Emerging Issues in Doing Cross-Cultural Research in Multicultural and Multilingual Societies

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Abstract. Cross-cultural research is one of the emerging areas in HCI field lately. There have been fruitful discussions on issues of using measurement or doing field work to address HCI issues 'across countries' or 'across-cultures' . However, methodological concerns in conducting research in multicultural and multilingual society have not been fully explored. This paper reviews research work done and outlines problems and concerns in doing cross-cultural research in multicultural and multilingual society/country. Consequently, we propose a conceptual framework/procedure as a starting point for further development of measurements or field strategies.

Keywords: Cross-cultural measurement.

1 Introduction

Cross-cultural research is one of the emerging areas in HCI field lately. During the 1990's cross-cultural HCI research has expanded from issuing guidelines and importing models from the social sciences [23] to developing its own frameworks [18]. For any company to design and market products for sales to other countries, it is critical to understand users' cultural background and possible consequential responses to products. Doing user studies across different cultures and countries becomes a common practice for researchers and practitioners. There have been fruitful discussions on issues of using measurement or doing field work to address HCI issues 'across countries' or 'across-cultures'. However, it becomes evident that an effective research tools used in one culture may not gather the data one wants in another culture. Methodological concerns in conducting research in multicultural and multilingual society have not been fully explored. This paper reviews research work done and outlines problems and concerns in doing cross-cultural research.

2 Research Methodology in Cross-Cultural Research

The nature of cross-cultural research is to understand and compare various cultural practices. It increases the complexity of research process because the researcher has to

consider various cultural factors that can contribute to the differences in research outcomes. The major challenge in doing research across cultures is to establish equivalence in each stage of the research process. No research is completely independent from the cultural context of the researcher. In order to obtain the data sought, the research tool and research procedure have to be suitable for the cultural context the research is conducted.

There are works done in multiple fields to enhance understanding of the issue. Majority of the literature has raised issue of research approach. The earliest work can be found in Frijda & Jahoda's [19] discussion on the difficulties to achieve equivalence in doing cross-cultural research in psychology. Many studies have then discussed equivalence in cross-cultural research in various ways. Sekaran [39] delineates methodological issues into five dimensions: functional equivalence, instrumentation, data-collection, sampling design and data analysis. Adler [2]adds criterion definition and research administration to Sekaran's [39] structure. Hui and Triandis [25] suggested that cross-cultural comparability can be achieved by establishing compatibility across cultures on four key categories of equivalence. Conceptual or functional equivalence, Construct operationalization equivalence, Item equivalence, Scale Equivalence Methodological simplicity and level of analysis were later added to update this same framework [34]. Carvusgil and Das [10] came up with four categorizations: basic research design, sampling issue, instrumentation & data collection and data analysis. Usunier & Lee [43] summarize equivalence issues into conceptual, functional, translation, measure, sampling and data collection equivalence.

The above list of categorization is not exhaustive, but reflects common major themes in existing literature over the past five decades. High degree of similarities is observed in the ways methodological issues are discussed. Scholars who work in this area also provide possible explanations and solutions to problematic issues in conducting cross-cultural research. It is evident that researchers who are interested in conducting cross-cultural research need to be aware of and deal with those common equivalence problems. However, the problem becomes more complex when a research is to be conducted in multicultural and multilinguistic environment [44]. The threats to research measures increase exponentially in a cross-national study as the diversity encompassed in such a project is expanded [14]. Research has not extended discussion on equivalence in such a complex context. This paper does not attempt to revise existing categorization. Rather, it aims at situating equivalence issues in multicultural and multilingual societies. In the next section, issues central to conducting cross-cultural research are identified. Directions to advance understanding of methodological those issues in multicultural context are discussed.

2.1   Conceptual Equivalence

People from different cultures understand the world around them in their specific ways. Hence, the basic issue in cross-cultural research is to understand if meaning constructed from various cultures can reach "sameness". The sameness in the way people assign meaning to concepts and behaviors is conceptual equivalence. Byrne & Watkins [7] warns that it is difficult to achieve conceptual equivalance in cross-cultural research. He attributes this to "item bias", a condition whereby due to cultural differences, people set for themselves different criteria to judge concepts by. Even the

most basic of concepts, such as human motivation, can encounter conceptual inequality issues. Spini [41] examined a concept "hedonism" from a 10 value scale showed strong conceptual inequality.

To understand factors influence conception, several dimensions have been identified from past research: perception, values and attitudes, personality and gender.

Perception. Any research trying to find out people's opinions or reactions would have to deal with a subjective perception of each individual. Material presented to the research participants may not be perceived in the same way across cultures. Hong, Benet-Martinez, Chiu and Morris [24] found that exposure of Chinese or American material to Chinese-American bilinguals activated a different knowledge system and affected the way they responded in different ways.

Being aware of this, some "inter-national" studies that aims at testing differences have tried to differentiate the degree of variance across countries. They want to know how different people perceive things? Ewing, Caruana & Zinkhan [16] found that perception to advertising is different between the United States and countries outside it. However, differences are usually less when comparing countries outside the United States, even when there is a big geographical distance (e.g. UK and Singapore).

Moreover, perception is dynamic and that makes it hard to research equivalence [36]. Weber and Hsee [48] found that while attitudes to risk are relatively anchored, perception to risk however is highly volatile. Attitudes need to be researched separately since it influences research outcomes in different ways.

Values and Attitudes. Every culture has a distinct value system. Researchers tend to design research questions/hypothesis in the way they place values to the issue. One obvious example is that Western constructs do not always correspond to the rest of the world. Farruggia, Chen, Greenberger, Dmitrieva, and Macek [17] pointed out that their assumption of self esteem correlate to depression does not stand true in collectivistic society.

Personality. Personality is an important indicator for conceptual understanding. Leung and Bond [28] suggested that individual traits and cultural traits need to be distinguished in doing comparative studies.

Gender. Literature in this area is relatively fewer than the rest of the issues identified. It recognizes possible differences in how males and females perceive things [38, 47]. However, there is no compelling result that recommend how gender differences play a part in methodology. This is an area for further research.

The current approach to understand conceptual equivalence typically assumes cultural homogeneity within a nation. Few research addressed heterogeneity within a given culture. Aspinall [3] and Kim, Li and Ng [27] indicate ethnic differences can contribute to strong difference in conceptual equivalence. In a multicultural society, cultural groups within the same country or geographical area have distinct way to conceptualize things in life. Failure to consider differences among groups of different cultural background within a country can lead to inaccurate research outcomes.

2.2   Measurement Applicability

A large body of literature addressed problems of applying measurement across cultures. One of the often-cited problems in the interpretation of cross-cultural differences is the lack of comparability of testing methods [5]. Indeed, achieving such comparability can seem like a daunting task, considering that over 50 types of equivalence have been discussed in the literature (see Johnson, 1998).

For example, a well-known measurement Job Description Index (JDI) has been tested multiple times and proven to be sufficient in cross-cultural research. However, Wang and Russel [46] point out that the index fails to uncover unique traits of satisfaction that exist if one takes an "emic" perspective. To complicate the problem, Morland & Williams [31] noted that scales used in cross-cultural research can be an indication of "direction", e.g. change in attitudes, etc. as opposed to a test of difference.

Another difficulty is the degree of generalizability. Paunonen and Ashton [35] reviewed a variety of personality measurements found that although the tests had "transportability", the ability to generalize findings from foreign cultures is limited. This substantiates that even though an instrument may have sufficient reliability, or measurement equality, generalizing is difficult in cross-cultural contexts.

It brings out the importance of addressing issues of contextual influence. A person of a certain culture may find dimensions of his culture manifesting in different degrees depending on the country he is located. If he is located within a foreign country, there is higher chance of manifesting the cultural aspects there in his answers. Chen, Ng & Rao [11] recommended to solve this problem by cultural priming. Cultural priming refers to removing cultural specific questions from measurements.

Another proposed solution for solving this problem is to examine "measure cultural similarities and differences at a more concrete level (i.e; specific, everyday attitudes and behaviors that seemed common to many societies at many points in time)" to avoid measurement issues. Funkhouser [20] calls these constructs "anchors", by which "bias-free, cultural comparisons can be made."

Studies that use non-verbal cues or pictorial representations as stimuli show various outcomes. Morris [32] writes that the self assessment manikin (SAM) is a highly efficient tool for measuring advertising responses, and that results show that this method of deriving emotional responses are "generally the same in the United States and Taiwan". On the other end of the spectrum, Hofer & Chasiotis [22] found the picture story method far too subjective. No consistency in that research was found. The article by Ye [49] also found that facial expressions are culturally bound and subjective. Facial expressions of Chinese varied with their own spoken linguistic cues.

2.3   Translation Quality

Translation quality refers to how similar the meaning of a term is to its original meaning after it is translated to another language. The "sameness" of the term can be subdivided into the following areas: direct vocabulary, semantic and grammar-syntactical. *Vocabulary equivalence* refers to the exact translation of the word. Does a term, love, for example, have a similar word in Japanese? *Semantic equivalence* notes the differences in meaning of a word. While love in English can be a generic expression for an emotion, there may be many forms and degrees of love in another

language. *Grammar-syntactical equivalence* is a degree of sameness in the construction of sentences. This is of more relevance to open ended responses, where individual translated words may have no meaning when placed as a sentence. Little studies is done in grammar-syntactical equivalence.

Rogler [37] expressed that translation inequality is a result of "cultural insensitivity". Not only does one have to know about the idiomatic or direct vocabulary similarity, knowledge of the country's history is also highly important. It is important for researchers, therefore, not only to get the hang of the language, but also to understand if the word can suit a country's history and experience.

The translational problems should not be taken just as the meanings of the question. Translation issues with regards to scales can also cause serious validity issues. Bad to excellent, as a scale for example, may not work well when the second language does not possess words that can accurately mean the above. This is particularly important since most of the scales and methods are developed in English.

After the translation is done, the next step is to test if the translation is of good quality. Several studies have dwelled on this issue [6, 8, 9, 42, 21]. One common suggestion is to back translate. For bilingual participants, asking them to answer both English and the translated terms is suggested. However, this method has also been criticized because bilingual respondents tend to have a "parent language" and hence think in a particular way that may be different from what a monolingual person might think. For a multilingual context, Duh and Save [15] have recommended to provide multiple languages in the measurement but allow participants to choose the language they are more comfortable with.

2.4 Response Styles

Baumbartner & Steenkamp [4] suggest that response style contamination has been overlooked in existing cross-cultural research. Not only do people not look out for response style issues, they also do not take up measures to prevent contamination (such as reverse coding). Response styles issues are divided into the following parts: extreme response styles, midpoint tendency, acquiesce response styles, and pleasing tendency.

Extreme response styles. Extreme response style is a tendency for the respondent to place his/her response on the extremities of a scale. Clarke [13] suggests that while it is easy to find out extreme response styles and sift it out, it is much more complicated when extreme response styles are mixed with acquiesce response styles. The study of cultures can reveal extreme response styles, and the researcher has to be prepared. Preemptive measures are recommended within the article. Hui and Triandis [26] also suggests complex reasons for extreme response styles. In their research, Hispanics were tested for extreme response styles. They demonstrated strong extreme response styles in a 5 point scale, but insignificant response style bias on a 10 point scale.

Some researchers have made suggestions. Arce-Ferrer and Ketterer [1] found that extreme response was slightly improved when items were added to moderate out the extreme response. Cheung and Rensvold [12] use Multiple-group confirmatory factor

analysis to test whether cultural groups can be meaningfully compared on the basis of factor (latent) means. Researchers can use this test to derive if their findings have any use after being contaminated by extreme response styles.

Midpoint tendency. Midpoint tendency is a response style where the respondent tends not to input extreme opinion using likert scales. Midpoint tendencies tend to be a problem within more conservative nations whereby expressions of strong opinions are not encouraged. Cheung and Rensvold [12] recommend avoiding this problem by using a "two stage format study".

Acquiesce Response styles. This is the classic "yea-saying" response styles. However, this form of response style can also be generalized as a strong one sided response style. When Mondak and Canache [30] removed the "neutral option" and introduced the "don't know option" in the questionnaire, it brought forth strong acquiesce response styles. People are unlikely to admit they do not know answers to the questions.

Researchers should also be more careful when they construct surveys or questions for cultures ranked high in uncertainty avoidance, as chances of acquiesce response styles emerging are higher [40]. Smith [40] writes that "Bias can be thought of as a nation-level reflection of the individual communication styles and patterns of inter-group relations that prevail within certain specifiable cultural contexts." He suggested adding in a factor that offsets the acquiescence bias.

Pleasing response styles. This is an interaction effect whereby the respondent tries to respond in a way to please the interviewer. It is suggested that developing countries tend to exhibit a social desirability bias. That causes problems especially when the researcher has no access to the real beliefs of an individual. When conducting interviews, researchers should also think about the race and gender of the interviewer and those interviewed, speculating if it might affect the interview in anyway.

2.5 Sampling

According to Lonner & Berry [29] "the problem of drawing equivalent samples will be a major, if not the most major, methodological obstacle to overcome satisfactorily." When doing cross cultural research, researchers will face a number of problems when it comes to their samples. One of them is "matching". "Matching" is described as getting 2 samples from 2 different cultures with (usually) identical socioeconomic statuses. Dorian, 2002 found it hard to find exact socio-economic samples for comparisons given that occupations, income levels, educational levels and spending parity are vastly different between China and North America. In that project, the researcher gave up the search for identical matches and instead looked towards a more qualitative, holistic approach to complete his research. Another article by Mullen, Milne & Doney [33] noted that outliers can be a threat to cross-cultural sampling. It can be harder to detect outliers in a cross-cultural setting.

3   Conclusion

This paper outlines important methodological concerns in doing user studies across different cultural contexts. Current research identified measurement applicability and translation quality as two primary issues when conducting cross-cultural research in a multicultural and multilinguistic context. However, very few research provided viable suggestions to solve the problems. Future research should explore potential problems in other areas as well as provide possible solutions to assure the degree of rigor in cross-cultural research.

References

 1. Arce-Ferrer, A.J., Ketterer, J.J.: The effect of scale tailoring for cross-cultural application on scale reliability and construct validity. Educational and Psychological Measurement 63, 484–501 (2003)
 2. Adler, N.: A Typology of Management Studies Involving Culture. Journal of International Business Studies 14, 29–47 (1983)
 3. Aspinall, P.J.: Approaches to developing an improved cross-national understanding of concepts and terms relating to ethnicity and race. International Sociology 22, 41–70 (2007)
 4. Baumbartner, H., Steenkamp, J.E.M.: Response styles in marketing research: A cross-national investigation. Journal of Marketing Research 38, 143–156 (2001)
 5. Bond, M.H., Smith, P.B.: Cross-cultural social and organizational psychology. Annual Review of Psychology 47, 205–285 (1996)
 6. Bontempo, R.: Translation Fidelity of Psychological Scales: An Item Response Theory Analysis of an Individualism-Collectivism Scale. Journal of Cross-cultural Psychology. 24, 149–166 (1993)
 7. Byrne, B.M., Watkins, D.: The issue of measurement invariance revisited. Journal of Cross-cultural Psychology 34, 155–175 (2003)
 8. Candell, G.L., Hulin, C.L.: Cross-language and cross-cultural comparisons in scale translations. Journal of Cross-cultural Psychology 17, 417–440 (1986)
 9. Chapman, D.W., Carter, J.F.: Translation procedures for the cross cultural use of measurement instruments. Educational Evaluation and Policy Analysis 1, 71–76 (1979)
10. Carvusgil, S.T., Das, A.: Methodological issues in empirical cross cultural research: a survey of the management literature and a framework. vol. 37, pp. 71–96 (1997)
11. Chen, H., Ng, S., Rao, A.R.: Cultural differences in consumer impatience. Journal of Marketing Research 42, 291–301 (2005)
12. Cheung, G.W., Rensvold, R.B.: Assessing extreme and acquiescence response sets in cross-cultural research using structural equations modeling. Journal of Cross-Cultural Psychology 31, 187–212 (2000)
13. Clarke, I.: Extreme response style in cross-cultural research. International Marketing Review 18, 301–324 (2001)
14. Davis, H.L., Douglas, S.P., Silk, A.J.: Measure unreliability: A hidden threat to crossnational marketing research? Journal of Markering Spring 45, 98–108 (1981)
15. Duh, H.B.L., Reva, R.: Technical Report: usage of affective words in multilingual society. Center for Human Factors and Ergonomics, Nanyang Technological University, Singapore (2005)

16. Ewing, M.T., Caruana, A., Zinkhan, G.M.: On the cross-national generalizability and equivalence of advertising response scales developed in the USA. International Journal of Advertising 21, 323–343 (2002)
17. Farruggia, S.P., Chen, C., Greenberger, E., Dmitrieva, J., Macek, P.: Adolescent self-esteem in cross-cultural perspective. Journal of Cross-cultural Psychology 35, 719–733 (2004)
18. French, T., Smith, A.: Semiotically enhanced Web Interfaces for Shared Meanings: Can Semiotics Help Us Meet the Challenge of Cross-Cultural HCI Design? IWIPS 2000 Baltimore, US (2000)
19. Frijda, N., Jahoda, G.: On the scope and methods of cross-cultural research. International Journal of Psychology 1, 109–127 (1966)
20. Funkhouser, G.: A self-anchoring instrument and analytical procedure for reducing cultural bias in cross-cultural research. Journal of Social Psychology 133, 661–673 (1993)
21. Geisinger, K.F.: Cross-cultural normative assessment: Translation and adaptation issues influencing the normative interpretation of assessment information. Psychological Assessment 6, 304–312 (1994)
22. Hofer, J., Chasiotis, A.: Methodological considerations of applying a tat-type picture-story test in cross-cultural research. Journal of Cross-cultural Psychology 35, 224–241 (2004)
23. Hofstede, G.: Cultures and organizations: Software of the mind. McGraw-Hill, London, England (1991)
24. Hong, Y., Benet-Martinez, V., Chiu, C., Morris, M.W.: Boundaries of cultural influence: Construct activation as a mechanism for cultural differences in social perception. Journal of Cross-Cultural Psychology 34, 453–464 (2003)
25. Hui, C.H., Triandis, H.C.: Measurements in cross-cultural psychology. Journal of Cross-Cultural Psychology 16, 131–152 (1985)
26. Hui, C.H., Triandis, H.C.: Effects of culture and response format on extreme response style. Journal of Cross-Cultural Psychology 20, 296–309 (1989)
27. Kim, B.S.K., Li, L.C., Ng, G.F.: The Asian-American values scale-multidimensional: Development reliability and validity. Cultural Diversity and Ethnic Minority Psychology. 11, 187–201 (2005)
28. Leung, K., Bond, M.H.: On the empirical identification of dimensions for cross-cultural comparisons. Journal of Cross-Cultural Psychology 20, 133–151 (1989)
29. Lonner, W., Berry, J.: Sampling and surveying. Field methods in cross-cultural research Sage Publications, Inc., pp. 85–110 (1986)
30. Mondak, J.J., Canache, D.: Knowledge variables in cross-national social inquiry. Social Science Quarterly 85, 539–558 (2004)
31. Morland, J.K., Williams, J.E.: Cross-cultural measurement or racial and ethnic attitudes by the semantic differential. Social Forces 48, 107–112 (1969)
32. Morris, J.D.: Sam: The self assessment manikin. Journal of Advertising Research 35, 63–68 (1995)
33. Mullen, M.R., Milne, G.R., Doney, P.M.: An international marketing application of outlier analysis for structural equations: A methodological note. Journal of International Marketing 3, 45–62 (1995)
34. Nasif, E.G., Al-Daeaj, E.B., Thibodeaux, M.S.: Methodological Problems in Cross-cultural Research: An updated Review. Management International Review 31, 79–91 (1991)
35. Paunonen, S.V., Ashton, M.C.: The structured assessment of personality across cultures. Journal of Cross-Cultural Psychology 29, 150–170 (1998)

36. Ployhart, R.E., Wiechmann, D., Schmitt, N., Sacco, J.M., Rogg, K.: The cross-cultural equivalence of job performance ratings. Human Performance 16, 49–79 (2003)
37. Rogler, L.H.: Methodological sources of cultural insensitivity in mental health research. American Psychologist 54, 424–433 (1999)
38. Schwartz, S.H., Rubel, T.: Sex differences in value priorities: Cross-cultural and multimethod studies. Journal of Personality and Social Psychology 89(6), 1010–1028 (2005)
39. Sekaran, U.: Methodological and Theoretical Issues and Advancements in Cross-Cultural Research. Journal of International Business Studies. 14, 61–73 (1983)
40. Smith, P.B.: Acquiescent response bias as an aspect of cultural communication style. Journal of Cross-Cultural Psychology 35, 50–61 (2002)
41. Spini, D.: Measurement equivalence of 10 values types from the Schwartz value survey across 21 countries. Journal of Cross-cultural Psychology 34, 3–23 (2003)
42. Thomas, D.L., Weigart, A.J.: Determining nonequivalent measurement in cross-cultural family research. Journal of Marriage and the Family 34, 166–177 (1972)
43. Usunier, J-C., Lee, J.A.: Marking Across Cultures, 4th edn. Prentice Hall, London (2005)
44. Van der Vijver, F.J.R., Leung, K.: Methods and Data analysis for cross cultural research. Sage, Thousand Oaks, CA (1997)
45. Van Raaij, W.F.: Cross-cultural research methodology as a case of construct validity. Advances in Consumer Research 5, 693–701 (1978)
46. Wang, M., Russel, S.S.: Measurement equivalence of the job descriptive index across Chinese and American workers: Results from confirmatory factor analysis and item response theory. Educational and Psychological Measurement 65, 709–732 (2005)
47. Watkins, D., Cheung, S.: Culture, gender and response bias: An analysis of responses to the self-description questionnaire. Journal of Cross-Cultural Psychology 26, 490–504 (1995)
48. Weber, E.U., Hsee, C.: Cross-cultural differences in risk perception but cross-cultural similarities in attitudes towards perceived risks. Management Science 44, 1205–1217 (1998)
49. Ye, Z.: The chinese folk model of facial expressions: A linguistic perspective. Culture and Psychology 10, 195–222 (2004)