8
Psychological Approaches to the Relationship between Happiness and Public Policy in P.R. China

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Introduction

For years, public policy has focused on reducing and repairing aspects of society such as urban blight, crime, pollution, traffic congestion, etc. However, it became increasingly obvious that the society could not flourish by focusing only on eliminating these deficiencies (Kretzmann & Mcknight 1993). Such a course will only make the society fragile and vulnerable to the adverse situations such as external shocks, turbulence and crisis. Instead, helping society develop the capacities to be resilient, prosperous and happy will bring longer-term benefits (Benson 1997; National Research Council 2002; Carruthers & Hood 2004).

On the other hand, the strong emphasis on the material wealth nowadays substantially distorts what a society really values (Diener & Seligman 2004), and people tend to forget such important needs as being loved, having a sense of belonging, wisdom, self-esteem, and self-fulfillment, which are all crucial to happiness. Reorienting society's path of development help to avoid conditions, such as alienation between the more and the less fortunate, increasing selfishness, chaos and despair, and bring about real progress to happiness for all.

1   Positive psychology

Psychology has, since World War II, become a science largely about healing, and it concentrates on repairing damages to human functioning. This almost exclusive attention to pathology results in a model of the human being lacking the positive features that make life worth living (Seligman & Csikszentmihalyi 2000), and neglecting the positive side of people's life, namely happiness. However, as a reduction of negative deficits does not automatically result in the ability to tackle future

169

problems and an increase in positive assets (Lykken 2000), it is important and constructive to exploit human being's potentials and cultivate positive characters (e.g., flexibility, resilient, optimism, hope, wisdom, rationality, creativity, self-determination, etc.) to enhance their capacities (Hood & Carruthers 2002). Only in this way will people not be frail and passive when they are confronted with adverse situations, but instead be resilient and able to thrive in the face of disasters, and to achieve higher goals and lead a happy life.

Accordingly, in response to the limitation of the old disease model of psychology, positive psychology, as a new paradigm (Seligman 2002), begins to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities. The field of positive psychology at the subjective level is about valuing subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present). At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skills, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. At the group level, it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (Seligman & Csikszentmihalyi 2000).

2   Three functional areas of public policy

Public policy, as an instrument of government to enhance the capacity of the society to obtain happiness, covers three functional areas: policies on economic/material enrichment to support the basic needs of people for life, policies to strengthen the resilience of individual, family, community and society to destructive factors and adverse situations which impair the harmony of society and hold back its development, and finally policies to facilitate the positive factors which could promote and enhance the happiness/well-being of people in the long term.

To the countries with a developed economy such as the USA, the major mission of public policy should not be material enrichment but should rather be meeting the advanced needs of its people and enhancing virtue, spirit, and culture. For example, although economic output has risen steeply over the past decades in US, there has been no commensurate rise in life satisfaction in this period, and there has been a substantial increase in depression and distrust (Frey & Stutzer 2002).

For less developed countries such as those in East Africa, the primary mission of their public policies might still be exclusively in the first functional area. Because the basic needs of its people, sometimes even the fundamental survival need, remain difficult to manage, fulfillment of advanced needs such as vocation, aesthetic ability, self-esteem, or self-fulfillment is a luxury. Under this condition, meeting basic needs of its people is not only crucial to the survival of people but also the survival of society, the first functional area of public policy hereby should be given the highest priority.

As for better developed countries, government should pay attention to all of three functional areas of public policy and give each of them appropriate weight when operating in different areas or for different groups of people. Even in these countries there are groups of people still struggling to meet basic survival needs, but the living conditions of some other places or people have already reached the standard of moderately developed countries, and they would care more about seeking and satisfying advanced needs. Given this, government should take care of three functional areas simultaneously to strengthen the multi-level resilience and happiness of society.

3 The significance of conducting research on public policy and resilience in China

Since China adopted an opening up policy in 1978, China has gone through a great period of economic transition. Economic planning has been gradually reduced, giving way to new policies and institutions designed to promote the market economy and the nation's economic progress, such as the opening-up of *special economic zones in coastal area*, the establishment of stock markets, the spinning off of SOEs (State Owned Enterprises), the inflow of foreign direct investment, the rise of entrepreneurship and free competition etc. All this is leading to a more competitive and more efficient economy. China's economy has "taken off" and is now growing at an astonishing pace. In the past 15 years, China's GDP has been growing at an average speed of almost 9% per year and China's GNP per capital also rose greatly, from 300 USD in 1978 to 1090 USD in 2004 (NBSC 2004). Evidently, Chinese people's well-being has risen remarkably during this transition period of China. For instance, public infrastructure has been improved, the service sector has grown, the social safety nets/insurance mechanisms have been strengthened, quality education (i.e., education for all-around development or competence-oriented education) has been popularized over the whole China, etc.

Nevertheless, China is facing bottlenecks threatening sustainable social and economic development. During decades of economic development, there were indeed many deep-seated problems hiding behind the big prosperous scene, such as the deterioration of environment, policy-oriented speculation in stock markets, corruption and loss of state-owned capital, lack of moral codes in business and social life, increase of poor-rich gap, holding off country labor's default salary, unemployment, etc. (Wu 1997). Some of these serious problems were inevitable byproducts of high-speed economic development. Although equality has to be somewhat sacrificed to gain efficiency, many of these problems resulted from shortsighted and inappropriate relevant public policies, destabilizing and impairing the well-being of the whole society. Therefore, aiming at attaining the goal of harmonious society of China proposed by the president Hu of China in the 16th National Congress of the Communist Party of China in 2004, apart from factors favorable to the well-being of Chinese people, policy makers should attach more importance to these kinds of social disharmonious and unstable factors and take the responsibility to promote resilience and protect the happiness/well-being of citizens during this risky and unstable transition period of China.

However, despite much effort, little is yet currently known about the effectiveness of policy in maintaining and protecting happiness, particularly in strengthening multi-level resilience of society. Accordingly, in order to reinforce the exploration of functions of public policies on multi-level resilience of society, it is necessary to carry out research on the underlying psychological mechanism, on the effects public policies may exert when citizens face risky adverse situations, and the impact imposed by public policies on the well-being of citizens. In terms of this, we have conducted a study during the SARS crisis to throw light on the multi-level mechanisms of social resilience. The results of research can be regarded as a theoretical basis to improve the efficiency of policy making, and the way/methodology may also be useful for future studies on public policy and social resilience in other areas.

We investigated the psychological mechanisms from the perspective of risk perception, which plays a role in how human beings respond to risky and adverse situations. We also examined the effects of policies adopted by government during crisis on the risk perception of citizens and their following mental health and coping behaviors. Our research confirmed the positive functions of public policy in strengthening the resilience of citizens and the key role of risk perception played in mechanisms of resilience of citizens which needs to be attached more importance by Chinese government when making policies in a crisis.

This paper will provide a strong rationale for the contributions of resilience promotion efforts in the facilitation of well-being.

4   Multi-level resilience

Resilience as a concept deriving from developmental psychology has been studied extensively for more than 20 years. In the past few years, along with positive psychology being put forward and blooming quickly, resilience research was brought into a new era (Seligman & Csikszentmihalyi 2000) in which it is no longer a concept unique to developmental psychology but has been infused new vitality in the areas of psychopathology, health promotion, stress management, crisis management, etc.

How resilience is defined can be viewed from two major perspectives: the personal character perspective and the interactive perspective. The former mainly uses person-focused approaches, which compares people who have different profiles of characters within or across time on sets of criteria to ascertain what differentiates resilient persons from other groups of persons. The latter mainly adopts variable-focused approaches, which use multivariate statistics to test for linkages among measures of the degree of risk or adversity, potential qualities of the individual and environmental factors that may function to compensate for or protest the individual from the negative consequences of risks or adversities (Masten 2001).

4.1   From the characters perspective

From this perspective, resilience is viewed as the inner strengths of a human being (Saleebey 2002). It is a combination of abilities and characteristics that interact dynamically to allow an individual to bounce back, cope successfully, grow stronger and function above the norm in spite of significant stress or adversity (Rutter 1993; Tusaie & Dyer 2004). Such kinds of definitions could be also put into words like "the capacity to rebound from adversity strengthened and more resourceful" (Walsh 1998), "efforts to restore or maintain internal or external equilibrium under significant threat" (Masten, Best & Garmezy 1991), or "representing good developmental outcomes and sustained competence despite the presence of stress and risk" (Werner 1995), etc.

Bonanno (2004) considered resilience as a psychological counterpart of physical immunity system, an innate psychological immune capacity that produces well-being and wisdom even during extremely averse events and facilitates psychological healing from the inside out. Likewise, there also are some researchers proposing that resilience appears to be a common phenomenon that results in most cases from

the normative functions of basic human adaptive systems (Masten 2001; Roisman 2005). If those systems are protected and in good working order, development will be robust even in the face of severe adversity; if these major systems are impaired, antecedent or consequent to adversity, then the risk for developmental problems will be much greater, particularly if the environmental hazards are prolonged.

Connor & Davidson (2003), the authors of a most widely used instrument for measuring resilience, advocated that resilience embodies the personal qualities that enable one to thrive in the face of adversity. Research over the last 20 years has demonstrated that resilience is a multidimensional characteristic that varies with context, time, age, gender, and cultural origin, as well as within an individual subjected to different life circumstances (Garmezy 1985; Garmezy & Rutter 1985; Rutter 1985; Seligman & Csikszentmihalyi 2000; Werner & Smith 1992; Richardson *et al.* 1990; Richardson 2002). Beginning at a point of biopsychospiritual balance, one adapts body, mind, and spirit to current life circumstances, and then arrives at another level of balance, which may be better or worse than original one.

4.2   From the interactive perspective

Greene (2002) pointed out that there is no consensus about the definition of the resilience construct. Current evidence suggests that the idea of overall resilience is of questionable utility (Luthar, Doernberger & Zigler 1993; Hunter 2001). Definitions that focus on aggregating various domains are likely to be weakly correlated with outcomes. Because of a weak correlation among the domains of resilience, individuals may vary in resilience characteristics. Moreover, resilience does not function uniformly and automatically, but waxes and wanes in response to contextual variables. So domain specificity is more useful in research and practice application than is a global definition of resilience (Werner & Johnson 1999).

Waller (2001) traced the evolution of the resilience construct across diverse social science disciplines, suggesting that "resilience is a multi-determined and ever-changing product of interacting forces within a given ecosystemic context." It was also advocated by Tusaie & Dyer (2004) who stressed using a holistic, dynamic, and interactive perspective to understand resilience. From the perspective of positive psychology, the above processes should be characterized by good outcomes in spite of serious threat to adaptation or development (Masten 2001). So understanding these processes is important to the comprehension of the mechanisms of resilience.

First, we need to keep a notion of homeostasis in mind, which refers to a balance between needs and supplies. Both of them could be defined with reference to intrapersonal and environmental factors. Needs could be generated from a person *per se* or external demanding, while supplies could also be viewed as capability, assets or resources for satisfying needs or counteracting the cost of external demanding. In this sense, adversities could be understood as a threat to the satisfaction of human needs and the acquisition of competencies and resources to carry out valued goals or external demandings (Sandler 2001), and supplies could be considered as protective factors (Masten 2001). When the balance or homeostasis between these two major forces is disrupted, the response to that disruption is a reintegrative process, leading to one of four outcomes (Richardson *et al.* 1990; Rutter 1993; Masten 2001; Tusaie & Dyer 2004): (1) the disruption represents an opportunity for growth and increased resilience, whereby adaptation to the disruption leads to a new, higher level of homeostasis; (2) return to baseline homeostasis, in an effort to just get past or beyond the disruption; (3) recovery with loss, establishing a lower level of homeostasis; or 4) a dysfunctional state in which maladaptive strategies (e.g., self-destructive behaviors) are used to cope with stressors and ending with collapse.

Second, we need to figure out common mechanisms to explain the effects of adversities and of protective factors that promote resilience and good outcomes. Protective factors, as suggested by researchers, are multi-level (Tusaie & Dyer 2004), namely the individual, microsystems and macro levels, which reduce the negative effects of adversities through their effects on satisfaction of human needs, on the occurrence of adversities, on exploiting human's potentials and in turn enhancing their capacities on resistance (Maluccio *et al.* 2002). These effects hereby can be described as protective, preventive and promotive (Sandler 2001). This multi-level conceptualization of protection is consistent with a view of resilience as a multi-level concept, which explicitly rejects the notion that resilience resides solely or even primarily within the characteristics of the individual (Hobfoll 2002; Wyman *et al.* 2000).

On the individual level (i.e., intrapersonal), some cognitive factors and specific competencies were identified as contribution to higher levels of resilience. Cognitive factors include optimism, intelligence, creativity, humor, and a belief system that provides existential meaning (Richman & Bowen 1997), a cohesive life narrative, and an appreciation of the uniqueness of oneself. Competencies that contribute to

resilience include a wide range of coping strategies, social skills, educational abilities, and memory above the average level.

On the family level, McCubbin & McCubbin (1988) identified some characteristics that help families be resistant to disruption in the face of change or crisis, such as commitment, support and intimate relationship between family members, social support from neighbors and community, etc.

Mechanisms of resilience that operate at the level of the community are also being identified that may be powerful sources of protection against the effects of adversities. Sampson *et al.* (1997) conceptualizes community social organization as the "ability of a community structure to realize the common values of its residents". He identified several community characteristics that have important implications for protection from adversity, including rules, resources, and routines.

For the national level, the notion of resilience has been just recognized only relatively recently and has seemingly worked its way into US's lexicon since the events of September 11, 2001, into the management of public health crisis during SARS in 2003, and also into the crisis management of the tsunami in Southeast Asia in 2004, and so on. How to promote national resilience is still on a burgeoning stage; however, it is pressing and also in high need to enrich the knowledge and experience in this area so as to maintain the harmony and stability during social transition and promote sustained development of the human society, contributing to happiness.

Public policy, as an important instrument of government to coordinate the social function, should have the accountabilities to enhance social capitals and capabilities contributing resilience and happiness during social transition and development.

Case Study to illustrate the importance of public polices to multi-level resilience promotion

Public policy – Functioning as protector and resilient factor of public well-being during SARS

Between November 2002 and July 2003, the infectious disease of Severe Acute Respiratory Syndrome (SARS) has swept Guangdong, Hong Kong, Beijing and North China. Due to its nature of strong infectivity and high fatality, and since no definite preventive and treating solutions had yet been found, the crisis confronted Chinese society with a

tremendous challenge. On the one hand, in protecting against SARS and saving SARS patients, the Chinese government instituted a variety of valid measures to control the spreading sources and prevent people from being infected, which brought the infectious disease under control in relatively short period and gained universal positive recognition. On the other hand, in order to contain the panic and potential chaos among citizens during SARS, the Chinese government adopted a series of policies to maintain social stability which to some extent demonstrated its validity in the following reactions of more rational behaviors and mental health of citizens. But it should have been more improvement on the well-being of citizens if there had been stronger theoretical basis for government' policy making.

Therefore, aiming at enriching the theoretical basis for the crisis management of government and also for the national resilience of public, we conducted a study during the SARS episode on the psychological mechanisms of citizens in the face of public health crisis. We constructed a risk perception-centered social-psychological-behavioral predictive model. The results provided psychological and managerial suggestion in protecting against SARS, and also laid the theoretical foundation for the nation to establish a psychological precautionary system, to improve the efficiency of policy making of government during crisis and in turn contribute to the public's resilience and happiness.

In the face of a crisis, people tend to become panicky if they lack enough objective information, or if they know of no definitive solutions. Irrational mental states and behaviors may result. This translates to an impairment of the psychological well-being of the public and often also the stability and harmony of society. So in that kind of uncertain and dangerous situations, effective communication about risk factors becomes critically important. Risk communication is a social process. Its aim is to keep people informed of a crisis. With better information, people will begin to generate appropriate coping behaviors and be involved in more national risk decisions. Risk communication usually happens when human risk perception arises, and functions through reducing people's risk perception. Trauma suggested that risk communication is a systematic process; its key points are promulgating integrated, transparent, authentic, and timely crisis-relevant information, risk assessment of the public and safety educational management to disaster. At the end of April 2003, the National Ministry of Health, People's Republic of China, began to update the news of the national-wide infectious situation every day such as the numbers of new patients and

suspect patients in each province, assuring people of being informed of what happened with the SARS in time. This action is a good example of risk communication conducted by the Chinese government over recent years. Referring to the campaign of Chinese government successfully protecting against and controlling the impairments of SARS, we conducted a research, aiming at exploring the underlying mechanisms of the crisis management concerning the public. Our results provided theoretical basis and improved the efficiency for the countermeasures of government to manage the irrational psychological and behavioral reactions of the public and potential panic and chaos.

Due to the key role of risk communication between government and the public in the crisis management with regard to the public, research was carried out with a view to answer two questions: How did the public psychologically and behaviorally react to this never-met infectious disease and to governmental risk communication? What kind of role, from the view of psychology, did governmental risk communication play in the management of the risk perception and coping behaviors of the public and helping the public recover to the normal state? The addressing of these two questions is implacably important for the establishment of a public-resilience system with social-psychological and behavioral indicative indices, contributing to the whole profile of crisis management of government. These two aspects were the focuses of interest in this study.

Research hypotheses

(i) Research questions and purposes

This study was conducted in the background of SARS threat on diversified groups of people from a variety of areas in China with different levels of SARS infection severity. In order to understand the multi-level mechanisms of the public's resilience under the SARS crisis, there were three questions needing to be investigated at first: how did the informational factors influence risk perception, what were the features of individuals' risk perceptions, and what were their effects on proposed precautionary indices such as the public's coping behaviors, mental health, and so forth?

(ii) Hypothesized framework of predictive model

Based on classical psychological theories of information processing and the S-O-R (stimulus-organism-response) model, we proposed a predictive model from the following three aspects (see Figure 8.1).

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┌──────────────────────────┐        ┌──────────────┐        ┌──────────────────┐
│  Positive Information    │───────▶│    Risk      │───────▶│  Social          │
└──────────────────────────┘        │  Perception  │        │  Precautionary   │
┌──────────────────────────┐───────▶│              │        │  Indices         │
│  Negative Information    │        └──────────────┘        └──────────────────┘
└──────────────────────────┘
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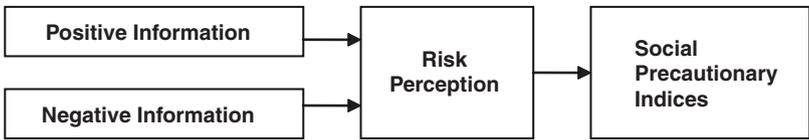
Figure 8.1 Chinese people's psychological behavior during SARS crisis

(1) Positive information and negative information. As the independent variables in the predictive model, according to its nature in threatening or protecting individual safety, the information could be divided into positive information and negative information. Referring to the information issued by the National Ministry of Health and mass media, we categorized them into negative information and positive information. Information on SARS infection is negative information (suggesting negative consequences), e.g. the number of new SARS cases. Information on recovery and on measures taken by government to prevent against the spread of SARS is positive information (suggesting positive consequences), e.g. new recovery cases and the policies or measures taken by government.

(2) Risk perception. Risk perception, as mediator variable, emphasizes an individual's experience through intuitive judgment and subjective feeling which is affected by many psychological, social, situational and cultural elements (Slovic 1987; Vlerk & Stallen 1981; Douglas & Wildavsky 1982). Slovic (1987) proposed a psychometric model of risk perception of which two orthogonal dimensions of familiarity and controllability were identified. Specifically, in a Cartesian coordinate system comprising these two factors, every risky event is located at a point which could directly exhibit human perceptual features of the risks on that event. The present study adopted this two-dimension psychometric model to measure risk perception of the public on various risks during SARS.

(3) Psychological and behavioral indices of resilience. In the current study, we considered 6 indices to represent the resilience and general well-being of citizens during the crisis of SARS, including risk assessment, feeling of nervousness, coping behavior, mental health, SARS situation anticipation and economic development anticipation.

(iii) Hypotheses.

Hypothesis 1: In the crisis of SARS, SARS-related negative information aggravated individual risk perception, and to public irrational nervousness

or scare; but positive information, especially that about policies and measures taken by government had significant contribution to alleviating public irrational cognition.

Hypothesis 2: The unknown and uncontrollable elements of SARS *per se*, were the key factors inducing public feeling of insecurity and alarm.

Hypothesis 3: SARS-related information influenced the public's psychological and behavioral indices through their risk perception. Six variables of risk assessment, feeling of nervousness, coping behavior, mental health, SARS situation anticipation and economic development anticipation would be effective precautionary indices in predicting public resilience in crisis.

Research method

(i) Subjects

The removal of questionnaires with missing or extreme values resulted in 4231 valid subjects. Demographic characteristics of respondents are listed as in Table 8.1.

Table 8.1 Sample distribution and demographic characteristics

Cities	Sample N	Demographic characteristics	%
Beijing	363	**Gender**	
Tianjin	434	Male	42.1
Inner Mongolia	190	Female	57.9
Guangzhou	208		
Shanghai	286	**Age range**	
Changsha	208	Below 20	8.5
Hangzhou	130	20–29	48.6
Jinhua	225	30–39	19.8
Guiyang	205	40–49	15.4
Shijiazhuang	146	50–59	6.4
Shenyang	223	Above 60	8.5
Ningbo	250		
Wuhan	236	**Educational level**	
Wuxi	238	Primary secondary school and below	8.1
Jiangxi	239	High secondary and technical schools	19.6
Chongqing	184	College degree	19.8
Shanxi	271	Bachelor degree	41.9
Xi'an	195	Master degree and above	10.5
Total N	4132		

(ii) Instruments

Before May 9th, through survey or web sites, we conducted a pilot study on this preliminary questionnaire, surveying 236 respondents randomly recruited from Beijing. Based on the analysis of results of pilot study, we deleted or modified items which were hard to under-stand or of low reliability, and formed the final version of question-naire in this study. The questionnaire consists of three parts, as follows:

(1) SARS-related Information. It represented two groups of items: information concerning SARS *per se*, including its characteristics, infec-tivity, mortality, etc., and information about preventive measures and policies, including official speech, protecting and insulations against SARS, public bus, supermarket supply, etc. There were 23 items in all, and all are measured against a 5-point Likert scale.

(2) Risk Perception Scale. It was derived from the psychometric model of risk perception proposed by Slovic in 1987; we combined it with 6 events of SARS: SARS pathogen, spreading and infectivity, recovery rate, preventive measures and policies and policies, infec-tivity after recovery, and after-effects on physical health. The ques-tionnaire asked the respondents how familiar and controllable they feel about the 6 events, and their overall feeling respectively on these two dimensions. All responses are again coded on a 5-point Likert scale.

(3) Social-psychological Precautionary Indices. They are consisting of 6 resilience indices: risk perception, feeling of nervousness, SARS situation anticipation, mental health, coping behavior and eco-nomic development anticipation. We adopted the GHQ 12 (General Health Questionnaire) as the measurement of mental health, and it had been used by a study on the laid-offs in China (Shi, Song & Zhang 2001).

(iii) Procedure

Electronic version of questionnaires were emailed to the qualified sur-veyors of 17 cities in China who then printed them out locally. The investigation was conducted in the period from May 9 to May 19 in 2003; both the questionnaire distribution and feedback were completed during this time. Since the first official report on April 21st, the SARS situation had been gradually under control, though SARS remained a threat. We determined the degree of infection severity for each district according to the new SARS cases and suspect cases reported.

Results & discussion

(i) Analysis on informational factors influencing risk perception.

We performed factor analysis via Varimax rotation by SPSS 11.5 on the 23 items measuring the importance of each kind of information in people's judging of risk. We obtained four factors, with a cumulative squared loading of 62.27% after deleting three items which loaded too low. We performed the factor analysis again, resulting in a clearer 4-factor structure, with the cumulative squared loading rising to 65.69%. Later analysis accepted the 4-factor model, with 20 items in all.

Factor 1 is "SARS infectivity information," including new SARS cases, cumulative SARS case, new and cumulative suspect cases, new and cumulative death cases, and the number of isolated persons. They are all in the nature of negative SARS-related information.

Factor 2 was "Recovery information," including new recovery cases and cumulative cases discharged from hospital, in the nature of positive SARS-related information.

Factor 3 was "information of personal interest," such as whether there are cases in their organizations or living areas, whether there are cases in people they know, and whether there are cases in their age group. They are all in the nature of negative SARS-related information.

Factor 4 was "information on measures taken by government", including government official speech, news press, the blocking ways against SARS spreading, the improvement of hospital treatment and conditions, and bus\water\electricity supply. These are in the nature of positive SARS-related information.

We took further analysis on the effects of all information in each city, and it was found that in all districts, people paid more attention to the recovery information and the information of personal interest; in the severest infectious district, people paid significantly higher attention to the information about infected cases than in other districts.

(ii) The spatial characteristics of the public's risk perception of SARS in May, 2003

According to the six types of risky events in SARS and people's overall feeling, we did ANOVA respectively on the feelings of familiarity and controllability; the results indicated that people's feelings of familiarity and controllability towards six risky events were significantly different. The descending order of people's feelings of *familiarity* toward six events was: spreading and infectivity, preventive measures and policies, recovery rate, SARS pathogen, infectivity after recovery

and aftereffects on physical health; while the descending order of people's feelings of *controllability* over 6 events was: preventive measures and policies, infectivity after recovery, aftereffects on physical health, spreading and infectivity, recovery rate, and SARS pathogen. In terms of these results, we drew a map of public risk perception distribution (see Figure 8.2).

As shown in Figure 8.2, firstly, people's risk perception of SARS is generally located in the upper right part of the risk perception quadrant, the area of "familiar and controllable," which indicates that, in the middle of May, the general risk perception of Chinese people to SARS was, by and large, under control. Secondly, among the six risky events, SARS pathogen is in the area of "uncontrollable and unfamiliar," that is to say, people felt the most doubtful and uncertain about SARS pathogen; people's perception of SARS-related events complied with the scientific research proceedings in SARS virus at the time (Li, Li, Zhang, Lu & Zhang 2003). Thirdly, after effects on physical health and infectivity after recovery are located in the area of "unfamiliar but controllable," namely that people felt unfamiliar to these two factors, but still had a sense of control. Last, other three events (infectivity, preventive effects, and recovery rate) are located in the area of "controllable and familiar," suggesting that people felt informed to these three concerns as well as controllable and correspondingly were in lower risk perception. It could
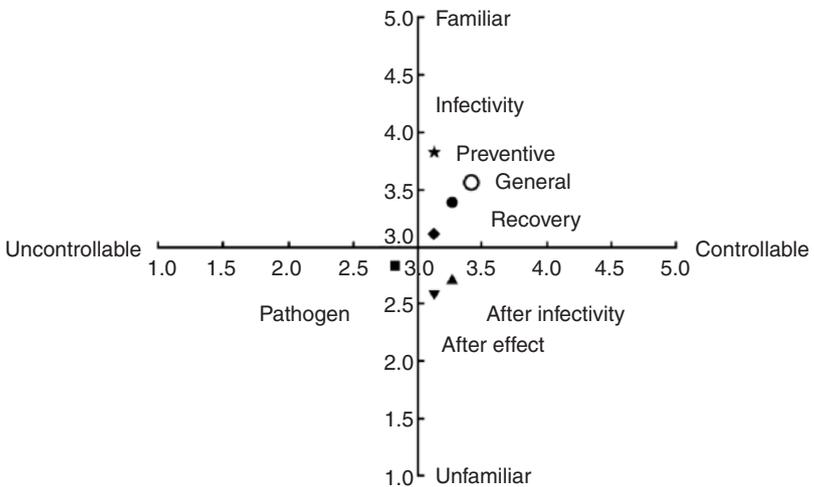

Figure 8.2   Public risk perception distributions

be linked with the fact that in the former half of May, the measures and policies taken by government came into effect and SARS situation was primarily put under control. In order to test its generalizability across districts with diverse degree of infection, we did the same descriptive analysis and drew distribution maps of risk perception for five cities: Beijing, Huhehaote, Wuhan, Guiyang and Guangzhou. Although the results presented subtle changes of factor positions, their locations in each quadrant remained generally the same. The results above suggested that this risk perception map reflected the common risk perception features of Chinese people in SARS crisis, and which indicated that people's feeling of uncontrollable and unfamiliar could be potential factors to arouse public panic. Hypothesis 2, that the unknown and uncontrollable elements of SARS *per se* were the key factors inducing unsafe feeling, was supported here.

(iii) Construction of empirical model of mechanisms of risk communication and its effects on public resilience

Structural Equation Modeling is currently the most widely-adopted method to explore causal relationships in a complex theoretical model (Hoyle 1995). We used the statistical software of Amos 4.0 to test the hypothesized risk perception-centered model. Based on the results from factor analysis, we categorized SARS-related information into four factors as independent/exogenous variables of this model; they were infectivity information, recovery information, information related to personal interest and information about measures and policies taken by government. Second, we took the risk perception consisting of familiarity and controllability as the mediated variable (endogenous variables in SEM). In the end, the dependent variables (endogenous variables in SEM) were two factors extracted from the six precautionary indices through exploratory factor analysis of which the cumulative square loading was 53.45%; factor one was negative precautionary indices, including risk assessment, feeling of nervousness and SARS situation anticipation; factor two was positive precautionary indices, including mental health, coping behaviors and economic development anticipation.

Table 8.2 presents the goodness of fit statistics. To present a good model the first four indices, namely the Unbiased Goodness of Fit Index (GFI), the unbiased Adjusted Goodness of Fit Index (AGFI), the Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI), should all be no less than 0.9, and the Root Mean Square Error of Approximation (RSMEA) should be less than 0.08. The hypothesized

Table 8.2 Models' goodness of fit indices

	χ^2	*df*	*GFI*	*AGFI*	*CFI*	*TLI*	*RSMEA*
Model 1	2045.023	94	.940	.914	.895	.867	.070
Model 2	1633.910	67	.946	.915	.911	.879	.074
Model 3	1204.005	66	.960	.936	.935	.911	.064

model 1 did not fit data satisfactorily, so we made adjustments in accordance with the modification indices suggested for modeling. Model 2 was formulated after dropping the index of economic development anticipation from the positive social-psychological precautionary indices and the index of SARS development anticipation from the negative social-psychological precautionary indices. Also based on suggested modifications, we added a path in Model 3 from SARS infectious information directly to negative precautionary indices. Model 3 fitted the sample data best. So we accepted it as the best theoretical model.

The structural equations for Model 3 are estimated as follows:

Risk perception = –.16 infectivity information +.12 recovery information –.23 information of personal interest +.18 government policies & measures + ζ + α

[1] **R^2 = .07**

Negative precautionary indices = –.23 risk perception +.38 infectivity information + ζ + α

[2] **R^2 = .21**

Positive precautionary indices = .41 risk perception + ζ + α

[3] **R^2 = .17**

As shown in the above three equations, the impact of informational factors on risk perception varied. Infectivity information and information of personal interest had a negative impact on risk perception; while recovery information and information about policies and measures taken by government had positive effects.

Worth noting is the fact that information about SARS infectivity affected negative precautionary variables directly. Thus, with information about increasing infectivity, people's risk assessment in

terms of negative precautionary variables tended to be higher. This must be the reason that people usually judge risky events from extrinsic and objective indices such as its occurring rate and seriousness of consequences (Xu 1998). So when an event happens frequently and with serious consequences, people will perceive higher risks for this event.

We advocate reasonable consciousness about risk factors as a response to an impending crisis, but excessive worry and irrational risk perception will induce unnecessary worry, scare, tension of being at loose ends, emotional disorders, and even arouse collective panic in a large social range. This study found that, in the severest districts, information of being infected and that of personal interest could induce irrational and excessive risk assessment, while the positive information, including recovery information and that with policies and measures taken by government, could level down individual risk perception, help them objectively assess the SARS threat on humans, and establish rational risk assessment.

In the campaign of protecting against SARS, the authors released five issues of the social-psychological precautionary newsletter (IoP 2003a, 2003b), in which it was suggested that government timely strengthen the publicity and transparency of recovery rate and new recovery cases, and pointed out the bias in risk perception. They to some extent helped the public objectively assess the SARS threat and establish rational risk consciousness. The active preventive measures and policies taken by Chinese government functioned in remising the public panic, such as blocking up the spreading sources, controlling the population flowing, setting special hospitals to save patients, etc; these measures could increase people's feeling of safety, and decrease their perception of risk. These results showed that: negative information, including SARS-infected patient information and SARS information of personal interest, aroused and elevated public risk perception; while positive information, including recovery information and information about measures taken by government, decreased their risk perception. Hypothesis 1 was supported.

The results were also included in the five issues of social-psychological precautionary newsletter to government. The precautionary variables proposed in this study became the referring indices for Beijing city government to analyze and predict the resilience and well-being of citizens during SARS among 18 districts of Beijing, and also were viewed as one of theoretical foundations for comparing and decision making in the five northern cities of China.

5   Conclusion

From the exploration of the mechanisms of risk communication between government and the public and its effects on the public's following psychological and behavioral reactions during the SARS, we learned that risk perception, anticipation, mental health and coping behaviors were four crucial indicators for the resilience and well-being of the public confronted with adversity. Accordingly, to control the irrational psychological and behavioral reactions of the public, government should pay more attention to the appropriate ways of releasing crisis relevant information, especially the negative and self-related information, the information transparency, and attach importance to the reports of mass media on the measures and polices taken by government to manage the crisis as well, which could alleviate the irrational risk perception and panic.

The SARS episode has thrown light on how we may establish a system for crisis management from a multi-level view to enhance resilience, harmonizing relationships at the individual level, family level, community level, social level and natural level. It also underscored the need to establish a precautionary indices system to monitor the functions of such a multi-level resilience system.

6   Future research directions

As we said above, during the social and economic transitional period, constructing socialistic harmonious society is one of the most important goals for Chinese society. It will drive the government and the public to attach more importance to the problems with regard to harmonious development, such as body and mind health, labor relationship, economic development, environment protection, etc. Moreover, happiness/well-being, as the ultimate end the human being strives for, should be kept in mind and referred to as one of the most important indicators in the construction of harmonious society by Chinese government.

Health under the WHO definition is a state of fulfillment encompassing physical, mental and social well-being and not just the absence of disease or infirmity. We have applied this concept to organizational research, and have come up with the term "healthy organization" to highlight the harmonious development on both the organizational productivity and the well-being of people in organization. This term is becoming more and more popular in the academic and practical area of management and Industrial/Organizational psychology. Essentially,

healthy organization shares the same goal with building harmonious society, namely enhancing the happiness/well-being of its people and at the same time promoting the development of organization/society. Moreover, society to some extent can be viewed as consisting of various organizations, with different nature and different level, such as individual, organizational, community and social level. Thus, we advocate for building *healthy organizations* in order to achieve the goal of harmonious society of China.

From the perspective of individual and organization level, building healthy organization means creating a favorable working environment, establishing harmonious labor relationships, improving psychological health of employee, cultivating organizational culture, promoting living quality and future development of employee, and strengthening the resilience of employees and organizations to handle the stress of competition and transformation. From the perspective of the community and society level, building a healthy organization aims to stabilize the society, prevent crisis, increase the resilience of citizens, advance the abilities of government leader and enhance the core-competence of China.

We now propose six areas for future research, hoping to illuminate how the multi-level resilience system and healthy organizations can be established down the road.

(i) Establish standards of health

Establishing health standards of health incorporating psychological and behavioral indices at the individual, leader, organization, community and society levels is a prerequisite to establishing a harmonious society. Health is a multi-facet concept. For the individual, health means being adapted to the transformations of natural environment, society and economy. For the leader, health means promoting management ability and making sound decisions. For the society, health means reasonable arrangements for human resources. Establishing standards could provide theoretical and measurable baseline of building harmonious society. Furthermore, this system could also offer judging tools which have different levels for government to draw the relevant policy implications.

(ii) Set up multi-level resilience and psychological precautionary system for social crisis

As mentioned above, for decision makers of public policy, a key problem of building harmonious society is how to forecast, cope and solve the "unharmonious factors" aroused by the economical and social

transformation. As we all know, disharmonious psychological state of the public is a precursor to social crisis. Thus, it is important to add multi-level resilience and psychological precautionary system of social crisis to national security system. For example, during the SARS period, we had already set up a preliminary psychological precautionary system and accumulated many experiences about how to calm down the public's unhealthy psychological state (see above study). The establishment of this system could offer the psychological reactive model of the public when they face a social crisis or disaster, provide the theoretical basis for countermeasures to improve the ability of resilience and crisis management of the Chinese government, and scientifically validate the efficiency of public policy taken by the Chinese government as well.

(iii) Explore the psychological and behavioral mechanisms of labor conflicts

With the globalization trend in economic development, labor guarantee system needs to construct a Labor Relationship Conciliation System with Chinese characteristics. While enterprises pursue maximizing their profit, how to solve problems of labor relationship becomes more and more intractable. The labor conflict (such as psychological problems of decapitator and survivor during organizational transformation, employment problems of people injured in the workplace, welfare of casual laborer who comes from rural areas, etc.) will harm not only the individual organization, but also the whole society. Hence, government should give their attention to legal right of these social vulnerable groups and provide some preferential strategies to them when making public policy.

(iv) Adopting the Employee Assistance Program (EAP)

Along with our society switching to the market economy, there is increasing evidence that mergers and acquisitions, organizational restructuring and downsizing can adversely affect the psychological health of employee. Thus, psychological problems, such as job insecurity, job stress and job burnout, have become more and more common among workers today. In recent years, many companies dealing with Employee Assistance Programs (EAP) started to extend their branches into China. EAP are programs aiming at alleviating personal, family and work-related problems that might interfere with the performance and physical/psychological health of workers. Expanding this kind of service could effectively decrease the level of unhealthy psychological state of the public, reduce the probability of various

troublous activities to organizations, and increase the resilience of both employees and organizations. Evidently, EAP is an important step to healthy organization, and it must be implemented in terms of cultural and management backgrounds of China.

(v) Strengthening leadership at the top

The competence of leaders, especially that of leaders of administrative departments who are in charge of public policies, plays a key role in constructing a harmonious society. Building a competent leadership is a significant strategy of the 16th National Congress of the CPC as well.

(vi) Cultivate healthy culture of organizations

Although promoting economic development and living standard are important in building a harmonious society, maximizing economic profits could not by itself increase happiness. There is much evidence that happiness is one of the direct factors leading to positive behaviors, such as organizational citizenship behavior (OCB) and job satisfaction. Thus there is an imperative to construct a healthy organization culture emphasizing happiness/well-being centered incentives rather than money-centered incentives, establishing an atmosphere of cooperation, a transformational managerial style, and promoting core competence of organization, community and society.

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