or had only partial

support; while the costs varied and it was often not clear why some were so expensive; and partnerships were often not good at articulating what benefits they provided. Some typical comments here included:

‘In bad ones it is a waste of money, we don’t get regular info, the quality of info may be poor, we are worried about data protection compliance, so we worry about sharing.’ (G)

‘Some are very useful and we get a great service, and we get good interaction with members and the police. But others are a money spinner for somebody ... we have one which costs £200 per annum which is really good and another, £2,500.’ (L)

Despite the reported problems associated with partnerships, interviewees reported positives. This included stores liking the involvement and sometimes benefiting from a form of support (via radios), and information (from local data collection and sharing) that they could not easily obtain from other sources. The good partnerships provided timely and accurate information on an on-going basis, were effectively managed, had radios which provided backup and they were linked to the police and made use of CCTV, developed local profiles, had meaningful meetings where feedback was provided and plans were made to act on issues, and information was fed to other groups including national partnerships. However, this required stores to engage and it was not always obvious to interviewees that they did. It was noted that there were plans afoot to require schemes to meet criteria that would enable retailers to measure performance, effectively adding more transparency to operations.

In some cases, where the police were engaged and proactively supporting a crime partnership the benefits were considerable, although in one case a respondent noted a city where the police were seeking engagement but the partnership was not up to it. Some typical comments include:

‘Historically they have been useless, very supermarket driven instead of thinking about fashion. Going forward in dealing with OC, this is an area other retailers are investing in, in making the most of facial recognition, there is an opportunity there.’ (F)

‘If run well, it gives an immediate line of support, a tool for sharing info, also to feel the store is contributing to reducing crime locally. We say they are part of the community and this helps facilitate that.’ (G)

‘At a local level, to stores they can be really valuable, 7 or 8. They feel supported and share information and provide extra security. It could even be a 9, in some stores.’ (I)

The Value of Civil Recovery

Only two respondents said their company was not involved with civil recovery. Those that use this approach were able to identify limitations, principally in it: being an ineffective deterrent, having the potential to generate adverse publicity, and being an administrative burden:

‘It is not worth it, nothing has changed, no one has teeth, mostly the offenders ignore the demands, I don’t know a retailer who pursues it since there are so many non-payers, and so it is really hard to argue that it is a core part of the strategy.’ (B)

‘Mainly because it is time consuming from an administrative point of view and also the commission fees are high. Then there is the publicity they get, they have had some bad press, and some act as vigilantes, if they nick £10 you ask them to pay £200, it is heavy handed.’ (E)

‘The risk of bad publicity, getting it wrong, outweighs the benefit.’ (G)

In part at least to manage these limitations some retailers use civil recovery some of the time for example, only (or primarily) against staff thieves, or only in some stores, for example, where they have guards deployed and in one case it took second place to seeking criminal compensation.

The principal reasons for being involved was that it was cheap to operate and provided some income (although this was never stated as the main benefit); the data that was generated was useful, for example in identifying times when stores were most at risk; and in some cases key stakeholders such as senior management favoured it.

Two respondents had evaluated the benefits more fully:

‘We measure in terms of money coming back, we measure from subjective feedback from people, feedback from colleagues on what they think. In a social media survey, we got 4,000 responses, and we had some support for what we are doing about civil recovery, it came back that people believe in it.’ (A)

‘Yes, if you do it well you can measure it. We use a third party ... I am able to get sanitised data from them so I can see how much malicious activity has been reported on the high street and I can benchmark that against the activity of stores. So if we are not reporting anything in one area and another store is busy reporting we can be sure something is not right.’ (C)

None of the retailers appeared ready to change their position, those currently involved intended to stay that way, so too the two who were not involved.

The Most Effective Approaches

Respondents were asked about their most effective loss prevention tools. Here the focus moved away from physical security measures to people. The effectiveness of staff featured prominently in interviewees’ responses, principally in store but also across the company (for a discussion of the importance of people factors see, Beck, Hopkins, & Smith, 2014). The overlap between good customer service and theft prevention was underlined. One respondent highlighted the importance of training as a tool to engage all staff meaningfully in preventing loss.

Despite a strong staff focus in responses about this issue, some respondents did mention physical security. For example; CCTV, because it has a crime prevention and broader business management purpose (‘*You get a bigger ROI.*’ (A)); tags because they offer a visible deterrent; and in particular data analytics because when done well they provide a foundation for targeting all other measures. But it was noted that no single measure was sufficient and that good loss prevention always required a more rounded approach. The quotes provided here highlight examples:

'Staff, all my colleagues. My team spend time getting them to look through a different lens on total loss and profit protection.' (A)

'Data, that is by far the main tool, and the other one is just being able to talk, being able to engage with someone, being good at this is why our departmental staff can help the business ... talk the language your customer can understand.' (F)

'People. Insight and information, everything is still useless without people to act on things ... I mean here people across the whole organisation, getting them involved and building a culture so they care and believe they can make a difference and understand issues, I include everyone from the shop floor to the MD, at the high level understanding why I want money and what I do.' (I)

Discussion

It should be stressed that this chapter is based on interviews with retail loss prevention managers/directors, and it is based on their responses to a range of questions concerned with retail loss and security. The findings are instructive but reliant on the individual's perception and experience rather than a full analysis of the loss prevention field. They don't in any way amount to an independent evaluation of what works; and it is precisely because these types of evaluations are rare that understanding alternative assessments become important.

In retailing those charged with preventing crime do not have ultimate control over the key resource, the staff deployed on the frontline. Yet when asked about the main challenges they faced other issues emerged. For example, those posed by technological changes. Certainly the reduced police commitment—influenced by austerity measures—to responding to incidents occurring in retailing featured prominently. In addition, having to keep up to date with a range of threats, cyber as well as physical ones (and not least organised criminals) continues to focus a lot of attention. The recession has had an impact and with it the even greater focus on the bottom line; it has often made it harder to attract funding for new initiatives (albeit interviewees referenced a range of successes). The reduced

number of staff on the shop floor also results in less surveillance opportunities and means there is less perceived deterrence for offenders.

This latter point is important because keen and alert staff, properly motivated and trained, was viewed as the most effective crime prevention measure by interviewees. Yet none of the measures were viewed as universally good or bad; they all had a value depending on the context and this varied markedly. All measures had their supporters and detractors. Guards were seen to have a value in providing a human response to issues as they arose and in providing a visible deterrent but their impact on losses was less marked as some pointed to low loss levels even when guards were removed from stores. Likewise CCTV was sometimes seen as an essential part of a strategy but others pointed to out of date technology and cameras not being used to their full potential. EAS was sometimes seen as effective against opportunists in particular but also as a poor relation to RFID although for the most part the jury was out on this when assessed in terms of theft prevention rather than stock management. There were mixed views of both civil recovery schemes and crime partnerships. It was not so much that when done well they were not both praised, they were. Rather it was the case that often practice did not match the potential to influence loss reduction.

There seems much to be gained then from engaging loss prevention managers in good forms of evaluations. They stated that they learned about what works from their peers, both within their companies and amongst fellow retail loss prevention staff. Conferences and participation in specialist industry groups and initiatives played a part as well as reading reports and research. Via these routes the learnings from scholarly evaluations will and did filter down. But the processes they adopted were reactions to a commercial environment where scholarly evaluations can and were often seen as something academics did and the practical implications were not always obvious. This is a case for ensuring that good forms of evaluation are developed which enable practitioners to engage meaningfully in understanding what works (see, Ekblom, 2011). This may need a special focus from those who develop evaluations protocols to understand the distinct features of the business environment, and specifically where the primary motive is to benefit shareholders—albeit the public are likely to benefit too (Gill & Howell, 2017)—and where a

focus on preventing crime may take second place to tolerating it because of the commercial imperative.

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Notes

1. For this reason I have used the term here in a general sense in the remainder of this paper.
2. In the two cases here where a range was given the mean of the two scores was taken to calculate the overall average.

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15

Towards a Theory of Tagging in Retail Environments

Aiden Sidebottom and Nick Tilley

On Security Tagging and the Merits of Theory

Theft is a common and costly problem for retailers. A recent survey of wholesalers and retailers in England and Wales found that 25 percent had experienced at least one theft in the past year (Williams, 2016). Repeat victimization was common, with victimized businesses experiencing an average of 41 thefts over the same time period. Shoplifting accounted for 72 percent (3.3 million incidents) of all crimes committed against members of the wholesale and retail sector. Theft by employees made up just one percent (39,000 incidents).

Theft, by customers or employees, is a major source of “shrinkage”, the term used by businesses to denote preventable losses resulting from crime, administrative errors and product damage or wastage (for a detailed discussion see Beck, 2016a). Retailers define shrinkage in different ways, so comparisons between businesses can be misleading (Beck, 2016a). Notwithstanding these disparities, a survey of 203 retailers estimated the

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annual cost of shrinkage across the 24 participating nations at US\$123 billion (Global Retail Theft Barometer, 2015). Eighty-four percent of shrinkage losses were attributed to crime (shoplifting, employee theft and supplier fraud).

In response, retailers have implemented a variety of security measures (see Clarke & Petrossian, 2012), the prevalence of which is rising, in what Hopkins and Gill (2017, p. 379) call the ‘securitization of business’. According to the Commercial Victimization Survey, there were substantial increases in the proportion of retailers that employed CCTV (185%), window protection (54%) and burglar alarms (14%) between 1993 and 2013 (Hopkins & Gill, 2017). Security is of course but one consideration for retailers. Decisions over what to do about crime must also take account of the perceptions and experience of customers, costs, aesthetics, environmental effects, reputation, privacy and so on.

This chapter is concerned with security tags. Tags are attached to or inserted in products or packaging with the intention of reducing theft. They are popular among retailers in part because tagged merchandise remains on open display and is thus readily accessible to customers and staff. There are several kinds of security tag (see Beck, 2016b). Ink dye tags contain a chamber of indelible ink which is released when a tag is tampered with (DiLonardo & Clarke, 1996). These tags are non-electronic and typically applied to clothing. Electronic article surveillance (EAS) tags, by contrast, can range from “hard” plastic tags to “soft” paper tags (DiLonardo, 2008; Hayes, 2007). They are installed as part of a system which comprises the electronic tag, detector gates with built-in radio antennae (typically located at store exits) and a control unit. EAS tags are designed to trigger an alarm when passing a detector gate whilst active.

There is a sizeable literature on security tags (see Beck, 2016b; DiLonardo, 2008; Hayes, 2007). Studies emanating mainly from the US have assessed the impact of tags on theft (Bamfield, 1994; Beck & Palmer, 2010; DiLonardo & Clarke, 1996; Hayes & Blackwood, 2006), examined retailers’ reasons for and experience of applying tags (Blackwood & Hayes, 2003), and interviewed shoplifters on how they perceive and seek to circumvent security tagging (Gill, Bilby, & Turbin, 1999; Hayes, 1997; Lasky, Fisher, & Jacques, 2015). There is also a recent systematic review of the tagging literature (Sidebottom, Thornton, et al., 2017), in

which we collaborated and whose findings will be discussed shortly. Yet for all these studies and the insights they contain, to our knowledge there is as yet no theory of tagging in retail environments. This limits the extent to which evidence on tagging can be confidently generalized across settings.

Theory is sometimes given bad press. It is a central currency of academia and by association has received the same criticisms that are customarily leveled at academics: irrelevant, inaccessible and highfalutin. Moreover, theory is often portrayed as something that is distinct from and unrelated to the 'practice' of reducing crime. We find the distinction unhelpful—and inaccurate. Following Tilley and Sidebottom (2017), in this chapter we adopt a Popperian (Popper, 1972) conception of theory. We take it to mean any set of ideas on which we might act or interpret the world. Thus conceived, platitudinous assumptions that theory is divorced from practice are hard to sustain. On the contrary, we contend that the practice of crime prevention is awash with theory, albeit that such theories are seldom articulated or empirically tested (Tilley & Sidebottom, 2017). The decision to apply any crime prevention measure (for example a security tag) embodies a conjecture that the measure can and will bring about its intended crime prevention outcomes (say reduced levels of theft) in the circumstances in which it is being used (say the particular shop/s in question), without unacceptable negative side effects (for example loss of sales).

To claim that theory is ubiquitous in crime prevention says nothing about the *value* of theory for crime prevention. A critic might therefore ask why we need a theory of tagging. This is why. The notion that decisions on how to deal with crime should be informed by reliable research evidence is now widely both advocated and accepted.¹ Evidence on the effectiveness of an intervention is clearly an important consideration when deciding how best to deal with a presenting problem. But it only goes so far. As Eck (2017a, p. 579) writes, 'accumulating evaluation findings by itself does not teach us much ... these are necessary, but ultimately insufficient conditions for learning'. More specifically, they provide limited guidance on arguably the most pressing question for those tasked with reducing crime: whether an intervention that worked 'there' (i.e. produced positive outcomes in specific study settings) will

generate the same desired outcomes 'here' (i.e. in the novel setting of interest) (Cartwright, 2013; Eck, 2017a).

Theory helps generalize from 'there' to 'here'. It does so in several ways. First, theory provides a framework to make sense of research findings, comparing the results of an individual study with those expected on the basis of prior research. Second, theory helps organize knowledge at a higher level of abstraction than the particulars of any specific study or suite of studies, which in turn can be drawn upon when deciding whether an intervention that was effective in one setting stands a good chance of being effective elsewhere. Third, theory can assist evaluation design. Specification of the mechanisms through which an intervention is hypothesised to reduce crime in the context in which it is to be introduced allows detailed predictions of outcomes patterns to be derived. Then, provisions for relevant data collection and analysis can be made that speak to those patterns (for example where, when and which crimes are expected to fall, in comparison to crime types where falls would not be expected). Fourth, studies that test intervention theories provide for cumulation. Findings from one study lead to applications in another context, thereby clarifying the limits to the generalisability of findings and informing refinements to the theory. This then provides for better-informed targeting of interventions in the future.

To illustrate the value of theory with a practical example, consider hot spots policing. There is strong evidence from primary studies (Ratcliffe, Taniguchi, Groff, & Wood, 2011) and meta-analyses (Braga, Papachristos, & Hureau, 2014) that police patrols targeted at geographic micro-places where crime concentrates have been associated with significant reductions in crime. There is also some consensus on *how* targeted police patrols reduce crime, with most commentators invoking deterrence both in the immediate time and place in which police officers are present (initial deterrence) and in the targeted area for a period of time post-patrol (residual deterrence). However, as Sherman et al. (2014) observe, despite a large body of evidence on the *effects* of hot spots policing, only recently has a theory emerged on *how to implement* hot spots policing so as to maximise the probability of achieving the sought-after preventive gains. Sherman et al. (2014) go on to propose a ten-point theory of hot spots policing which in turn informed a hot spots policing trial in Trinidad and

Tobago. This chapter seeks to do for security tagging what Sherman and his co-authors have done for hot spots policing.

Our chapter proceeds as follows. In the next section we summarise the methods and main findings of a recent systematic review of the tagging literature. The approach taken in this review departs from the standard model of systematic reviews in crime prevention. More specifically, evidence was synthesised on not only the effects of tagging but also its mechanisms, moderators, implementation and economics, guided by the EMMIE framework (Johnson, Tilley, & Bowers, 2015). It is our view that this type of review lends itself to the development of programme theories, which we attempt later in this chapter through the use of a logic model. We finish with a brief discussion of the implications of our theory for crime prevention.

EMMIE and the Evidence on Security Tagging

At root, evidence-based crime prevention is about ensuring that those with the responsibility and competency to deal effectively with crime possess relevant and reliable evidence with which to make informed decisions. This raises the question: what types of evidence do decision makers need? Johnson et al. (2015) proposed the acronym EMMIE to highlight five categories of evidence relevant to crime prevention. The initial E refers to the 'effects' of an intervention. This is the dominant outcome measure in evaluations and systematic reviews in crime prevention. The next two elements of EMMIE originate in the scientific realist approach to evaluation (Pawson & Tilley, 1997), and the guiding conviction that 'outcomes unearthed in empirical investigation are intelligible only if we understand the underlying *mechanisms* which give rise to them and the *contexts* which sustain them' (Pawson & Tilley, 1994, p. 292). Consistent with this perspective, the first M of EMMIE refers to 'mechanism', the causal processes by which an intervention produces its effects. Mechanisms matter because a single intervention can lead to reductions in crime in multiple ways (see for example Tilley, 1993 on CCTV and Sidebottom, Tompson, et al., 2017 on alley gating). Evaluations should therefore collect data on the outcomes expected if hypothesised mechanism(s) are at

play, what Eck and Madensen (2009) call ‘signature analysis’ (see also Farrell, Tseloni, & Tilley, 2016). If the outcome patterns are consistent with expectations then we can be more confident in attributing the observed effects to the intervention. But mechanisms are seldom activated unconditionally. They require favourable conditions. This is what realists call ‘context’, represented in EMMIE’s second M as ‘moderators’. This refers to the conditions that are necessary for a mechanism(s) to generate the desired outcome.² The I of EMMIE refers to ‘implementation’—the practical task of *doing* crime prevention, and a common source of intervention failure (Ekblom, 2010; Homel & Homel, 2012). And finally, the second E denotes ‘economics’, referring to the cost-effectiveness of an intervention.

Johnson et al. (2015) proposed EMMIE as a framework to assess the type and quality of evidence in systematic reviews in crime prevention. EMMIE also has a prospective function, however, through supporting the design and conduct of new systematic reviews in the hope of increasing their policy relevance. EMMIE was applied this way in the systematic review of security tagging through the use of a mixed-methods approach. Further details on these methods can be found in Sidebottom, Thornton, et al. (2017) and Sidebottom, Tompson, et al. (2017). In the remainder of this section we limit our discussion to the key findings from the review on tagging, which are summarised in Table 15.1.

Sidebottom, Thornton, et al. (2017) identified 50 studies judged eligible for inclusion in the review. Of those, eight studies contained quantitative data on the effectiveness of tags. The risk of bias among these eight studies was considered medium to high. A particular concern related to the (non-)comparability of action and control groups since none of the identified evaluations performed statistical tests to ensure equivalence before tags were installed. On extracting data from these eight studies, it was evident that despite a shared concern with assessing the impact of tags, there was substantial heterogeneity between studies both in terms of tag type (for example conspicuous vs. visible tags) and outcome measure (for example shrinkage, shortage, theft, and sales). In light of this diversity, a meta-analysis was deemed inappropriate. In the absence of a single estimate on the effectiveness of tags, and mindful of the limitations of “vote counting”, Sidebottom, Thornton, et al. (2017)

Table 15.1 Summary of main findings of EMMIE-informed systematic review of tagging

	Studies used (total $n = 50$)	Key findings
Effect	8	<ul style="list-style-type: none"> • Heterogeneity between studies in tag type and outcome measure precluded a meta-analysis • Five studies reported positive effects associated with tagging; one study reported no effect; two studies reported backfire effects • Conspicuous tags were associated with greater preventive gains than less visible tags • Crime displacement and diffusion of benefits (or halo-effects) was referred to but not empirically examined
Mechanism	27	<ul style="list-style-type: none"> • No studies presented a quantitative assessment of tag-related mechanisms • Risk elevation was the dominant mechanism through which tags were deemed to work, particularly for EAS tags • Risk elevation was assumed to operate either by altering perceptions of risk or the actual probability of detection • Reward reduction (or benefit denial) was frequently invoked mainly in relation to ink tags • Increasing the effort was a third albeit less frequently acknowledged mechanism, assumed to work by boosting the effort required to exit a store undetected and/or to detach tags in-store or post theft

(continued)

Table 15.1 (continued)

	Studies used (total $n = 50$)	Key findings
Moderator	28	<p>Factors believed to influence tag effectiveness relate to:</p> <ul style="list-style-type: none"> • The shop and its staff—high false alarm rates generate ‘alarm apathy’ among staff and reduce the likelihood of a swift response thereby weakening the perceived deterrent value to shoplifters • Tag type and strategy—whether tags are applied to all or some products may influence offender awareness of tags • Merchandise—the type of product dictates the type of tag that is suitable • Police—The arrest and conviction of apprehended shoplifters, and any consequently general deterrent effects, is dependent on the actions of criminal justice agencies. Detaining suspects can be costly and dangerous to the retailer, and so speed of police response is important • Customers including shoplifters—occasional, opportunist shoplifters are thought to be more likely to be put off by overt, highly conspicuous tags whereas for professional shoplifters, who are more likely to adapt and seek to circumvent tagging measures, covert tags are considered more effective as a means of producing arrests of shoplifters who are unaware of the risks they are taking
Implementation	29	<ul style="list-style-type: none"> • Challenges with tagging were often attributable to the actions of staff, most notably failure to correctly attach, remove or deactivate tags, or respond to sounding alarms. Staff training and monitoring was considered important to mitigate these problems
Economics	32	<ul style="list-style-type: none"> • There were no high-quality cost-benefit analyses of tagging in retail environments • The cost of tags was found to vary widely across studies • The costs of tagging relate to more than the tag and associated infrastructure, but also include the costs of hiring staff to attach, remove and monitor tags. These costs are keenly observed by retailers • Considerations over the effectiveness of tags concern sales as well as loss reduction • Cases were observed where increases in theft (a negative result) were offset by increases in sales (a positive result)

report that five of the eight evaluations showed positive benefits (broadly defined) associated with the installation of tags, with more visible tags tending to be more effective than less visible tags. One study reported no effect of tags and the remaining two studies showed *increases* in shrinkage (a backfire effect). It is also noteworthy that despite retailer accounts of tagged items conferring protection to non-tagged items, no studies were found that analysed displacement/diffusions of benefits following the use of security tags.

Turning to the other elements of EMMIE, 27 studies contained information on the mechanisms thought to underpin tagging effectiveness. These mechanisms were generally consistent with the language of rational choice and situational crime prevention. For example, the most frequently cited mechanism associated with tags was *increase the risk*. The assumption was that tags reduce opportunities for theft by increasing the probability, perceived or actual, that offenders will be detected when attempting to leave a store with a tagged item. The second most commonly referred to mechanism related to *reductions in rewards*. This was typically invoked when discussing the operation of ink dye tags, whereby attempts to remove tags might cause them to break thereby spoiling the tagged merchandise and reducing its desirability and resale potential. The third mechanism concerned *increasing the effort*. Whether an item is stolen for use or sale, attached tags need to be removed, either in store or after the event. Consequently, all things being equal, the effort required to successfully steal and dispose of tagged merchandise will be greater than that for non-tagged items. Some individuals liable to steal merchandise will be deterred by the increased effort.

Twenty-eight studies contained information on the environmental conditions associated with security tags being more or less effective. Five key 'moderators' were identified (albeit that the term was rarely used). The first relates to store and staff. For example, the design of stores can determine the ease with which suspected offenders can be monitored or the speed with which staff can respond to sounding alarms. The second moderator relates to the type of tag(s) and how they have been applied. For example, in some stores a sufficient level of deterrence might be achieved by selectively tagging only a small proportion of items (known as fractional tagging). Elsewhere blanket coverage may be preferable. The

third contextual feature shaping the potential for tag effectiveness concerns the type and mix of merchandise. For example, some products are more amenable to tagging than others (i.e. small cosmetic items are tricky to tag); some are better suited to certain types of tags (i.e. meat products are better suited to soft tags). The fourth moderator relates to the actions of the police and criminal justice system. Simply put, retailers' efforts to deter, detect and detain shoplifters are affected by the speed of police response, and the likelihood that apprehended offenders will be arrested, prosecuted, and convicted.

The final moderator concerns the types of customers that visit a store, including those liable to respond to crime opportunities and temptations. There are numerous motives thought to explain shoplifting, from the acquisition of resources to theft as a form of excitement or a response to peer pressure (Walsh, 1978). Despite this variation in motive, the literature on retail crime suggests two types of offender involved in shoplifting. Frequent, professional shoplifters are widely distinguished, with some research evidence, from occasional, amateur, opportunist ones. Opportunist shoplifters are considered open to temptation, but do not go to shops with the intention of stealing. Professional shoplifters, by contrast, go to shops in order to steal and generally do so to sell the items stolen or to exchange them for drugs. It is assumed that preventing theft by the former is simpler than preventing theft by the latter—the former are more easily put off (by, say, overt preventive measures), while the latter have a strong interest in testing and overcoming security measures, including tags, that are put in place to protect the type of goods they wish to steal.

The distinction between 'moderators' and 'implementation' is imperfect. Much of what is done in the name of implementation might affect the activation of causal mechanisms, our definition of a moderator. By contrast, much of what might plausibly affect the activation of causal mechanisms has little to do with implementation. Despite this overlap, two distinct areas of implementation were identified by Sidebottom, Thornton, et al. (2017). The first related to store staff. The literature on tagging included numerous references to staff incorrectly attaching, removing and/or deactivating tags, and in the case of EAS tags failing to respond to sounding alarms (around one in five according to Hayes & Blackwood, 2006). Training, monitoring and incentives were deemed

necessary to improve staff participation in a tagging initiative. The second factor relevant to implementation concerns the ways in which tags are fitted. Retailers may opt to use one type of tag or alternatively deploy a range of tag types, including decoy tags (those that are inoperative). As alluded to already, they may opt for blanket coverage or apply tags selectively to those items considered most susceptible to theft and/or those with the highest profit margin. Tags can also either be applied at source by the manufacturer or in store by the retailer (see Beck, 2016a). Decisions over the best strategy to adopt will depend on the resources available to and merchandise stocked by the retailer.

The final area of synthesis concerned economics. Estimates on the cost of tags were found to vary widely, reflecting the heterogeneity in tagging initiatives. Although several studies were identified which detailed the various costs of tagging (the tag, associated infrastructure, staff costs of applying and removing tags, etc), comprehensive cost-benefit analyses were lacking. Retailer reports made available to the review authors did investigate the effect of tags on sales figures. Downs, Hayes, and Tallman (2011), for example, showed how the use of a highly visible EAS tag led to both reductions in shrinkage and an uptick in sales. Theft and sales rates do not always operate in tandem, however. Our review turned up one retailer report which described a switch from secure casings on DVDS to the use of soft EAS tags. In reviewing the effects of this change, it was reported that stores knowingly accepted increased thefts of untagged DVDs on the grounds that it gained more from being able readily to display the tagged DVDs and thereby sell more.

Building Theory

We began this chapter by advocating the importance of theory for crime prevention. We argued that theory plays an essential role in organising knowledge. This in turn can profitably inform and accelerate decisions as to whether and how an intervention shown to work in one setting might produce the same effects elsewhere. Next, we provided an overview of what we know about security tagging based on a review of the available evidence, structured according to the EMMIE framework. In this section,

we attempt to bring these two themes together. We take the key findings from Sidebottom, Thornton, et al.'s (2017) systematic review of tagging and in combination with evidence from cognate areas of crime prevention and environmental criminology more generally (see Wortley & Townsley, 2016), work up a theory of tagging in retail environments.

Developing theory can be challenging, however. Tilley and Sidebottom (2017) list several sources of complexity in crime prevention that pose difficulties for the development of theory. These include the multitude of proximal and distal factors implicated in crime causation, the shifting backdrop of social, technological and economic changes against which crime and its prevention play out, and the equally dynamic interplay between innovative offenders and crime preventers. What holds for crime prevention in general is also true of security tagging in particular. Whilst tags look at first sight to be a rather straightforward crime prevention device, the application of EMMIE showed that despite appearances, tagging is both theoretically and practically complex.

This complexity is amplified further by the processes of innovation and mutual adaptation that characterise shoplifting and its prevention (Lasky et al., 2015; for a general discussion see Ekblom, 1999). Shoplifters steal; merchants install preventive measures; professional shoplifters adapt to circumvent the measures; circumvention techniques are then disseminated, both in person and (increasingly) online; shop staff adapt to changes in the frequency of alarms and the reactions of those activating them; merchants adapt by installing new measures some supplementary and some complementary and by issuing new instructions to staff; suppliers of tags devise improved products intended to catch up with or get ahead of innovative offenders; professional shoplifters adapt again; etc. At the same time, new and highly desirable products are developed for which there is a flourishing stolen goods market, 'crime harvests' ensue (Pease, 2001), meanwhile older products become too cheap and too undesirable to warrant offender attention. Police attendance to shoplifting incidents also changes according to resource availability and expectation that they will be able to make an arrest that will lead to conviction. Merchants similarly adapt to police practices in their decisions over whether to detain suspected shoplifters.

These layers of complexity present challenges for the study of retail tagging. Research cannot hope separately to examine all permutations of the heterogeneous conditions for tags. Moreover, the complexity at work in retail tagging means that any particular application of tags will occur in a distinctive configuration of conditions that are liable to influence the causal mechanisms activated by tags and the outcomes produced from them. This poses obvious problems for those asking themselves whether a tagging regime that produced positive effects in one setting will generate the same outcomes elsewhere. One way of attempting to deal with this complexity is to consider tagging at a higher level of abstraction and develop what Merton (1967) popularised as *middle-range* theory. In the context of security tagging, such theory would sit somewhere between the range of findings emanating from retail research and experience and grand theories of how crime is caused and patterned. Such a theory would not be tied to any particular tag, retailer or setting, but instead would strive to consolidate the available evidence into a generalizable framework to help identify the types of tagging strategy that work for particular types of products in particular retail settings.

For the purposes of this chapter we have opted to use a logic model to present our theory. Logic models are a schematic commonly employed by planners and evaluators to chart how a given programme is expected to work under different conditions. McLaughlin and Jordan (1999, p. 3) add that logic models help identify ‘key performance measurement points and evaluation issues [that] improves data collection and usefulness’. Moreover, they usefully ‘facilitate communication amongst program planners, evaluators, and a range of stakeholders by making assumptions upon which programs are predicated more transparent and causal mechanisms more explicit’ (Anderson et al., 2011, p. 34).

Our logic model for tagging in retail environments is presented in Fig. 15.1. It should be interpreted as comprising four columns. Taken together these four columns depict a casual sequence running from left to right, albeit in reality there are various feedback loops that buck this linear trend, which we will discuss shortly. The first column (intervention) highlights some key considerations when deciding on a tagging initiative. We have divided this panel into two parts: decisions that relate to the tag (i.e. ink or EAS tag, hard or soft tag, etc.) and decisions that relate to how

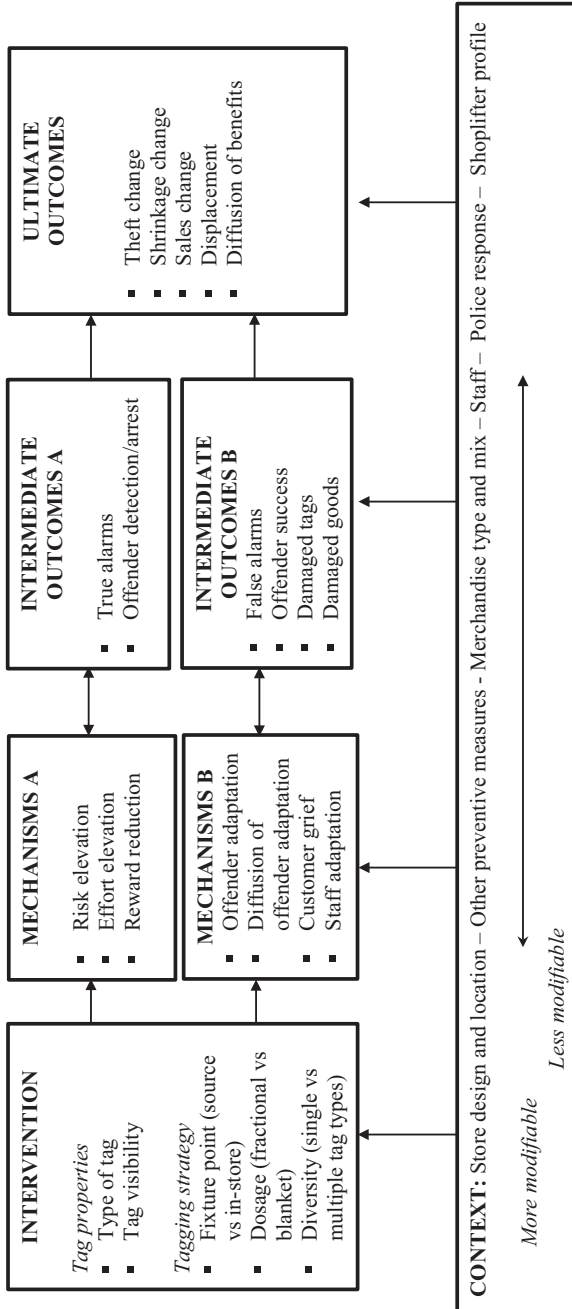


Fig. 15.1 Logic model tracing the use of security tags in retail environments

tags are deployed (i.e. tag all or some products, tag at source or in-store). The second column (mechanism) refers to the causal processes through which tags are expected to lead to the sought-after outcomes. Although these are listed singly in Fig. 15.1 (i.e. risk, effort, reward), tags might plausibly activate multiple mechanisms simultaneously. Columns three and four detail intermediate and ultimate outcomes that might be generated by the activation of said mechanisms. For our purposes, intermediate outcomes refer to those shorter-term changes that are directly linked to the installation of tags and which individually or jointly contribute to the ultimate outcomes. It is worth mentioning at this point that columns three and four include both positive and negative effects, reflecting the mixed results reported in Sidebottom, Thornton, et al. (2017). Moreover, these outcome measures are not limited to crime but include sales rates and customer experience, again reflecting the broader concerns of retailers.

Bridging the four columns of Fig. 15.1 is a panel that indicates some of the key contextual factors assumed to moderate the activation of tagging mechanisms. We have organised these factors according to the extent to which they might plausibly be modified by retailers (and related parties). Those factors towards the left-hand side are generally more amenable to modification than those towards the right. For example, store design and layout will influence the extent and distribution of crime opportunities. Attractive items without adequate security provisions that are displayed within easy reach of potential offenders are, all things being equal, more likely to be stolen than equivalent items that are less accessible. We can assume with some confidence that retailers have a strong say in these decisions. By contrast, issues regarding the police response to shoplifting or the extent, type and motivation of those liable to steal from shops is largely (though not completely) outside of retailers' control.

Concentrating now on these contextual factors, we have already discussed how the actions of staff are an important moderator of tag effectiveness. Focussing specifically on how staff behaviour might influence the activation of tag mechanisms, consider the case of EAS tags. The literature is clear in showing that many alarms do not initiate a staff response. Hayes and Blackwood (2006) found that only 18% of some 4000 sounding alarms were acted on by store staff. Some of these alarms

will inevitably be false, the product of tags not being removed, untagged items still triggering the alarm or because of a malfunctioning system. Whatever the reasons, so-called ‘alarm apathy’ is common. Yet from the perspective of the offender, failure to consistently respond to sounding alarms communicates the message that the probability of being confronted when attempting to exit a store with a tagged item is far from inevitable, thereby undermining the risk elevation mechanism assumed to underpin the effectiveness of EAS tags. We might therefore speculate that, all things equal, greater levels of alarm apathy will be associated with higher levels of shop theft.

The type and diversity of products can likewise moderate tag mechanisms through, say, influencing the kind of tag that might plausibly be deployed or the extent to which a given store is considered an attractive target for theft. Regarding the latter, there is strong theoretical and empirical support that theft is unevenly distributed across product lines. Popular targets for theft tend to be those that are CRAVED (concealable, removable, available, valuable, enjoyable and disposable, see Clarke, 1999) and, focussing specifically on consumer goods stolen for resale, those that are affordable, transportable, concealable, untraceable, tradeable, profitable, reputable, imperishable, consumable, evaluable, and shiftable, represented by the acronym AT CUT PRICES (Gill & Clarke, 2012). Analysing theft data for over 7000 products stocked in 204 US supermarkets, Smith (2017) recently showed that items displaying attributes that matched CRAVED were reliably stolen in greater numbers. At a higher level of abstraction, we might therefore infer that *between* stores, those with a greater proportion of CRAVED items are more likely to be targeted by offenders, and *within* stores, across product lines theft is expected to concentrate on those items that best adhere to the CRAVED model.

No theory nor logic model can hope to capture all the contextual factors that might influence intervention effectiveness. Nor will these factors be of equal salience to all retailers at all times. Figure 15.1 does not therefore present an exhaustive list of tag moderators but rather a selection of those factors that the literature suggests affect tagging and which retailers should consider. The final contextual factor included in Fig. 15.1—other prevention measures—received little attention in the review by

Sidebottom, Thornton, et al. (2017) but nevertheless might plausibly influence the operation of tags, based on what we know about crime prevention more generally. Retailers typically employ a range of security measures operating simultaneously. It is possible that in certain conditions the use of other interventions might boost the effectiveness of tags, such as the presence of publicity alerting would-be offenders that tags are in operation. This is not guaranteed, however, and there are examples in crime prevention where more does not mean merrier. One example is the study by Tilley, Thompson, Farrell, Grove, and Tseloni (2015) in which analysis of British Crime Survey data revealed, unexpectedly, that the effectiveness of alarms when installed alongside other burglary prevention measures has diminished over time and may even *increase* the risk of victimization, for reasons suggested by the authors. Return to tagging, we are unaware of any studies that have systematically assessed whether security tags implemented in the presence or absence of other preventive measures are associated with variations in levels of retail theft. Absent such evidence, we might cautiously conclude that the effects of tags might be influenced by additional prevention measures operating in a retail environment and that different configurations of such measures might give rise to different, both intended and unintended, outcome patterns.

Figure 15.1 depicts two causal pathways. The first pathway (Mechanism A) describes the intended model of how tags might work. Here, we assume that the conditions are sufficient to activate the preventive mechanisms through which tags are expected to work (i.e. risk, effort, reward). If activated, we would expect to see increases in the rates of true alarms and offender apprehension (in the case of EAS tags). Shifts towards a greater ratio of true to false alarms and increases in the number of offenders detected will in turn affect, say, the perceived risk of apprehension among other potential offenders. This feedback loop is depicted in the two-way arrows between columns two and three. As alluded to above, positive intermediate outcome patterns would be expected to lead to reductions in theft and, potentially, increases in sales and diffusions of benefits to other untagged products. We emphasise the word *potentially*: reductions in theft resulting from an effective tagging initiative is not the only determinant of sales, nor will reductions in the theft of tagged products inevitably lead to reductions in the theft of untagged products.

However, in the interests of advancing our knowledge of tagging, these are plausible outcomes associated with tags and should therefore be considered in future evaluations of tagging schemes.

The causal pathway of Mechanism B shows what might happen when tags do not operate as expected. Here, we present an example where offenders have successfully outwitted a tagging scheme and shared the means to do so. In this scenario, we would expect to see increases in, say, the number of discarded tags found in store. We would also expect to observe no impact on theft levels or associated ultimate outcome measures. Mechanism B also covers cases where tags are not removed by cashiers and the customer is hence liable to become dissatisfied because they have either to try to remove the tag and risk spoiling it or return the item to the store or, at worst, are stopped at the store exit and accused of theft when the alarm sounds. Here the unintended outcome relates not to theft but to customer dissatisfaction and thence inclination to shop again at the same store. False alarms may also feedback to staff reluctance to stop those who set off alarms on leaving the shop, reducing their actual or perceived risk increasing functions as shown in Mechanisms A.

Conclusion and Implications

Tags are a popular kind of security measure designed to reduce shoplifting, despite limited evidence on their impact and on the conditions in which they are found to be more or less effective. In this chapter, we set out the beginnings of a theory of tagging in retail environments. We presented our theory with a view to: (a) helping retailers think through the relevant considerations in deciding whether to use tags, what types of tags to use, what products to tag, what management arrangements are needed for tags to produce positive but not negative outcomes, and what complementary measures may be most useful, (b) informing monitoring arrangements to help track how tags are or are not working, (c) stimulating further research on tagging to refine our understanding of their potential as a shop theft reduction measure, and (d) sensitising those developing new tagging technologies to considerations that need to go into their design.

A key message of Fig. 15.1 (and crime prevention more generally) is that the same tagging initiative introduced into more or less favourable contexts can activate mechanisms that give rise to different outcome patterns, both intended and unintended. Strictly speaking, each retail store furnishes a unique setting. Even in a chain where other features remain the same, the staff and customer profile will differ. Each outlet will therefore experience its own particular patterns of shop theft. Successful preventive strategies therefore depend on a good enough grasp of (a) the circumstances of the store and its pattern of shop-thefts, and (b) the potential of the measures being contemplated to reduce the problem sufficiently to cover the costs incurred and any unintended negative side-effects. The theory represented in Fig. 15.1, which is rooted in the available research and environmental criminology more generally, is thus intended to alert decision-makers to the considerations needed to work out whether tagging makes sense for them and what types of tagging strategy to adopt. Ideally, decision-makers or their advisors would populate the boxes with the particulars of their store to work through what could reasonably be expected. Having populated Fig. 15.1 with relevant specifics, the next step would be to monitor the process using relevant data. Such an exercise would be especially useful for large retail chains, where even though individual stores are strictly unique there are many commonalities. In this case, carefully monitored pilots in a few stores would help determine whether tagging is proving cost-effective in the short to medium term and the conditions needed for this to be the case. For researchers working alongside retailers, what such an approach offers is a way of refining our understanding of tagging and its consequences. Retailers could then better be advised on the factors they need to consider in deciding whether to implement tagging and if so how to apply it.

We would hope that our theory is also relevant to the designers of tags who have an interest in selling their products. They face (we hope) increasingly smart customers for tags and (we regret) some smart shoplifters trying to circumvent them. Understanding the uses and abuses of tagging, the ways in which tags produce their outcomes, and the conditions in which patterns of positive and negative outcomes are generated should help tag manufacturers improve the tags they develop.

We began this chapter by claiming that the use of theory in crime prevention is inevitable and ubiquitous. Our argument here is that being explicit about theory is important so that the grounds for decisions are spelt out and thereby open to discussion in advance and the underlying hypotheses open to test once tagging has been put in place. This is how we can learn from experience. What we have done in this chapter is to take the disparate research available so far relating to tagging and organise it into a coherent theoretical framework, depicted as a logic model, that sits at a sufficiently high level of abstraction to be applicable across a wide range of retail settings. Further work is of course needed to check the completeness and validity of our model, with refinements made in the light of emerging evidence and practice. For now, however, it is our hope that this framework forms a platform for further research and decision-making to inform improvements better and more cost-effectively to reduce shop theft in the future.

Notes

1. This is not to ignore critiques of so-called “evidence-based policing” as it is generally conceived (see for e.g. Eck, 2017b; Sparrow, 2016; Tilley & Laycock, 2017).
2. The term ‘moderator’ is used here to refer to conditions for the activation of causal mechanisms rather than to any variable that may ‘moderate’ effects otherwise found, for example as a result of study design.

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Part VI

Research and Practice



16

Practical Challenges and New Research Frontiers in Retail Crime and Its Prevention

Vania Ceccato and Rachel Armitage

Introduction

This final chapter is composed of four parts: a summary of the results, the cross-cutting common themes, the book limitations and a future research agenda linked to policy recommendations. This chapter first synthesises and critically reviews the key findings, identifying relevant challenges and lessons learnt by contributors that come from a variety of backgrounds. Then, it outlines the future research in retail crime and provides a number of suggestions for policy recommendations that are linked to different retail issues.

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An Overview of the Book Chapters

This book was divided into six parts; the first chapter provides an introduction to retail crime and defines the scope and theoretical framework of the book. In Chap. 2 Bamfield explores the international trends in retail crime and crime prevention interventions, outlining the difficulties in accurately measuring loss from crime as opposed to loss from waste or staff error. Additional measurement complexities are also discussed, not least the issue of levels of apprehensions often reflecting the scale of crime prevention activity as opposed to actual patterns of crime. This chapter highlights the ever changing (and expanding) nature of retail crime that encompasses crimes as varied as shoplifting, fraud, cybercrime and organized crime, and thus the interventions required to target these offences.

Part II focuses on the types of products that are most frequently stolen as well as how the product, settings and offenders interplay in a retail environment. This is the *micro-scale* of retail crime that focuses on products, settings and to some extent, store environmental features. Smith and Clarke explore the extent to which additional variables could enhance the effectiveness of CRAVED as a measure of product risk. Clarke's (1999) original CRAVED framework asserts that 'hot products' will be those that are *Concealable, Removable, Available, Valuable, Enjoyable* and *Disposable*. To these, Smith and Clarke add the extent to which products require *regular replenishment*—for example, razor blades. Other factors include whether products are a *brand name*, as opposed to the store's own brand, and whether the product has a known role in illicit drug use, for example, the product provides a high, enhances the effects of drug use, reduces the ill effects of drug use, or can be used as an ingredient for making illicit drugs. In assessing a large sample of 7468 fast moving consumer goods (FMCGs) across 204 supermarkets in the US, Smith and Clarke found that CRAVED explains shoplifting better on its own than with the additional three variables. Although a somewhat disappointing conclusion, they argue that this could be a reflection of the prevention policies already in place to target such goods. As they state: "*What is stolen depends not just on what shoplifters would like to steal, but what they are able to steal, which depends to some extent on the anti-theft policies pursued by the stores*".

In Chap. 4, Hunter et al. explore who shoplifts and why. Utilising police recorded data and detailed interviews with offenders from a core city in England, they explore patterns in socio-demographic variables as well as motivations, targets and deterrents. A key finding, and one that resonates with Armitage et al., is that, whilst shoplifters may experience many convictions—the average number for this cohort being 47, this represents a minor proportion of their offences—many reporting that they committed thousands of undetected offences. Motivations for offending fall largely into the categories of economic (the need to fund drug use, lifestyle), psychological (the thrill of offending), moral (the belief that retailers can afford the loss) and social (being part of a shoplifting community). Offender perceptions of security measures revealed that, whilst formal surveillance (CCTV, security guards, store detectives, EAS) and place managers (store staff) were deterrents, the primary indicator of risk was store design and layout—from the placement of goods to the height of shelving units. Given the cost of many security interventions, this finding is significant and something that should be considered with store planners, ideally, at the planning stage. Whilst retailers have many competing demands, security not necessarily the primary concern, careful consideration of design features and their influence on offender decision making can be incorporated into the design and layout of stores.

Taylor explores the impact that customer operated payment systems (COPS) are likely to have on retail crime. Such technology includes self-service checkouts (SCOs) and scan-as-you-go, these are becoming increasingly popular in supermarkets across the world. Cautioning of the difficulties in ascertaining the true extent of retail theft facilitated by such technologies, Taylor discusses the techniques utilised by shoplifters concealing goods using SCOs, the motivations for such offending and the potential measures to reduce this *modus operandi*. Methods used to avoid payment at SCOs includes: switching barcode labels so that a cheaper product's barcode is scanned, manipulating the weight scales, selecting a cheaper item for loose goods and bypassing the scan altogether. In line with many other chapters, Taylor touches here upon the extent to which the layout of the SCO area, designed to facilitate speed and efficiency, could be manipulated to reduce this risk. Taylor also discusses the motivations for those using this *modus operandi* to shoplift, referring to these

offenders as SWIPERS—Seemingly Well-Intentioned Patrons Engaging in routine Shoplifting. Categorising these as: *accidental* (resulting from a once accidental occurrence, these individuals realize how easy it was to get away with this crime); *switchers* (who feel that switching labels is not really a crime, more an application of discount); *compensating* (who believe that the store saves so much by using SCO that this crime is justifiable), and *irritated/frustrated* (who feel that the inconvenience of SCOs makes stealing justifiable).

Part III of this book is devoted to crime and perceived safety in retail environments. In Chap. 6, Armitage et al. explore the influence of store design and layout on shoplifter perceptions of risk, and consider the relevance of Crime Prevention through Environmental Design (CPTED) to the supermarket environment. Using novel techniques to explore offender journeys through two major supermarket chains (using body-worn cameras), ex-shoplifters were asked to explore the store as if committing an offence and to narrate that journey throughout. The findings confirm that surveillance is a key deterrent. The threat of being observed and subsequently challenged is the most referenced deterrent in interviews and walk rounds. Physical security measures appear less effective, with shoplifters easily able to overcome interventions, and clearly winning what Pease (2001) refers to as the ‘arms race’. Although a small sample, the findings reveal clear parallels with other chapters in terms of offenders’ recognition of the importance of design and layout and their awareness of human error—be that in accurately implementing security interventions or what offenders perceive as apathy and disinterest amongst retail staff. An interesting early observation from this chapter is the clear deterrent effect of immediate apprehension. Where security measures offer a delayed risk of apprehension, offenders were clearly unconcerned. However, any intervention that offered the slightest risk of halting them there and then was considered to be a risk not worth taking. The extent to which this clear and consistent finding is currently incorporated into store security measures is uncertain, however, the impact upon levels of theft could be significant.

The micro analysis of retail crime continues to be the focus in Part III with a study from Australia on the nature of shoplifting and its prevention in small stores presented by Paul Cozens. Cozens looks at shoplifting

prevention from the perspective of store owners and managers and focuses on small stores with between one to three staff. The chapter explores hot products, crime prevention methods and losses from shoplifting. Interestingly, the majority of participants stated that they utilise the design and layout of stores as opposed to the more cost-intensive physical security or target hardening. Measures based upon design and layout included lighting, lowering shelves and units to enhance visibility and positioning the checkout.

In Chap. 7, Ceccato et al. use innovative methods to explore spatial and temporal concentrations of crime in a shopping centre in Sweden. Reminding the reader of the diverse nature of retail environments (ranging from single shops to huge malls) and the variation in crime challenges (ranging from graffiti and public disturbance to violence and property crime). This chapter categorises the mall into five parts: *Functional, public, transitional, entrances* and *immediate surrounding*, again reminding the reader that retail spaces do not exist in isolation, and that crime prevention interventions must consider the context in which the retail space is located. Ceccato et al. conclude by offering CPTED based interventions that address the identified weaknesses in each of these five parts of the mall.

Using the same shopping centre in Sweden, Ceccato and Tcacencu explore perceptions of safety amongst users of that space, revealing that fear is influenced by both personal characteristics and the environmental design of the spaces they frequent. The study found that fear of crime was not directly correlated with experience of crime, with 85% declare feeling unsafe and only 5% experiencing a crime within the shopping centre. The findings also revealed that the spaces in which users felt the most unsafe were not those in which most incidents happened. The chapter concludes by presenting practical recommendations on how to improve feelings of safety in the five key parts of the shopping centre.

The meso-scale of the analysis of retail crime is exemplified by Part IV of this book that deals with retail crime in a wider context, the chapter goes beyond the space of shopping mall to look at street segments, corners, railway stations, neighbourhood and city contexts. Weisburd et al. discuss shopping crime in Israel, investigating the extent to which the law of crime concentration applies to retail crime, and consequently the likely

effectiveness of hot-spot policing in addressing this crime type. They conclude that shopping crime follows the general law of crime concentration with 0.4% of streets producing one quarter of shopping crime and 1% of streets producing 50% of shopping crime. As with other crime types, concentrations are reasonably stable over time. These crimes show a slight variation in the stability of those streets segments that experience the highest proportion of shopping crime. The chapter concludes by confirming that the findings do not contradict the need for, or effectiveness of hot-spot policing, however, with retail crime, it is essential to account for the dynamic development of places and the shifts and variation in land use over time.

In Chap. 11, Newton analyses shoplifting in a different environment—the railway station, and highlights the diverse and changing nature of retail environments and the importance of the context in which they are located. Newton uses data from the British Transport Police to explore patterns and concentrations of shoplifting, revealing that the top ten stations for shoplifting (1.7% of stations) experienced 66% of shoplifting offences; the top station experiencing almost a fifth of all offences. Whilst this chapter explores the data available, it highlights limitations in these data, for example, that it includes no information relating to *modus operandi* and no time of offence.

Here a *macro perspective* of supply and demand mechanisms was appropriated to help understand the nature of cargo theft or thefts of medicine as an organised crime against trading. Justus et al. explore the extent, distribution and potential prevention of cargo theft in São Paulo, Brazil. Again highlighting the limitations in data that makes the analysis of this crime problematic, Justus et al. conduct a detailed analysis of spatial and temporal patterns of cargo theft. For urban areas, food (e.g. meat of all types) is the most common target, followed by electronics and pharmaceuticals. For highways, the three most common products are fuel, machines and equipment. Temporal patterns of victimisation times also vary, with urban areas experiencing the most cargo theft between 0600 and 1600—business hours when products are available. Highways are most vulnerable between 0400 and 0600. For both locations, weekdays are the most vulnerable. Useful for prevention, this chapter highlights the

pattern of high monetary return and low probability of failure, suggesting that cargo theft offenders think rationally in selecting suitable targets.

In Chap. 13, Savona et al. explore the theft of medicines in Italy, asserting and testing two hypotheses: (1) that medicines are laundered and resold on the legal market, and (2) that organised crime plays a crucial role with support from a network of corrupt officials and white collar criminals. As with the majority of contributions, the limitations of crime data are discussed, the analysis for this chapter relying on a systematic review of articles published in Italian newspapers. The chapter explores the drivers, actors and *modus operandi* for this understudied offence. Motivations include *growing demand, restricted access, reimbursement regimes and illegal use of legal medicines*. Factors that predict vulnerability include: *low volume and weight, high price, lack of traceability, price differentials and parallel trade*. Analysis of *modus operandi* and geographical location of offences support the second hypothesis—that this offence is predominantly committed by criminal organisations that exploit loopholes in wholesale and parallel trade and take advantage of the lack of traceability of medicines, steal from vulnerable locations and resell goods on the European legal market. Knowing who is committing these crimes, where they are taking place and what actors are involved is essential in designing prevention interventions.

Part V of the book presents examples of theoretical and practical examples when dealing with retail crime prevention. Considering yet another relevant agent in the prevention and reduction of retail crime, Gill interviews twelve loss prevention managers of large high street retailers. The focus is on crime prevention measures and their effectiveness in reducing retail crime. Participants discussed the importance of having the support of the Board in receiving funding for crime prevention, but also in prioritising the loss from theft amongst other considerations not least customer experience. The interviews revealed mixed responses regarding the effectiveness of security measures such as guarding, CCTV, EAS and partnership working. As was highlighted in Armitage et al., Sidebottom and Tilley and Hunter et al., a key factor in determining effectiveness was the management and training of staff, crucial in the effectiveness of implementation.

In the concluding chapter, Sidebottom and Tilley explore the importance of developing a theory of tagging in retail environments. Aware of the ‘bad press’ that theorising has received, and the ill-founded assumption that theory is irrelevant to practical applications of crime prevention and security, they outline the importance of theory in retail crime prevention and develop a theory specific to retail tagging. Without a clear theory to guide the implementation of security interventions and to evaluate impact, how can we be clear what works, in what circumstances and why? Using findings from a systematic review of tagging within a retail environment, Sidebottom and Tilley explore studies of tagging according to the EMMIE framework (effect, mechanisms, moderators, implementation and economics). Only 8 of the 50 eligible studies reported on quantifiable outcomes—five reporting positive outcomes, one no impact and two an increase in shrinkage following the introduction of tagging. A larger number of studies report on the mechanisms, moderators and implementation of tagging and findings are used to develop a tagging theory. Cautious of the extent to which retailers can affect change in some of the relevant factors—for example, stores can influence design and layout, other crime prevention interventions and staff responses, but have little influence on police and criminal justice responses and shoplifter profiles. The theory is presented as work in progress, requiring further exploration in conjunction with academics and practitioners.

Cross-Cutting Common Themes

Whilst these contributions report on a variety of retail environments, from the perspective of a number of relevant agents, in different countries and differing contexts, the findings reveal many common themes that are relevant to both policy and practice in preventing and reducing retail crime. Retail crime encompasses acts as varied as shoplifting, assault, cyber-crime, fraud, graffiti and public disturbance (to name just a few), with the personal and societal impact of these offences extending beyond the criminal act itself (consider violence and drug use). The environments in which retail crime takes place also vary—from small stores to large supermarkets and hospitals to railway stations. Yet whilst context varies,

there are many common emerging themes that can be transferred between settings to assist in retail crime prevention.

The first theme relates to issues of *data collection and measurement* of both retail crime and its prevention. All chapters discussed the limitations in retail crime data, be that missing vital variables specific to time, location or *modus operandi*, or the inability to distinguish theft from other losses including waste or employer theft. Concerns were raised regarding the extent to which retailers actually report retail crimes, for reasons including negative previous experiences with the police, perceptions of short sentences, fear of being seen as an easy target and the time and costs involved. Others report the need for caution in quantifying levels and patterns of apprehension, which may be a more accurate reflection of prevention activity, as opposed to the actual offences taking place. In order to assess effectiveness and transfer lessons, interventions must be adequately evaluated. While we lack data regarding what works, where and in what circumstances, we cannot confidently assert crime prevention messages, nor can we guide retailers in how best to protect their store.

A further theme to emerge from the contributions relates to the importance of *human factors*. Whilst crime prevention technology develops and evolves—be that CCTV, EAS or other innovations, the requirement for staff to implement and manage those technologies adds a potential flaw—one that requires ongoing training to overcome. Contributors highlighted the extent to which offenders are aware of these limitations—shoplifters describing security staff as apathetic, underpaid, uninterested and unwilling to risk their safety for such low wages. Implementing security without consideration for human factors will inevitably limit effectiveness.

Findings also highlight the extent to which retail crime prevention, as with other crime types is an arms race that must *continually evolve*. As new technologies are introduced, offenders discover ways to mitigate those measures. There is little room for complacency and evaluations of effectiveness should focus as much on what does not work, as that which currently does. Whilst technological solutions received some, albeit mixed, positive responses, what may be considered as simpler *design-based responses* appeared to produce consistently positive feedback from both those offending and those tasked with preventing these offences.

Crime Prevention through Environmental Design (CPTED) has been extensively evaluated in different contexts and whilst retail environments may have unique differences to, for example, residential housing, lessons can be transferred to those designing and managing retail environments.

Contributions highlighted both the *varied nature* of retail crime itself, as well as the environments in which it takes place. This adds a further complexity to the development of prevention solutions. What may be a crime problem or an adequate response in ASDA would be quite different to Armani. Equally the extent to which these retailers are willing to *accept* extensive losses as an inevitable consequence will also differ. Thus *selling* the crime prevention message must be tailored to suit the needs of these various environments.

Finally, a message emerging from each contribution was that the impact of retail crime goes far beyond the crime itself. Wider societal consequences include fear of crime amongst users of those spaces, violence against staff, elevated pricing and, in some cases, a pathway to more serious crimes. It is understandable that retailers must balance the different needs of users and abusers, yet retailers cannot simply blindly accept the losses because that risk is outweighed by the financial gains of avoiding the implementation of security measures—Roman and Farrell's (2002) discussion of the *Polluter Pays* principle is of key relevance here.

Book Limitations

One of the important contributions of this book has been to provide a systematic report of the trends and patterns in retail crime at various levels with examples from micro, meso and macro scales. However, the book is far from being free of limitations within the scope that has been set in Chap. 1. One of the limitations is that most chapters are written either by academics only or in combination with practitioners; it has not included chapters written by practitioners only, as initially intended. The format of the book, language limitations by contributors and difficulty in accessing and reporting 'sensitive data' within the limited timescales were the main problems found by experts that had initially planned to contribute to the book. A way forward is that contributions can be written by

academics and practitioners together, as it was done in Armitage et al. and Ceccato et al.

Another limitation of this book is that several chapters have dealt with retail theft committed by non-employees, visitors, shoppers, but much less focus has been given to crimes committed by retail employees. According to Global Retail Theft Barometer they constitute a large share of retail theft, in some countries they composed the largest share of retail losses (Bamfield, 2012; GRTB, 2016). Outside the scope of this book were the following types of incidents: cybercrime, online theft, fraud, online loss, which were covered within other key texts. In addition, this book does not include the politics of retail crime and crime prevention. Although the book touches on issues of crime by employees, terrorism, riots/looting/activism in retail environments, managerial and organisational issues related to crime and crime prevention in retail environment, these topics have not been the focus of this book, see for instance, Bamfield (2014), Beck (2016), Gill (2000).

Moreover, even though this book has attempted to characterise the dynamics of retail crime from an international perspective, our case studies do not include examples from Asia, Africa and South and central Americas.

Finally, of equal importance is the need to position the conceptual framework, case studies and findings of this book in a wider effort that aims at creating sustainable urban environments. In order to be sustainable, retail environments, be that a store or a shopping centre, must be composed of places that are attractive, safe and inclusive.

The next section identifies examples of the remaining research questions and reviews a set of key recommendations for policy that arise as a result of the research presented in this volume.

Future Research and Policy Recommendations

Research into retail crime contains a number of overlapping themes, and, as presented in this book, they have, to some extent, become united into a framework that focus on micro, meso and macro environments where retail crimes take place. This book illustrates a rich multidisciplinary field

which, in practice, have each developed within their own paths, from different disciplines and theoretical principles.

The policy recommendations put forward here are separated from the detailed suggestions made in each chapter of this edited volume. Although this book includes examples from retail crime from several countries, this section attempts to highlight policy recommendations that go beyond these national contexts. It is expected that policy recommendations are of relevance for professionals worldwide.

The role of retailers as victims in preventing crime—The role of retailers seen as victims rarely attract much attention on the news or in research, yet as suggested by Chap. 3 in this book, without studying victim's behaviour and their possible roles in increasing their own risks of victimization, it is very difficult to identify and promulgate effective precautions (Felson & Clarke, 2010). Although prevention should focus on offenders and settings, future research should focus on better understanding the interplay between offenders, victims (retailers) and retail settings. This development requires theoretical frameworks that go beyond situational crime prevention or managerial approaches based on supply and demand principles; instead it should be informed by cross-knowledge from different disciplines: psychology, criminology, economy, engineering, just to name a few. It is suggested that this multidisciplinary approach to retail crime is the way forward, as reality demands more integrated and holistic perspectives to understand, prevent and tackle retail crime.

Crime and perceived safety in retail environments—Studies often consider either the risk of crime in retail (against properties, employees, visitors) or perceived safety (fear of crime, feelings of anxiety, unpleasant feelings), separately. Future studies should instead combine both these dimensions when dealing with safety in retail environment. Rumours about crime, for example, can be equally damaging from a store or a shopping mall than crime itself, because fear is enough to keep visitors and employees away. In practice, a future assessment of safety conditions should engage multiple stakeholders as illustrated in Chap. 1, Table 1.1, depending on the scale (micro, meso and macro analysis).

The law of crime concentration in retail environments—Two chapters from the book provide general confirmation of the research that has been carried out on more general crime categories, that crime is concentrated

in space, both in commercial street segments (Tel Aviv-Yafo in Israel) and inside a shopping mall (in Stockholm, Sweden). Also important to note is that these chapters illustrate that specific types of crime show different concentration patterns. Future studies should further examine these differences among crime types and their stability over time. Another research route worthy of investigation is to assess the nature of these places that concentrate crime. Are these crime hot spots (Brantingham & Brantingham, 1995) *crime generators*, or *attractors*, or both? What makes them a *crime magnet* or a *crime radiator*? (See for example, Bowers, 2014). As it was suggested by Weisburd et al., the police will gain greater efficiency by focusing in on high crime places. In the case of the shopping mall, security guards should be placed where and when most crimes happen of a particular type. From an urban planning perspective, it is important to consider how the economics of shopping will affect the distribution of shopping crime. As suggested by Weisburd et al., the development of large shopping centres influences the locations of places with high rates of retail crime; which demands knowledge by the police and policy makers to design crime prevention practices.

Retail crime prevention must be space and time specific—Any safety and security intervention should consider the spatial and temporal contexts of the retail environments, from a store, a supermarket in a railway station to a major shopping mall or a commercial street. The context is important as interventions need to be both place and time specific as what is effective at peak times might not be at off peak times. Chapter 1 summarises, for example, the signature of each crime during shopping working hours. Chapter 14 indicates that political-economic contexts are also relevant to understand how managers work with loss prevention managers. For crime prevention, knowing these daily, weekly and seasonal rhythms is fundamental to a better use of resources. Gill suggests that “the recession has had an impact (on the way they work) it has often made it harder to attract funding for new initiatives. The reduced number of staff on the shop floor also results in less surveillance opportunities and means there is less perceived deterrence for offenders”.

The importance of technology beyond retail crime prevention—Chapters of this book highlight that certain technologies, such as CCTV, once were used to ‘just’ combat shoplifting but are now accepted as a

mainstream tool to combat terrorism or violence in particular environments. Moreover, these technologies can also be used in retail marketing through store counts and merchandising display analysis (see Bamfield in this book). However, evidence in favour of new generations of CCTV to prevent crime in the context of retail environment is weak or at least, partial at its best. Chapter 4 indicates that prolific shop theft offenders challenge the existing strategy of loss prevention managers and retail chains investing heavily in formal security devices. They declare not being affected by formal security measures that influence perceived opportunity structures and risks. Lack of evidence is not only a technological problem but can also be associated with the fact that in some countries, such as Sweden, problems with integrity and private laws do not allow the use of live feed cameras in particular settings. Data permitting, future research should further investigate the potentialities of these security devices not only to combat crime as it happens but to also produce better measures of risk, by capturing flow of people at particular settings in space and time for better crime prevention. In practice, this development demands methods that are capable of guiding and dealing with an ever-increasing volume of data coming from different types of technologies (e.g., self-check outs, CCTV, security devices) which constitute perhaps the new frontier in retail research and retail crime prevention in practice.

Shoplifting prevention must go beyond tagging technologies—Evidence is generally positive about the use of tagging technologies but according to Sidebottom and Tilley's chapter, most studies lack rigorous and robust methodologies. This is also confirmed by Beck (2016). This author also suggests that few studies have measured the direct impact of CCTV on retail store losses, therefore future research should systematically evaluate the role of these technologies on retail crime. In the particular case of shoplifting, Beck (2016) suggests that future research should also include the combined effects of store design and layout to facilitate the use of formal mechanisms of surveillance, such as CCTV and security guards. However, technologies and amplifying risks for shoplifters will have little or no impact on thefts committed by employees.

Challenging the limits of CPTED principles in retail environments—although evidence in favour of CPTED has unanimously been highlighted in several chapters of this book, further researcher is needed (using

larger sample size of offenders and/or victims) to confirm the findings presented in this book. Findings of this book confirm some of previous literature (Cardone & Hayes, 2012; Carmel-Gilfilen, 2011; Clarke & Petrossian, 2013) on the suggested factors that need to be taken into consideration when thinking about how store design influence offending. For shoplifting, for instance, future research could explore shoplifters' perceptions of layout, security and guardianship in stores. This could contribute to our understanding of what can be done in practice. New evidence from different types of retailers and/or city and country contexts would also be welcomed, particularly in city and country contexts of extreme high levels of crime. In those, research could highlight the patterns of retail crime concentration at multiple geographical levels. Moreover, a more critical perspective on CPTED as a crime prevention tool is necessary in the future since these environments by nature impose a number of theoretical a practical challenges. For example, retail environments are public spaces that are privately owned. Typical CPTED issues of *access control* and *territoriality* can be difficult to implement when the nature of tenure and ownership does not make clear who is responsible for what in terms of preventing crime. Where these responsibilities are not well defined, crime prevails.

From micro to meso and macro scale analysis in retail crime—Several chapters pointed out the advantages of considering micro environments to understand the nature of retail crime, their specific criminogenic characteristics and the extent that these interactions link with local as well as regional and international organised criminal networks (e.g. chapters on cargo theft/robbery or robbery of medicines). Whether the causes of crime are local or not, we claim that the complexity of crime in these facilities (and its prevention) can only be fully understood if 'global' contexts are well assessed in relation to the supply chain of products. Actions demand the cooperation of a range of stakeholders who have responsibility for retail establishments, those who deal with safety and security issues in and around these related establishments and any other actor beyond the local sphere (e.g. cross border policing, transportation companies). Several chapters of this book reveal evidence that the use of economic principles, in particular of rational choice theory, can be particularly helpful in explaining the supply and demand of illicit products and also its nature and geography of retail organised crime.

Stakeholders and the role of people in retail and retail loss prevention—There is a need to consider the interaction between people and the retail environment to promote an understanding of crime in these settings and better define retail loss prevention. Knowledge about the role, rights and obligations of different groups of stakeholders in retail can be compared with what they actually do in practice. In particular, more knowledge is needed about the varying degrees of responsibility of individuals for discouraging crime that happens in retail environments. For instance, investigating the role of guardians who keep an eye on targets, handlers who do the same for potential offenders and managers who monitor places (Clarke, 1992; Eck, 1994; Felson, 1986) and why certain individuals decide to commit crime despite crime opportunities being minimal and the chances of being caught are very high. It would be worth carrying out applications of Situational Action Theory—SAT (Wikström, Ceccato, Hardie, & Treiber, 2010). A route to a better understanding of the role of people in retail environments is provided by Gill in this book. He shows, among other things, examples of how actors see each other in a retail environment. In particular, Gill illustrates how security managers value the work done by guards “in providing a human response to issues as they arose and in providing a visible deterrent”. Future research could also focus on comparing the perception of different retail stakeholders which might help identify areas of improvement in cooperation which ultimately can affect retail crime prevention.

Translational criminology in retail crime prevention—Regardless of the topic, the issue of communicating theory and research results from academia to practitioners is fundamental. This key issue has previously been identified by Laub (2011) who sees a challenge to communicate research to appropriate audiences, experts, and relevant organisations. Methods that can communicate and engage practitioners in research process are a relevant topic for future research. Engaging security managers, security guards and policy makers in the process of research is therefore fundamental in a framework in which academics learn from practitioners and vice-versa. A way forward is that future contributions on retail crime prevention (such as this book) can be written by practitioners and academics together.

Safe retail environments is an individual right—Although retailers are targets of crime, customers and their properties are also victims of crime when shopping. Yet, they may not be the only ones. As in many other public places, entrances to stores and shopping malls increasingly accommodate groups of individuals that are often viewed as ‘a security problem’ rather than as individuals who have a right to spend time at the retail entrance. In these circumstances, urban planners, retailers and other stakeholders have to get right who is responsible for what (e.g. delivering security services for whom, where and when) at shopping facilities and their surrounding areas. Future research should devote time to creating frameworks that are capable of engaging different stakeholders in finding appropriate solutions that make sense locally whilst at the same time can be fair and inclusive.

One of the most important contributions of this book has been to report trends and patterns in retail crime using as a reference real life examples from a variety of contexts and written by a multidisciplinary group of experts. This contribution is far from being free of limitations and is in no way complete, but as the examples illustrated in this book reveal, they go some way towards providing an informative approach to retail crime and its prevention from an international perspective. By incorporating these previously mentioned complexities, this book offers a new take on retail crime by illustrating the interplay between individuals, products and more importantly, the characteristics of crime settings—whatever the scale concerned. Reflections upon ways to better plan retail environments to make them safe are also an integral part of the book. Planning for a safe retail environment is an essential part of creating an enjoyable shopping experience—which is, irrespective of country, one of the most appreciated leisure activities of our time.

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