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The Value of Keeping an Open Eye for Methodological Issues in Research on Resilience and Culture

Resilience, which refers to the recovery and sustained pursuit of the positive for individuals and communities despite adversity (e.g., Fletcher & Sarkar, 2013), has both culture universal and specific aspects (Ungar, 2008). We propose to keep an open eye for the methodological consideration in researching resilience and culture. We argue that qualitative and quantitative approaches to researching resilience can be adequately combined in cross-cultural studies (Van de Vijver & Chasiotis, 2010). The argument is based on two related considerations. Firstly, resilience research often takes place in field conditions in which the methodological rigor of laboratory research is hard to obtain. As a consequence, we need to have flexible tools in cross-cultural resilience research. Secondly, qualitative and quantitative methods can yield complementary insights (Denzin, 2006).

It is a strength of qualitative research that reality is studied with a very open mind, thereby providing much more opportunity for focusing on culture-specific aspects than can typically be achieved in quantitative studies. Qualitative methods have proven beneficial in improving the ecological validity of resilience studies within specific cultural contexts (e.g., Ungar & Liebenberg, 2011). Interviews, focus groups, observations, sometimes combined with other innovative methods, such as quadrant mapping and structured interview matrix, have been used to enrich qualitative studies (Ebersöhn, 2010; Moscardino, Axia, Scrimin, & Capello, 2007). The primary advantage of such approaches lies in the richness of the ethnographic portrayal of resilience in different contexts. For example, the Negotiating Resilience Project team has identified both cultural universals and specifics of resilient adolescents in various cultures with a new qualitative visual method, in which adolescents were interviewed and videotaped during a day, and they reflected on their own experience and environment through photo elicitation (e.g., Cameron, Lau, & Tapanya, 2009; Liebenberg,

Didkowsky, & Ungar, 2012). However, qualitative resilience studies are not without limitations. In particular, very few qualitative studies explicitly addressed the issue of equivalence and most had very small sample sizes. As argued below, quantitative studies are particularly useful in dealing with equivalence issues; various procedures have been developed to test whether quantitative data obtained in different cultures have the same psychological meaning. It can be concluded that the strengths and weaknesses of qualitative and quantitative methods complement each other. Therefore, it is easy to see that the combined use of both methods is fruitful, especially if the methods are integrated with an open eye for their strengths and weaknesses. We adopt a pragmatic approach to the integration of qualitative and quantitative methods. It may be noted that this pragmatism is in line with the current interest in mixed methods (Van de Vijver & Chasiotis, 2010).

Drawing on a framework of bias and equivalence from quantitative cross-cultural methods, we first review construct, method, and item bias arising in resilience research involving multiple cultures, and the corresponding levels of equivalence in cross-cultural comparisons. We start with a description of approaches developed in quantitative studies, followed by a description of how these apply to qualitative studies (providing examples throughout). We then turn to one of the key issues in mixed methods namely how to combine qualitative and quantitative evidence. Finally, we draw conclusions.

Bias and Equivalence in Cross-Cultural Resilience Research

Bias is defined as the presence of systematic errors that are expected to be found again were the study to be repeated. It includes various artifacts that threaten the validity of measures administered in different cultures (He & Van de Vijver, 2012). As a corresponding term, equivalence is defined as the level of comparability of scores across cultures. The primary goal in cross-cultural comparison is often to reduce bias and achieve equivalence, even though bias in itself can point to important cross-cultural differences (Poortinga & Van

der Flier, 1988). The existence of bias implies that differences in observed scores may not correspond to genuine differences in the underlying trait or ability being targeted. If not taken into account, bias can be misinterpreted as substantive cross-cultural differences. Based on the source of invalidity, three types of bias, namely construct, method, and item bias, can be distinguished (Van de Vijver & Tanzer, 2004). A summary of the types of bias, the sources, and strategies to deal with bias is presented in Table 1.

Construct Bias

Construct bias occurs when the construct measured is not identical across cultures. It can happen when there is only partial overlap in the definition of the construct across cultures or there are differences in behaviors relevant to the construct (Van de Vijver & Poortinga, 1997). The assessment of resilience, a multifaceted construct referring to a variety of traits, protective processes, and outcomes of individuals and communities under risk (Zautra, Hall, & Murray, 2010), is vulnerable to construct bias. To begin with, cultures differ in their implicit views on resilience. East Asians tend to view resilience as the full awareness and acceptance of experience, whereas Westerners tend to interpret it as self-choice and mastery over environment (Zautra et al., 2010). Similarly, certain behaviors considered risk factors that hamper resilience in one culture may have a positive connotation in another culture (e.g., Ungar, 2001). For instance, drop-out is regarded a negative school outcome in most cultures, yet it has been found that a group of African Canadian students resorted to drop-out to demonstrate dignity, personal efficacy, and independence (Dei, Mazzuca, McIsaac, & Zine, 1997). It is important to take culture-specific aspects of resilience into consideration and acknowledge the incompleteness of the overlap of the construct in studies involving very dissimilar cultures (Ungar, 2010).

Construct bias in quantitative studies. Both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) can be used to establish construct (in)equivalence in

cross-cultural data, whereas CFA is also capable of detecting item bias. EFA is preferred when the underlying structure is unclear, such as is often the case in measures of resilience (Ungar & Liebenberg, 2011). The principle of using EFA (and various other dimensionality-reducing techniques) to study equivalence is simple: identity of factors (or dimensions) of an instrument to assess resilience across cultures is taken as sufficient evidence for equivalence, which points to the similarity of resilience across the cultures studied. Target rotations can be carried out to compare the structure across cultures and to evaluate factor congruence, often by means of the computation of Tucker's phi coefficient, which tests to what extent factors are identical across cultures. Values of the coefficient above .90 are usually considered to be adequate and above .95 to be excellent (Van de Vijver & Leung, 1997).

CFA is usually applied when the structure of the construct can be derived from theory or previous work. A good fit of a CFA model indicates that the hypothesized factor structure can be accepted, and provides sufficient evidence for equivalence. CFA can test hierarchical models in which cross-cultural invariance is examined for a systematically increasing or decreasing number of parameters. The combination of a high level of detail and statistical rigor makes these analyses state-of-the-art in quantitative equivalence assessment. For example, Paton, Bajek, Okada, and McIvor (2010) studied earthquake preparedness in Japan and New Zealand; they used this method to test the cross-cultural invariance of the relationship between hazard beliefs, social characteristics, and their interaction to predict earthquake preparedness in the two cultures.

A number of resilience scales (e.g., the Connor-Davidson Resilience Scale, the Ego-Resilient Scale, and the Resilience Scale for Adults) have been reviewed for their psychometric properties in quantitative designs, yet no "gold standard" has been identified (Windle, Bennett, & Noyes, 2011). Moreover, some instruments may represent different factor structures in different cultures, causing construct bias. For example, a five-factor

solution of the Connor-Davidson Resilience Scale was found in a group of Chinese (Yu & Zhang, 2007), whereas a four-factor solution was found among community-dwelling older women in the US (Lamond et al., 2008). In addition, many of these measures did not take cultural influence into consideration. The Cultural Resilience Measure (Clauss-Ehlers, 2008) and the Child and Youth Resilience Measure (Ungar & Liebenberg, 2009), which explicitly factor cultural elements in, are perhaps among the best efforts to develop more ecologically valid measures of resilience.

Construct bias in qualitative studies. A qualitative method is slightly more flexible in dealing with construct bias compared with quantitative methods. Instead of assuming that a measure of resilience has validity in a cultural group and then testing this assertion in quantitative designs, qualitative studies can go one step back and start from interviews with locals to identify what is meant with resilience, or which behaviors and attitudes are associated with it. There are numerous examples of these ethnographic explorations, such as a study of depression in Zimbabwe (Patel, Abas, Broadhead, Todd, & Reeler, 2001). In qualitative designs of resilience and culture research, the working definition of resilience may be negotiated from the conjoint work of scientists and community partners at site (Abdou et al., 2010), which helps to clarify the scope of the construct and to facilitate the interpretation of results, thereby reducing the likelihood of bias.

Method Bias

Method bias is a generic term for bias deriving from sampling, structural features of the instrument, or administration processes. As the concept has been developed within the context of quantitative studies, we present the definitions within the framework of such studies, although as argued below the concept is also relevant in qualitative studies.

Method bias in quantitative studies. *Sample bias* results from the difference in sample characteristics (e.g., age, gender, education, religious belief) that has a bearing on

observed score differences. Respondents' religious beliefs may affect how they perceive and practice resilience (Pargament & Cummings, 2010), thus the comparison of resilience of atheists with religious people may be susceptible to sample bias. It is important to match or statistically control for the effects of certain sample characteristics when multiple cultures are involved (He & Van de Vijver, 2012).

Instrument bias refers to nuisance factors arising from instrument characteristics. The sources of instrument bias include response styles (in personality and attitude inventories) and stimulus familiarity (in cognitive and educational tests) (He & Van de Vijver, 2012). In measuring positive psychological constructs including resilience, Likert-type scales may induce high levels of response styles, such as acquiescence, which is the tendency to always agree regardless of content. Friborg, Martinussen, and Rosenvinge (2006) compared the Likert-based response formats with a semantic differential response format in a resilience measure and found that the latter could effectively reduce acquiescence without jeopardizing the psychometric quality.

Administration bias occurs when different administration conditions are applied (e.g., paper-based versus computer-based administration, individual versus group administration), unclear instructions, and communication between test administrator and respondents (e.g., language differences, taboo topics). It is important to match the administration conditions in different cultures. In interviewing participants of different cultures, local experts and assistants who have the same mother tongue may be preferred (e.g., Bottery, Ngai, Wong, & Wong, 2008).

Method bias in qualitative studies. The issue of using small and possibly biased *samples* can also jeopardize cross-cultural resilience studies, notably if target participants are hard to reach and the control of the methods is poor. To avoid or accommodate sample bias, different strategies to recruit participants can be used. Given the time and cost constraints,

small samples are often unavoidable. Bottery et al. (2008) compared resilience of a school principal in UK and a school principal in Hong Kong. They described both contextual differences and challenges faced by the principals and similarity in underlying themes, such as the desire to improve the children's lot and not to give in to constraints and pressures they daily face. Efforts can also be made to reach random samples and enhance generalizability. For example, Eggerman and Panter-Brick (2010) studied resilience among Afghani through semi-structured interviews with a systematic random sample of over 2000 participants. With matched gender and geographic representation in the sample, the study provided rich information on how contexts framed individual and collective experiences of resilience.

Another potential method bias threat is the *obtrusiveness of the presence of the researcher*. Quantitative studies can employ some procedures to reduce this obtrusiveness, mainly by standardizing administrations (thereby ensuring that identical questions are being asked) and using local test assistants. However, the analysis of qualitative data can easily become very interpretive or subjective. Researcher's obtrusiveness is difficult to avoid. In some cases it may be possible to develop a coding scheme by a multicultural research team involved in every stage of a qualitative study to examine interrater reliability. An adequate reliability check (i.e., usually with an interrater agreement above 85%) is important in demonstrating that categories are used in the same way by different raters (Abdou et al., 2010). If necessary, third parties (e.g., local experts) and interviewees can be invited to scrutinize the interpretation of qualitative data; a second interview can be arranged if there are points to be clarified or extended (Bottery et al., 2008). Finally, administration problems could also challenge qualitative data collection; examples are language problems in working with interpreters or having interviews overheard by locals or household members if a quiet place for conducting the interview is not available.

Item Bias

Item bias, also known as differential item functioning (DIF), indicates that an item has a different psychological meaning across cultures. The background of item bias can be both linguistic (e.g., poor translation) and cultural (e.g., inapplicability of item contents in different cultures or items with cross-culturally different connotations). Item bias may not be easy to accommodate in international tests or surveys, especially when heterogeneous samples are involved; therefore, it is important to detect and find explanations for the bias (e.g., item focus, context, and formats) (Leung & Van de Vijver, 2008).

Item bias in quantitative studies. In the quantitative tradition, an item is taken to be biased if persons with the same trait or ability, but coming from different cultures, are not equally likely to endorse the item (Van de Vijver & Leung, 1997). In other words, DIF refers to the problems caused by the differing probabilities of correctly solving or endorsing an item after matching on the underlying ability that the item is intended to measure in different cultures (Zumbo, 2007). For example, Pan, Wong, Chan, and Joubert (2008) had to exclude items regarding religion as a protective factor when studying resilience among Chinese students, because these items were much less meaningful for this group compared with respondents from cultures that place importance on religiosity. Numerous sophisticated statistical procedures are available to detect item bias (Van de Vijver & Leung, 1997; Zumbo, 2007).

Item bias in qualitative studies. In qualitative studies item bias is hardly ever systematically addressed. It is more likely that if an item would be poorly translated or would be not applicable in a specific cultural context, the problem would be picked up during a pilot or the main data collection. Yet, item bias could occur in qualitative studies and more systematic attention for the quality of separate items may enhance the quality of cross-cultural resilience studies.

Equivalence

Equivalence in quantitative studies. Equivalence refers to the measurement level at which scores obtained in different cultures can be compared. Dealing with the three types of bias presented above has important implications for cross-cultural equivalence. Van de Vijver and Leung (1997) distinguished three hierarchically nested equivalences, namely construct equivalence, measurement unit (or metric) equivalence, and full score (or scalar) equivalence.

Construct equivalence, the basis for any cross-cultural comparison, means that the same theoretical construct is measured across all cultures studied. Construct equivalence should be empirically demonstrated through confirming the identity of the structure of the construct and the adequacy of sampled items (Van de Vijver & Poortinga, 1997). It can be challenging to realize construct equivalence for locally developed measures of concepts. This is especially the case for resilience. Theron, Theron, and Malindi (2013) argued that resilience should not be uniformly conceptualized across contexts, and they defined resilience according to the valuing of collectivist philosophies in the African context. When a construct does not have the same meaning across the cultures, researchers need to acknowledge the incompleteness of conceptualization and compare the equivalent subfacets (i.e., partial invariance). *Metric equivalence* indicates that measures of interval or ratio level have the same measurement unit across cultural contexts, but they have different origins. When measures show metric equivalence, scores can be compared within cultural groups (e.g., male and female differences can be tested in each group), but scores cannot be compared directly across groups. *Scalar equivalence* states that scales have the same measurement unit and origin. It means that there is no bias and data can be compared directly within and across cultures. When measures show full score equivalence, analyses of variance and *t* tests to examine cross-cultural differences in means are appropriate for (and only for) this level of equivalence.

Equivalence in qualitative studies. Equivalence is a concept that has been developed in quantitative studies. In our view, the primary concern in qualitative studies is construct equivalence. Measurement and scalar invariance are hardly ever pursued in qualitative studies. We refer to the previous section for an overview of how construct bias can be dealt with in qualitative studies.

Combining Qualitative and Quantitative Evidence

The largest methodological bottleneck in the use of mixed methods in resilience research is the question of how qualitative and quantitative evidence can be combined. What are criteria to identify when evidence from multiple sources is diverging (contradictory), converging (reinforcing), or has no relationship? Triangulation is the key concept that can be used here, which essentially amounts to combining information from (usually) quantitative and qualitative methods. Conceptually further away from positivism, the concept of crystallization has been introduced by Richardson (2000). The idea behind crystallization is that there are multiple realities with infinite variety of shape, substance, transmutations, and angles of approach. Crystallization is an emergent framework to integrate multiple forms of analysis and genres of representation; it starts from the assumption that knowledge is situated, partial, constructed, multiple, embodied, and enmeshed in power relations (Ellingson, 2009). However, not much has been done on crystallization in qualitative research, thus further exploration and articulation of the concept as a workable technique is still to be established (Tobin & Begley, 2004).

Denzin (2006) distinguishes four types of triangulation, depending on what is combined: data (e.g., multiple questionnaires of resilience), investigators/informants (e.g., multiple observers), theories (e.g., multiple theoretical frameworks to explain resilience), or methods (e.g., multiple methods such as interviews and questionnaires). As an example of triangulation of investigators/informants, Hurd (2004) was interested in normal grief

processes of a female adolescent after losing her father. He interviewed her brother and mother to establish the validity of his data. The combination of two or more methods is the most common form of triangulation in resilience research. For example, Metzl (2009) combined qualitative and quantitative methods to examine the use of creativity in coping by survivors of hurricane Katrina. Camfield, Guillen-Royo, and Velazco (2010) examined whether objective need deprivation predicts subjective and psychological wellbeing in Bangladesh and Thailand. They used follow-up interviews to better understand the quantitative cross-cultural differences.

Notably when the information deals with overlapping issues, such as competing theories or qualitative and quantitative data about the same phenomenon, it can be useful to formalize the process of comparison. From a methodological perspective, these comparisons can be of three types: a quantitative—quantitative comparison, a qualitative—qualitative comparison, and a quantitative—qualitative comparison. Even if the original data are both qualitative and quantitative, it may well be possible to convert one type of information so that the final comparison to be made is within a single method (qualitative or quantitative). A conversion could resolve the problem that there are no formalized procedures to compare qualitative and quantitative evidence. Using content analysis (Krippendorff, 2012), qualitative information may be converted to numerical scores. Data from different quantitative sources that address the same issue can then be combined in so-called multimethod matrices (Campbell & Fiske, 1959), which can be analyzed using structural equation modeling (MacCallum & Austin, 2000).

If all data are converted to the qualitative domain, a similar approach can be adopted; yet, the earlier observed lack of formalized test procedures in qualitative studies may create problems. Through the analysis of protocols it may still be possible to compare different perspectives and to evaluate to what extent different informants or experts yield converging

and diverging information. Furthermore, the credibility and accuracy of sources can be evaluated by checking the quality of different sources of information.

Combining qualitative and quantitative information on the same topic can be troublesome if the two types of evidence yield incompatible conclusions and there is no clear rationale for favoring one source over the other. The problem can also occur within a single method. Suppose that two informants provide incompatible information as to the nature of resilience in a particular group. If the stalemate cannot be broken by additional evidence (e.g., one informant also provided unreliable information on another topic), there may not be much left than pointing out that the information is incompatible. In such a case, crystallization may be a more adequate method to pursue. Only if there is a clear convergence of information of qualitative and quantitative information, the two sources strengthen each other, which greatly add to the validity of the findings.

It can be concluded that combining information from multiple sources is often easiest when it involves quantitative (or quantified) data, as statistical procedures exist for combining these resources. However, in many cases data cannot be quantified or quantification defies the study purpose. In those cases a natural follow-up would be to assess the accuracy and alignment of qualitative information coming from different sources. These quality assessments may guide the decision as to the integration of qualitative information from multiple sources. However, if data from multiple sources are divergent and no convincing circumstantialevidence is available to substantiate a particular interpretation, it may be impossible to show the validity of conclusions.

Conclusion

Built on the extensive knowledge from cross-cultural research accumulated in the last few decades, we reviewed in this chapter the framework of bias and equivalence from quantitative methods and extended the application to qualitative and mixed methods. We

argued that resilience research would gain from a further integration of qualitative and quantitative methods (e.g., Luthar, Cicchetti, & Becker, 2000). Given the broad scope of research from resilience and culture, and the important implications merited, it is hoped that an open eye for methodological aspects of resilience studies can contribute to a more culture-informative understanding of resilience.

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Table 1

Overview of Bias, the Sources, and Strategies to Deal with Bias

Type of Bias	(a) Sources of bias
Construct Bias	1. Partial non-overlap of the construct 2. Differential behaviors associated with the construct 3. Poor sampling of relevant behaviors
Method Bias	1. Incomparability of samples 2. Differential familiarity with stimuli (cognitive tests) 3. Differential response styles 4. Differential response procedures 5. Tester/interview/observer effects
Item Bias	1. Poor item translation 2. Ambiguous items 3. Items that involve additional traits or abilities 4. Cultural specifics
	(b) Strategies to deal with bias
Construct Bias	1. Use of cultural informants 2. Use of local surveys 3. Partnering with the community 4. Exploratory factor analysis[a] 5. Confirmatory factor analysis[a]
Method Bias	1. Matching sample characteristics 2. Statistical control of the effects of sample characteristics[a] 3. Inclusion of measures of response styles 4. Standardized administration conditions 5. Avoidance of researcher obtrusiveness
Item Bias	1. Linguistic and psychological (judgmental) analysis of items 2. Differential Item Functioning analysis[a]

[a]Only applicable in quantitative studies