Application of the scenario questionnaire of horizontal and vertical individualism and collectivism to the assessment of cultural distance and cultural fit

Valery I. Chirkov^{a,*}, Martin Lynch^{b,1}, Sora Niwa^{a,2}

^a*Department of Psychology, University of Saskatchewan, 9 Campus Drive, Saskatoon, Canada SK S7N 5A5*

^b*Department of Clinical and Social Sciences in Psychology, University of Rochester,
Rochester, New York 14627, USA*

Abstract

The article reports the results of the development and application of a scenario questionnaire for the assessment of four cultural orientations: horizontal individualism (HI) and collectivism (HC) and vertical individualism (VI) and collectivism (VC). The 12-item questionnaire which is designed for application in the academic domain among university students has acceptable internal reliability and construct validity. This questionnaire was used to create the indices of cultural distance and cultural fit, and the hypotheses about their relations with cultural adaptation and the psychological well-being of international, Canadian-born and US-born students were supported. International students, who arrived mostly from China, Japan and South Korea see their home academic settings as more collectivistic (HC and VC) and less HI in comparison to Canada. A discrepancy between these students' home country and Canada regarding the VC orientation was associated with higher

*Corresponding author. Tel.: +1 306 966 6529; fax: +1 306 966 6630.

E-mail addresses: v.chirkov@usask.ca (V.I. Chirkov), lynch@banshee.sar.usf.edu (M. Lynch), son866@hotmail.com (S. Niwa).

¹Martin Lynch has moved to the Department of Psychology, University of South Florida/Sarasota-Manatee, 5700 N. Tamiami Trail, Sarasota FL 34243, USA.

²Sora Niwa has moved to the Department of Psychology, Kyushu University, Hakozaki, Higashi-ku, Fukuoka-shi, 812-8581, Japan.

depression. International as well as North American students had various degrees of fit to the culture of their university. The most predictive orientations with regard to the indicators of well-being and social adaptation were vertical orientations (VC and VI). Results are discussed in terms of the applicability of the developed questionnaire to study acculturation and in terms of the different role of horizontal versus vertical dimensions in cultural adaptation.

© 2005 Elsevier Ltd. All rights reserved.

Keywords: Scenario questionnaire; Cultural orientations; Cultural distance; Cultural fit

1. Introduction

The measurement of culture-related constructs is a controversial and complex enterprise. Whereas anthropologists typically reject the very idea of applying quantitative methods to the investigation of culture, cross-cultural psychologists continue to develop and apply various measures of different aspects of culture. The success of many cross-cultural psychological studies in acculturation psychology and the psychology of intercultural relations often depends on the quantifiable presentation of culture-related constructs as independent or moderating variables. Cross-cultural psychologists usually measure cultural dimensions—predominantly individualism and collectivism—(Hofstede, 1997; Triandis, 1995), cultural values (Rokeach, 1973; Schwartz, 1992, 1994), social axioms (Leung et al., 2002) and some other culture-related constructs. In the current article, we present the scenario measure of four cultural orientations, created by the intersection of two cultural dimensions: individualism–collectivism and horizontality–verticality. These cultural orientations are: horizontal collectivism (HC), horizontal individualism (HI), vertical collectivism (VC), and vertical individualism (VI).

The goals of the research reported in this article were to develop a new version of a scenario measure of these cultural orientations, to demonstrate its application for the assessment of cultural fit (CF) and cultural distance (CD), and to use these variables to predict the cultural adaptation of Canadian-, US-born and international students.

1.1. *The four cultural orientations and their descriptions*

Recently, cross-cultural researchers have shifted from studying separate cultural dimensions such as individualism and collectivism to the investigation of so-called cultural orientations which are the combination of more than one dimension. The most intensively studied orientations have been HC, HI, VC, and VI (Chiou, 2001; Nelson & Shavitt, 2002; Singelis, Triandis, Bhawuk, & Gelfand, 1995; Strunk & Chang, 1999). Following the descriptions by Fiske (1992), Hofstede (1997) and Triandis (1995), we understand these orientations to be four modes of social relations that were created through cultural evolution to solve some basic problems of human coexistence. According to Hofstede (1997), these four orientations address two of the most fundamental questions of human social life: (1) the problem of

attitudes toward authority, and (2) the relations between the individual and the group.

The first problem was conceptualized by Hofstede (1997) as the *power distance* dimension, as *horizontality–verticality* by Triandis (1995), and as *mastery* and *hierarchy* versus *egalitarian commitment* and *harmony* by Schwartz (1994). Each of these constructs addresses the issue of inequality among people with regard to different attributes, ranging from the physical and psychological to the social and political; specifically, they address the relationships between those in power and those not in power. The second problem is concerned with the coordination of the individual's needs and strivings with the group/community's goals and norms. It has traditionally been conceptualized as the *individualism/collectivism* (Hofstede, 1997; Triandis, 1995) dimension or as *autonomy* versus *conservatism* by Schwartz (1994).

Each of the four cultural dimensions offers a possible solution of the above-mentioned two problems. Specifically, horizontality calls for establishing egalitarian relations between people of different status and qualities. Verticality, in contrast, proposes a strong, hierarchically structured power distribution with a sharp differentiation between those with and without power. Individualism gives priority to the individual at the expense of the group, whereas collectivism emphasizes the opposite solution. Each society, because of different geographical, ecological and historical conditions, has developed its own pattern of cultural orientations, which reflects its idiosyncratic way of resolving the above-mentioned problems, and therefore each culture may be described by a specific configuration of the four cultural orientations (Cohen, 2001). The norms and practices which constitute these orientations are expected to guide people's behavior in order to maintain the established way of resolving the two core problems of human social life (Fiske, 1992; Haslam, 1997).

Thus, for example, the VC orientation requires the subordination of individuals' strivings and goals to the goals of their collective and to be ready to sacrifice individual interests to the interests of their group and its leader(s), and it directly emphasizes the necessity of a well-structured hierarchy of power and the priority of the collective over the individual. The social regulatory function of the other cultural orientations can also be easily discovered. In particular, HI supports individual development, privacy and autonomy which are accompanied by respect and tolerance toward other people. HC provides norms for communal living cultivating sharing, trust and strong collective identity combined with mutual respect and a feeling of equality toward in-group members. VI stresses hierarchy and status, but it also encourages individual competition, striving for higher position in the hierarchy and supports the desire to be the best among other in-group members. These prescribed ways of organizing social life may be maintained only if the content of these orientations is shared by the majority of the members of a society and constitutes their dominant way of responding to various social situations. These orientations are long-lasting patterns of social life which represent themselves in various domains of society: family, education, health care, job relations, political structure, etc. In the present research, we assessed these orientations in the domain of university education.

1.2. Problems with the measurement of cultural dimensions and orientations

A recent review of the research on individualism and its relations to various indicators of psychological functioning (Oyserman, Coon, & Kemmelmeier, 2002) and the commentaries on this article (Bond, 2002; Fiske, 2002; Kitayama, 2002) have raised an old problem regarding the methodological substantiation of the measurement of cultural dimensions. Below, we summarize some of the concerns expressed by these researchers.

First, we want to address a concern regarding using citizenship (or ethnic background) of participants as an indicator of people's cultural orientations, as when participants from Japan or China are thought to represent collectivistic cultures whereas participants from the US or Western Europe represent individualistic cultures. As Oyserman et al. (2002) observed, “a large proportion of researchers uses his [Hofstede's] ratings of country-level IND [individualism] as proxies for IND rather than assessing IND directly” (p. 7).

This operationalization of individualism/collectivism assumes a high level of cultural homogeneity of the surveyed countries across geographical regions and across different life domains (family, school, work relations, etc.). This assumption, however is far from reality, especially in multi-ethnic countries. Even in the US, which is considered to be a highly individualistic country, various regions differ vastly with regard to this dimension (Vandello & Cohen, 1999). This method of assessing cultural dimensions also implies that these dimensions and their relations discovered on a cultural level (China is a collectivistic country) are directly represented on an individual level (all Chinese students in a research sample are collectivists). Bond (2002) called this flaw in logic the ‘ecological fallacy’ and warned researchers against confusing the cultural and individual levels of analysis. Moreover, this operationalization of cultural dimensions ignores the fact that different cultural values and practices may be internalized by people to different extent, thus demonstrating high interpersonal variation in their endorsement (D’Andrade, 1992; Strauss, 1992).

Another limitation of the citizenship approach to assessing cultural dimensions relates to the non-probability sampling of participants in most cross-cultural studies. As Visser, Krosnick, and Lavrakas (2000) mentioned, in these studies, researchers usually use a non-probability and non-representative sample of participants from different countries and attribute socio-cultural differences among them to cultural features of their national culture or ethnic group. These authors warned social and cross-cultural psychologists that “social psychological research attempting to generalize from a college student sample to a nation looks silly and damages the apparent credibility of our enterprise” (Visser et al., 2000, p. 237).

Another way of measuring culture-related constructs, which has also been strongly criticized in the literature, is to average individuals' scores on, for example, an individualism–collectivism self-report scale, across samples taken from different countries. This approach treats the cultural dimension as another psychological trait and, as Fiske (2002) noted, “this does not make sense—especially if the goal is to see how culture and psychology are related. A culture is not an attribute of a person, nor

is it the mean values of the attributes of some aggregate of individuals” (p. 84). Further, he concluded that “taking the mean of a group of individual scores does not make such variables into measurements of culture” (p. 84) because these attitudinal measures do not measure such aspects of culture as norms, values and practices. Similar concerns regarding the validity of attitudinal scales to measure cultural variations were strongly emphasized by Kitayama (2002), who finally concluded that it is impossible to measure culture-related constructs using attitudinal surveys.

The fourth concern regarding the validity of self-report measures for assessing cultural dimensions relates to the different meaning that can be assigned not only to the items of the scale, but also to the various concepts that constitute the items. This is the question of comparability of constructs included in cross-cultural research. One solution to this problem is to use indigenous psychological constructs that reflect culturally specific themes (Kim & Berry, 1993). Despite its potential richness, however, this method of indigenization is not popular among cross-cultural psychologists because it does not allow the researchers to compare samples from different societies and generalize their findings. Another solution to this concern is to establish strong linguistic and statistical equivalence of the scales across different samples. In this case various statistical techniques are used to ensure measurement equivalence of the scales and to draw conclusions about the cross-cultural comparability of constructs (Byrne & Watkins, 2003; Cheung & Rensvold, 2000; Ghorpade, Hattrup, & Lackritz, 1999; Spini, 2003; Steenkamp & Baumgartner, 1998). One such technique is called Means and Covariance Structure (MACS) analysis (Little, 1997, 2000) which has been widely and successfully used in numerous cross-cultural studies (Chirkov & Ryan, 2001, 2004; Chirkov, Ryan, Kim, & Kaplan, 2003; Chirkov, Ryan, & Willness, 2005; Grob, Wearing, Little, & Wanner, 1996; Ryan et al., 1999).

1.3. Possible solutions of the cultural dimensions measurement problems

Cross-cultural psychologists continue looking for new methodological solutions regarding the quantitative assessment of culture-related constructs. One method, which has emerged in recent years, is the use of implicit measures and priming techniques to elicit culture relevant ideations and representations (Bargh & Chartrand, 2000). This method, based on the pre-experimental priming of cognitive representations related to various cultural phenomena (stereotypes or values), allows researchers to tackle the automatic or subconscious components of cognitive processing which they believe are highly relevant to the nature of cultural representations (Fiske, 1998).

In addition to new laboratory methods, cross-cultural scientists continue to modify self-report measures which give the opportunity to conduct survey research in a field setting. One such approach was suggested by Chirkov et al. (2003). Acknowledging the problem of measuring culture directly, they chose instead to assess what they called, ‘perceived cultural context’ (PCC). This concept is based on the idea that for psychological research culture is first of all a subjective phenomenon which reflects the perception by people of the practices, cognitions and values that

are shared by other members of a certain social or cultural group. Following this understanding of PCC, researchers selected items that represent behavioral, cognitive and emotional manifestations of the four cultural orientations (HI, HC, VI, and VC) and asked participants about the extent to which they perceive these behaviors or values to be shared by their countrymen. By asking this question, the researchers directly assessed how participants perceive their fellow-countrymen think about and behave with regard to particular practices and cognitions. By identifying the group of people (Canadians, Russians, etc.) this procedure addresses such important attributes of cultural representations as their sharedness among a particular group of people rather than the extent to which participants personally endorse them. The application of this construct to six countries allowed the researchers to build profiles of PCC in these countries and treat PCC as an independent variable in statistical analyses (Chirkov et al., 2003, 2005). One more advantage of this procedure is that, in addition to assessing cultural context, it can be applied to the assessment of an individual's endorsement of these same practices and values and even for evaluation of the level of their internalization (Chirkov et al., 2003).

Another option for improving the existing self-report measures of culture-related constructs is to use a scenario format. The most common way of doing this is to employ a set of situations culturally and socially relevant to prospective participants and provide each situation with options that reflect possible interpretations of or behavioral reactions to these situations. As Peng, Nisbett, and Wong (1997) concluded, based on their study of the validity of different formats for measuring cultural values—ranking, rating, attitude scale, and behavior scenario methods,—the scenario format is the most criterion valid method for assessing values. These authors believe that this method is useful because “it can reduce ‘noise’, such as differences between cultures in the interpretation of the meaning of value terms and such problems as the relativity of social comparison-based judgements and deprivation-based preferences” (p. 341). Kitayama (2002) agrees with this conclusion about the higher validity of the scenario format in comparison to ranking and rating formats of attitudinal scales.

The scenario method for measuring HI, HC, VI and VC has frequently been used in comparative cross-cultural research (Verma & Triandis, 1999) and as a basis for a structured exercise in cultural sensitivity training (Gelfand & Holcombe, 1998; Triandis & Singelis, 1998). Triandis, McCusker, and Hui (1990) applied this format to measure individualism and collectivism and with his colleagues (Triandis, Chen, & Chan, 1998) validated and widely used them. An advantage of the scenario method that these researchers stressed is its ability to reduce the desirability bias, to which conventional attitudinal scales are very prone.

The first goal of our study was to further develop and expand the applicability of scenario measures of four cultural orientations. We agree with the argument that the scenario format enriches the researcher's opportunities to assess many culture-relevant constructs. Instead of developing a general measure of four cultural orientations, we created a domain-specific measure which could assess the four cultural orientations in an academic setting. An academic (college and university)

setting, on the one hand, is a direct reflection of broader societal culture and, on the other hand, represents an environment where much cross-cultural and acculturation research has been done. The second goal of our study was to use the scenario measure to operationalize such constructs as cultural distance and cultural fit, and to use them to predict the cultural adaptation of Canadian- and US-born students, as well as of international students residing in Canada. Before presenting the empirical results, we briefly introduce these two constructs.

1.4. Cultural distance (CD) and cultural fit (CF) as predictors of cultural adaptation

Broadly speaking, the concept of CD reflects the dissimilarities between cultures with regard to their various aspects including language, religion, values, the status of women, individualism–collectivism, attitudes to authority, forms of government, the legal system, etc. (Berry, Poortinga, Segal, & Dasen, 2002; Ward, Bocher, & Furnham, 2001). The CD hypothesis predicts that the greater the gap between home and host cultures, the more difficulties newcomers (sojourners, international students, and immigrants) will experience (Ward et al., 2001). CF is a closely related construct that reflects the extent to which people's personal traits, values and other characteristics resemble the corresponding requirements of the culture (Ward et al., 2001). The CF hypothesis states that the adjustment of acculturating individuals is a function of similarities between their attributes and the host culture's norms (Ward et al., 2001). Cross-cultural psychologists use different methods to assess these constructs and to verify the CD and CF hypotheses. Thus, Babiker, Cox and Miller (1980) developed an individual difference measure of the perceived discrepancies between social and physical aspects of home and host culture environments and demonstrated that this operationalization of CD was related to anxiety and number of medical consultations among international students. Furnham and Bochner (1982) classified countries of origin into three groups according to similarities to British society in terms of religion, language, and climate, with classifications ranging from similar to distant. They found a strong positive association between CD and newcomers' difficulty interacting with the host culture. Ward and her collaborators widely used these constructs in their research on the adaptation of various groups of sojourners (Malaysian and Singaporean students in New Zealand). They used various operationalizations of these constructs ranging from perceived CD—participants were asked to rate the extent to which they perceived a difference between their own background and their experience in the host country (Searle & Ward, 1990; Ward & Searle, 1991)—and more objective measures based on the discrepancy either between participants' extraversion scores and host culture norms (Ward & Chang, 1997) or between the individual scores on the Chinese Value Survey and the host culture norms (Searle & Ward, 1990). Stromberg and Boehnke (2001) used the Schwartz Value Survey to assess the congruence between the endorsement of these values in five different samples of participants and their perception of these values' importance in the host country (Germany and Israel). They surveyed not only immigrants (specifically, Jews from Russia) to

Germany and Israel, but also native citizens of these countries: East and West Germans and Israelis.

The above-mentioned studies have demonstrated the validity of the constructs of CD and CF in predicting various aspects of acculturation. Thus, the application of the proposed scenario measure to the assessment of these two constructs was the second goal of our project.

The goal of the first part of our study was to select and modify the scenarios for measuring four cultural orientations—HI, HC, VI, and VC—in an educational setting and conduct a psychometric analysis of the selected items. Then, they were tested on the samples of Canadian students, international students (in a Canadian university) and students in the United States.

2. The development of the questionnaire

Scenarios for our questionnaire were taken from published scales (Gelfand & Holcombe, 1998; Triandis, 1995; Triandis et al., 1998; Verma & Triandis, 1999). These scales have demonstrated concurrent and criterion validity and have been widely used in research and cultural sensitivity training. Each scenario has a short description of a situation followed by four options each representing one of the four cultural orientations. We modified each scenario by adapting the situations to university and campus life and adding a 5-point Likert-type scale to assess the level of agreement with each option with 1—*strongly disagree* and 5—*strongly agree*. For example:

A student is going over Graduate Programs brochures in order to decide which program to attend. What is the most important factor in making this decision?

1. *It is a very competitive program and one of the best. (VI)*
2. *The student's professor/supervisor approves of it. (VC)*
3. *It is the program most of the student's classmates are going to. (HC)*
4. *It is the program which fits the student's interests and needs the most. (HI)*

For the first version of the questionnaire, 18 scenarios were selected. We used this questionnaire with two different instructions and a third was added for international students: *Instruction 1*: “How you personally would react to this situation”, *Instruction 2*: “How you think a typical English-speaking Canadian (or American) student would react to it” and *Instruction 3*: “How you think a typical student from your home country would react to it”. For the psychometric analysis we used *Instruction 2*.

Participants: Fifty-three participants from the Introductory Psychology pool from a Canadian mid-size prairie university constituted the first sample for the psychometric analysis of the scenarios. The sample included both genders and the age of the participants ranged from 18 to 22 years. In addition to this first version of the Scenario Measure of Cultural Orientations—Academic Setting (SCO-AS), we used the following questionnaires for validation purposes: a scenario questionnaire

developed by Gelfand and Holcombe (1998) and the Cultural Syndromes Scale (Triandis & Gelfand, 1998). We did not expect strong correlations between the relevant subscales because of the differences in the instructions, but anticipated mild positive correlations in the predicted direction.

2.1. The results of the first step of psychometric analysis

We calculated Cronbach alphas for each subscale across 18 scenarios and obtained the following coefficients of internal reliability: HC—.68, HI—.45, VC—.76 and VI—.57. After eliminating 3 scenarios that had all 4 options with low psychometric properties and editing and rewording the answers that had low internal consistency, the remaining 15 scenarios were presented to another sample of 102 Canadian students and after removing another three scenarios with low psychometric properties, the internal reliability of 12 scenarios became the following: HC—.78, HI—.85, VC—.82 and VI—.77. In the sample of 149 US students the Cronbach's alphas were: HC—.74, HI—.74, VC—.77, and VI—.81. All correlations with the scales that measure the same constructs were in the predicted direction. The correlations with the Gelfand and Holcombe's Scenario Scale for HC was .43 ($p < .01$), for HI was .16 (n.s.) for VC was .19 (n.s.) and for VI was .33 ($p < .05$). Triandis's measure of 4 cultural orientations which has items in attitudinal format also demonstrated the HC subscales correlated at .22 (n.s.), HI subscales correlated at .32 ($p < .05$), VC correlated at .45 ($p < .01$) and VI correlated at .43 ($p < .01$). Thus, the internal reliability and construct validity of the subscales were acceptable. The scale with 12 scenarios is presented in the appendix. To make the questionnaire as short as possible, we used the best 7 scenarios out of these 12 to survey international students.

3. The study of cultural adaptation

The primary purpose of this part of the study was to create indices of CD and CF and test their predictive power with regard to various indicators of cultural adaptation of international, Canadian-, and the US-born students. Because we acknowledge that not only international students but also students who were born in their country of residence may have various levels of adjustment to their home culture, we used the Canadian and the US students as additional validation groups.

3.1. Method

Participants: There were three samples of participants: international students ($N = 97$), Canadian-born ($N = 102$), and US-born ($N = 149$) students. International undergraduate students (41 males and 56 females) from a mid-size prairie Canadian university voluntarily participated in the study. They were not born in Canada, did not go to high school in Canada, and were in Canada on a study permit. They ranged in age from 18 to 33 years with a mean of 22.93 years ($SD = 3.03$). The

mean length of their stay in Canada was 24.87 months ($SD = 17.53$), ranging from 3 to 99 months. Forty-eight percent of international students were from China (including Hong Kong and Taiwan), 12% from Japan, 6% from South Korea, and the rest were from Kenya, Greece, Netherlands, Germany, Malaysia, Indonesia, United States, Nigeria, Ukraine, Sudan, Mexico, Bahamas, Burma, Vietnam, Bangladesh, India, Yemen, Tanzania, and Sri Lanka.

Canadian-born undergraduate students (23 men and 77 women and 2 participants did not indicate their gender) from the same Canadian university were recruited to participate in the study for course credit. Participants were considered to be ‘Canadian’ if they were born in Canada and their first language was English. Canadian students’ age ranged from 16 to 42 years with a mean of 20.16 years ($SD = 3.25$). The US sample consisted of 23 men and 124 women (2 participants did not report their gender) undergraduate students, whose age ranged from 17 to 48 years ($M = 20.11$, $SD = 2.61$). US participants were also restricted to those who were born in the country and for whom English was their first language. International students were older than both Canadian ($t(194) = 6.22$, $p < .001$) and US ($t(242) = 7.51$, $p < .001$) students.

Surveys were administered in small groups in a standardized format. After completing the survey, participants were fully debriefed about the purpose of the study.

3.2. Calculation of CD and CF

CD was calculated for international students as the absolute value discrepancy scores of each of the four cultural orientations between *Instruction 2* (perception of the host country cultural orientations) and *Instruction 3* (perception of the home country cultural orientations). The bigger the discrepancy the larger the culture distance. The statistics for this index are presented in Table 1.

CF was assessed by using the absolute value discrepancy scores of each of the four cultural orientations obtained on three samples using *Instruction 1* (personal

Table 1
Cultural distance for International Students

Cultural orientation	Target of evaluation	International students		
		M	SD	<i>t</i>
HC	Home country	3.76	.60	−3.10**
	Canada	3.52	.61	
HI	Home country	3.78	.64	3.13**
	Canada	4.00	.61	
VC	Home country	3.52	.63	−5.38**
	Canada	3.12	.60	
VI	Home country	3.37	.71	n.s.
	Canada	3.40	.61	

** $p < .01$.

preference of cultural orientations) and *Instruction 2* (perception of the host country [or home for Canadian and the US students] cultural orientations). The smaller the discrepancy the higher the culture fit. Means, standard deviations, and *t*-tests for these variables are presented in Table 2.

Psycho-Social-Cultural Adaptation measures included four groups of indicators: psychological well-being, socio-cultural adjustment, academic success, and language proficiency.

Psychological well-being indicators included self-esteem, satisfaction with life, physical symptoms, depression, and vitality. Self-esteem was assessed by *Rosenberg's Self-esteem Scale* (Rosenberg, 1965) with 10 items rated on a 5-point Likert scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. Cronbach's alphas were .75 for international students, .82 for Canadian students and .87 for the US students. The *Satisfaction with Life Scale* (Diener, Emmons, Larsen, & Griffin, 1985) was used to examine students' attitudes toward their life. Participants responded to 5 items using a 5-point Likert scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. Cronbach's alphas in the present study were .62 for international, .79 for Canadian and .88 for the US students. The *Brief Symptom Inventory* (Derogatis & Spencer, 1982) was used to examine general health. Participants were asked how often they had experienced various symptoms regarding their health by responding to 15 items using a 5-point scale ranging from (1) *not at all* to (5) *very frequently*. Cronbach's alphas were .85 for international, .83 for Canadian and .82 for the US students. The shortened *Self-Report Depression Scale* (Radloff, 1977) was used to assess the symptoms of depression. Participants answered 6 items using a 5-point Likert scale ranging from (1) *not at all* to (5) *very frequently*. Cronbach's alphas were .84 for international, .82 for Canadian and .85 for the US students. Based on the

Table 2
Culture fit for Canadian, United States and international students

Cultural orientation	Target of evaluation	Canadian students			US students			International students		
		M	SD	<i>t</i>	M	SD	<i>t</i>	M	SD	<i>t</i>
HC	ICO	3.22	.40	−7.98**	3.30	.40	−13.35**	3.29	.59	−3.42**
	HCO	3.56	.46		3.76	.46		3.52	.61	
HI	ICO	4.17	.56	−.05	4.36	.34	.23	3.86	.68	−2.18*
	HCO	4.17	.57		4.35	.39		4.00	.61	
VC	ICO	2.76	.43	1.56	2.57	.49	1.92 ⁺	3.05	.58	1.15
	HCO	2.84	.61		2.65	.54		3.12	.60	
VI	ICO	3.00	.40	−4.83**	2.79	.50	−10.84**	2.94	.66	−7.38**
	HCO	3.25	.56		3.35	.55		3.40	.61	

Note: HC—horizontal collectivism; HI—horizontal individualism; VC—vertical collectivism, VI—vertical individualism. ICO—individual cultural orientations; HCO—Perception of the cultural orientations of the students from Canada (for Canadian and International participants) and the US (for the US participants).

⁺ $p > .10$.

* $p < .05$.

** $p < .01$.

intercorrelations among these indicators, we calculated an overall index of psychological well-being (PWB) by summing up their standardized scores with physical symptoms and depression scores reversed. Socio-cultural adjustment was assessed using the *Social Situations Questionnaire* designed by Furnham and Bochman (1982). Participants indicated how comfortable they feel in 19 social situations, like “understanding jokes, humour and sarcasm” and “being with people that you don’t know very well”, using a 5-point Likert scale ranging from (1) *very uncomfortable* to (5) *very comfortable*. Cronbach’s alphas in the present study were .87 for international, .88 for Canadian and .86 for the US students. The *Identification with Culture Questionnaire* was based on the Cultural Estrangement Scale (Cozzarelli & Karafa, 1998). It was modified for each group of students accordingly. Example items are “I feel that my opinions in important matters are similar to the opinions of the average Canadian (or American)” or “I often feel that somehow I do not fit into the Canadian (or American) way of life”. Participants responded to 6 items using a 5-point Likert scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. Cronbach’s alphas were .80 for international, .87 for Canadian, and .93 for American students. The *Academic Success self-report scale* included three questions: “I am satisfied with my academic achievement ...in Canada” (for international students) and ... “at the University” (for Canadian and the US students), “It is difficult for me to study here” (reversed), and “I enjoy studying... in Canada” (for international students) and ... “at the University” (for Canadian and the US students). Participants responded with a 5-point Likert scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. Higher scores indicated a higher level of satisfaction with academic success. Additionally, the participants were asked to report the average of their past three exams, which was thought to represent their academic success at the university. The self-report measure correlated with this objective measure of academic success ($r = .33, p < .01$). The means and standard deviations for the above-described measures of cultural adaptation are presented in Table 3.

The *Language Proficiency* questionnaire was based on the Short Acculturation Scale for Hispanic Youth (Barona & Miller, 1994). Example items are “Your close friends speak: _____” or “You like going to parties at which the people speak: _____”. International students responded with a 5-point Likert scale ranging from (1) *only native language* to (5) *only English*. Cronbach’s alpha for this scale was .88. In addition to the language proficiency scores, international students were asked to report their scores on the paper-based Test of English as a Foreign Language (TOEFL) that measures the ability of non-native speakers of English to use and understand English. Scores on the TOEFL ranged from 200 to 677. The correlation between the self-report measure and the TOEFL scores was .44 ($p < .01$).

4. Results

The goal of applying the developed scenario measures of four cultural orientations was to test the ability of CD and CF indices constructed out of this measure to

Table 3
Means, Standard Deviations, and *t*-test for the indicators of cultural adjustment

Sample of students	Academic success	Culture identification	Social adjustment	Self-esteem	Life satisfaction	Depression	General health
International (N = 97)	3.49 (.79)	3.23 (.69)	3.23 (.61)	3.68 (.63)	3.16 (.71)	2.44 (.90)	2.01 (.65)
Canadian (N = 102)	3.17 (.78)	4.12 (.63)	3.52 (.62)	3.85 (.59)	3.42 (.79)	2.50 (.85)	2.22 (.61)
	<i>t</i> = 2.87**	<i>t</i> = -9.49**	<i>t</i> = -3.33**	<i>t</i> = -1.82 ⁺	<i>t</i> = -2.44*	<i>t</i> = -.48	<i>t</i> = -2.35*
US students (N = 149)	3.55 (.86)	3.68 (.89)	3.71 (.56)	4.04 (.69)	3.70 (.89)	2.33 (.84)	1.97 (.52)
	<i>t</i> = -.56	<i>t</i> = -4.45**	<i>t</i> = -6.23**	<i>t</i> = -4.22**	<i>t</i> = -5.27**	<i>t</i> = .96	<i>t</i> = .51

Note: *t*-test was conducted between the international students sample and the other two samples of participants.

⁺ *p* > .10.

* *p* < .05.

** *p* < .01.

predict cultural adaptation of different groups of students. We expected that higher levels of CF would predict positively, whereas a large CD would predict negatively the various indicators of social, cultural, psychological and academic adjustment.

Table 1 represents CD data for international students. This group of students sees the possible reaction of the students from their home countries as more collectivistic regarding both horizontal and vertical dimensions and less HI in comparison to Canada. Acknowledging that the majority of international students came from Eastern collectivistic countries these data demonstrate the criterion validity of our CD index. The data in Table 2 show CF (i.e., non-significant differences between self- and the host country cultural orientations) with regard to two cultural orientations: VC (for all three groups) and HI (for North American students). International students perceive themselves as less horizontally individualistic in comparison to their perception of Canadian students. Culture misfit in all three groups was discovered with regard to two other orientations, HC and VI. All participants perceive that other students from the country of their residence react more strongly with regard to these orientations than they do. Table 3 presents means for all indicators of cultural adjustment in the three groups. As expected, international students are lower on culture identification, social adjustment and life satisfaction, which may be attributed to their status as strangers in a new country. But contrary to this status, they are satisfied with their academic work and do not differ from the other two groups with regard to depression.

At the next step, we conducted correlational analysis of CD and CF with various indicators of cultural adaptation. Because the duration of studies in a host country is considered to be a moderating variable in predicting acculturation and cultural adaptation, for international students we calculated partial correlations controlling for the duration of stay in Canada. For CD, the more there was a discrepancy between international students' home country and Canada on VC the more

depressive symptoms they had ($r = .20, p < .05$). Two marginal correlations³ in the predicted directions were discovered for the indices of CD along two orientations: HI was negatively associated with the Satisfaction with Life Scale ($r = -.17, p < .10$), and HC was negatively correlated with the Social Situations Questionnaires ($r = -.17, p < .10$), meaning that the bigger the CD along these orientations the lower were life satisfaction and adjustment to various social situations. Discrepancy with regard to HC was related positively to identification with Canadian culture ($r = .21, p < .05$).

With regard to CF the vertical orientations had a higher number of correlations with cultural adjustment indicators in comparison to horizontal orientations. Specifically, for international students the discrepancy between individual and Canadian cultural orientations on VC was negatively associated with life satisfaction ($r = -.25, p < .01$), positively with the Brief Symptoms Inventory ($r = .24, p < .01$), and marginally positively with depression ($r = .18, p < .10$). These correlations mean that the more the international students' individual reactions to academic situations along VC differ from their perception of these reactions of the Canadian students the worse the psychological well-being of international students. Discrepancy on VI was negatively associated with the indicator of academic success (self-report and exam grades combined) ($r = -.23, p < .001$). For Canadian students, the discrepancies between individual and cultural orientations along VC and VI dimensions had negative correlations with the index of PWB: VC $r = -.19, p < .01$; VI $r = -.15, p < .05$. In other words, the less the discrepancy with regard to the vertical orientations the better PWB of Canadian students. In addition, CF (the small discrepancies) with regard to HC, VC and VI was positively related to the Social Situations Questionnaire ($r = .31, p < .01$; $r = .20, p < .05$; $r = .43, p < .01$), indicating more social comfort under the conditions of CF.

For the US students CF with regard to VC, VI, and HI orientations was positively correlated with the Culture Identification Scale—the smaller the discrepancy the higher the scores on the scale. The r 's were $.25, p < .01$; $.34, p < .01$; and $.17, p < .05$, respectively. These correlations mean that the smaller the discrepancies between the individual preferences and the perception of the reactions of other US students along these three dimensions the more they were satisfied with their culture and the more they felt they fit into the American culture.

5. Discussion

Ongoing discussion about the measurement of culture-related constructs has motivated researchers to search for new ways to operationalize these complex variables. In the present article, we introduce a scenario measure of 4 cultural

³Although not a conventional practice, we decided to report results with significance less than or equal to .10 and call them 'marginally significant'. These results may become significant if sample size increases, which is of potential importance for replication of the study. Marginally significant results should be treated with caution.

orientations: HI, HC, VI, and VC in an academic setting. One advantage of the developed questionnaire is that the parameters that it assesses are not arbitrarily chosen, but were selected on theoretical and empirical bases supported by previous research (Hofstede, 1997; Triandis, 1995, 1997). The four cultural orientations—HC, HI, VC, and VI—are believed to represent the universal ways of solving two fundamental problems of people's social coexistence: attitudes toward inequality and power, and relations between the individual and the group (Haslam, 1997; Hofstede, 1997). We believe that these orientations reflect the essential elements of any culture and should be studied in a systematic way. The scenario format was chosen because of its validity and ability to reduce various forms of bias typical for cross-cultural research (Kitayama, 2002; Peng et al., 1997). This format also allowed us to assess the personal endorsement of the practices, the perception of endorsement of these practices by students in the home country and the perception of endorsement by students in the country of settlement. The last two parameters reflect the construct of PCC (Chirkov et al., 2003) which may be used as an operationalization of culture for empirical cross-cultural research. PCC is a subjective evaluation of the extent to which particular practices, behaviors or values are shared among representatives of a national or cultural group. Another advantage of our questionnaire is that it assesses the cultural context of a specific domain—the academic setting—and not a general one, as measured in our previous studies (Chirkov et al., 2003, 2005). This domain specificity of our measure is advantageous because it allows researchers to make more precise predictions regarding different parameters of students' life and their behaviors that take place in that particular setting. By comparing the PCC in the educational institutions in the country of settlement and individual endorsement of the same practices, we were able to build the index of CF and by comparing the PCC in the home and the host countries we calculated the CD index. Demonstrating the relations between these indices and various indicators of cultural adjustment provided validation for our measure and a test of the respective CD and CF hypotheses.

The measure of cultural orientations has acceptable internal reliability and construct validity. The criterion validity of this measure is confirmed through the analysis of the PCC of the home countries provided by international students, which reflected the collectivistic cultural orientation of the East countries (China, Japan, and Korea) from which the majority of these students came. The indices of CD and CF allow us to support the two research hypotheses concerning the negative relation of CD and the positive relation of CF with indicators of cultural adaptation. CD for international students with regard to three orientations—VC, HC, and HI (the last two with a marginal significance),—was associated with psychological adjustment in the predicted direction: the greater CD was, the less healthy students felt themselves. This result confirmed the conclusions of many previous studies which discovered that the greater the CD, the less comfortable international students feel themselves in a new country. It is important to mention that this hypothesis has been confirmed regardless of the method of operationalization of this construct. In our study, we compared

countries regarding four cultural orientations, whereas some previous researches (Babiker et al., 1980; Mumford & Babiker, 1998; Ward & Searle, 1991) assessed the differences in terms of such parameters as clothing, food, leisure, etc. Furnham and Bochner (1982) calculated CD from British society with regard to religion, language and climate. Redmond (2000) used the dimensions extracted by Hofstede (1997) to calculate CD and study its relation to stress. Despite these differences in operationalization of CD, the CD hypothesis was in general supported across all these studies.

The CF hypothesis is also supported for international and native-born students in general. The VC orientation had the highest number of correlations with the indicators of cultural adaptation that were assessed. To the extent that international students' individual reactions to various academic situations along this orientation were similar to how they believed Canadian students would react to the same situations, the higher was their well-being, assessed in terms of life satisfaction, general health, and lack of depression.

CF with regard to VI, which requires competition and striving for high status, was positively correlated with academic success, meaning that the more international students endorse this orientation in the same way that Canadian students do, the more they were satisfied with their studies. The concept of CF works for native born students also. In particular, Canadian-born students have better well-being and feel more comfortable in various social situations if they demonstrate CF with regard to all vertical, plus HC orientations. For the US students, we received a direct validation of the designed index of CF with regard to three orientations which were positively related to culture identification scores. Specifically, the more the US students demonstrated congruence with the reaction of their fellow American students regarding HC, VI and VC, the more they felt that they belonged to American culture. Again, the data show that vertical orientations play an important role in the culture fit of native born students. As suggested by Chirkov et al. (2003), horizontal relations, both individualistic and collectivistic, provide better conditions for people's psychological growth, integration and well-being than vertical ones. Thus, it was hypothesized that horizontal practices may be closer to human nature and more easily internalized, and that people are more flexible with regard to them (Veenhoven, 1999). In contrast, it was proposed that vertical orientations may be more alien to human nature, that it is harder to accept them, and once accepted they are more rigid. If these assumptions are true, then, when it comes to adjustment toward different orientations, the vertical ones should be the ones with which it is more difficult to cope. Indeed, this was suggested in the present study by the fact that vertical orientations provided the highest number of correlations with the indicators of social functioning.

Although we obtained support for the two tested hypotheses, further studies are needed to investigate the developed questionnaire and its application to the problems of acculturation. To this end, we are working on the development of a similar questionnaire for the family setting which will assess PCC in the domain of family relations. Cross-domain comparison of PCC will provide the opportunity to identify culture-general and domain-specific features of the cultural environment and their

relations to social behavior and well-being of different groups of individuals. It is also important to work on more specific identification of who is a ‘typical’ student or a ‘typical’ member of a particular cultural community in order to differentiate ‘proximal’ and ‘distal’ components of a cultural context. This will make the developed measure more precise and as a result more predictive.

Acknowledgement

This research was supported by a SSHRC grant from the President of the University of Saskatchewan to the first author.

Appendix. The Scenario Questionnaire of Cultural Orientations–Academic Setting

Instruction: The following is a set of 12 scenarios. All these scenarios are related to various aspects of students’ life. Each scenario is followed by four options. Please imagine these situations, read all four options, and rate each option according to how you think A TYPICAL ENGLISH-SPEAKING CANADIAN STUDENT would react to it. Please remember there are no right or wrong answers in this task. Use the following scale:

Strongly disagree	Somewhat disagree	It is difficult to say	Somewhat agree	Strongly agree
1	2	3	4	5

1. Happy university life is attained by

1. Being loyal to one’s student community and ready to sacrifice one’s interests for the benefit of it. VC
2. Linking with a lot of friendly people and sharing thoughts and feelings with them. HC
3. Being independent and doing what one likes. HI
4. Beating other students at different tasks (studying, sports, arts, etc). VI

2. A student must buy clothing for a major social event at the University. The best criterion for deciding what to buy is:

5. The student likes it. HI
6. The student’s parents like it. VC
7. The student’s friends like it. HC
8. It is so elegant that it will dazzle everyone. VI

3. Imagine a student is selecting a band to play at a social event at the University. What is the right way to make a decision about what band to choose?

- 9. To choose a band which this student really likes. HI
- 10. To choose a band which the person's friends approves of. HC
- 11. To choose a band which the administration of the University approves of. VC
- 12. To choose a band that is very famous and popular in the city. VI

4. A student is going over Graduate Programs brochures in order to decide which program to attend. What is the most important factor in making this decision?

- 13. It is a very competitive program and one of the best. VI
- 14. The student's professor/supervisor approves of it. VC
- 15. It is the program most of student's classmates are going to. HC
- 16. It is the program which fits student's interests and needs the most. HI

5. A controversy has developed in a student's class, and the student needs to take a position. Which is the most likely course of action?

- 17. To listen to all the facts and independently take his or her own position. HI
- 18. To discuss it with a professor and support the professor's position. VC
- 19. To discuss it with the student's friends and take their views into account. HC
- 20. To consider which position will most likely benefit the student in the future. VI

6. A student needs to choose one more class for next semester. Which is the right way to determine what class should be selected?

- 21. The one that will help this student get ahead of everyone else. VI
- 22. The one the student's professor/supervisor suggests. VC
- 23. The one the student's friends plan to take. HC
- 24. The one that seems most interesting to the student. HI

7. A big event is taking place in a University, and a student has received four requests from people to stay with him or her overnight while they are in town. The student only has space for one guest. Which one does he or she invite?

- 25. A friend. HC
- 26. A high-status member of a student's community. VC
- 27. The person who is the most fun to have around. HI
- 28. Someone well connected in political circles. VI

8. A student is starting a small business, and he or she is looking for a partner. Who is the right partner?

- 29. Someone with the same business interests. HI
- 30. Someone who is competitive and ambitious. VI
- 31. A relative or close friend. HC
- 32. A high status member of a student's community. VC

9. A student is considering joining a campus organization. Which factor is most important in deciding which organization to join?

- 33. The one in which the student will have the most fun. HI
- 34. The one that will look best on his or her resume. VI
- 35. The one that some of the student's friends and classmates are already members of that organization. HC
- 36. The one suggested by a professor or a high status members of a student's community. VC

10. The best society is one where

- 37. People get more money and recognition if they contribute more to the society. VI
- 38. People have more or less equal incomes and equal opportunities. HC
- 39. People can live their lives independently, and do the things which they enjoy. HI
- 40. People are ready to sacrifice their interests for the sake of their society. VC

11. What are the most important behaviors to show in a student community?

- 41. To share thoughts and emotions with other students. HC
- 42. To be loyal to the community and obedient to a leader. VC
- 43. To be self-reliant and able to think for oneself. HI
- 44. To compete with other students and get higher status in the community. VI

12. How does a student prefer to handle difficult class assignments?

- 45. Work alone. HI
- 46. Work with a group of classmates. HC
- 47. Discuss the assignment with the professor to get ahead of the others who did not do that. VI
- 48. Take charge of a group of classmates, parcel out tasks to make each person's job easier and the completion of the assignment successful. VC

References

- Babiker, I. E., Cox, J. L., & Miller, P. M. (1980). The measurement of cultural distance and its relationship to medical consultations, symptomatology and examination performance of overseas students at Edinburgh University. *Social Psychiatry*, 15, 109–116.
- Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis, & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). Cambridge, UK: Cambridge University Press.
- Barona, A., & Miller, J. A. (1994). Short acculturation scale for Hispanic Youth (SASH-Y): A preliminary report. *Hispanic Journal of Behavioral Sciences*, 16, 155–162.
- Berry, J. W., Poortinga, Y. H., Segal, M. H., & Dasen, P. R. (2002). *Cross-cultural psychology: Research and applications*. Cambridge, UK: Cambridge University Press.
- Bond, M. H. (2002). Reclaiming the individual from Hofstede's ecological analysis—a 20-year odyssey: Comment on Oyserman et al. (2002). *Journal of Personality and Social Psychology*, 128(1), 73–77.
- Byrne, B. M., & Watkins, D. (2003). The issue of measurement invariance revisited. *Journal of Cross-Cultural Psychology*, 34(2), 155–175.
- Cheung, G. W., & Rensvold, R. B. (2000). Assessing extreme and acquiescence response sets in cross-cultural research using structural equation modeling. *Journal of Cross-Cultural Psychology*, 31(2), 187–212.
- Chiou, J.-S. (2001). Horizontal and vertical individualism and collectivism among college students in the US, Taiwan and Argentina. *Journal of Social Psychology*, 14(5), 667–678.
- Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and US adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, 32(5), 618–635.
- Chirkov, V.I., & Ryan, R.M. (2004). Cultural context and psychological needs in Canada and Brazil: Testing a self-determination approach to internalization of cultural practices, identity and well-being. *Journal of Cross-Cultural Psychology*, accepted for publication.
- Chirkov, V. I., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97–110.
- Chirkov, V. I., Ryan, R. M., & Willness, C. (2005). Cultural context and psychological needs in Canada and Brazil: Testing a self-determination approach to internalization of cultural practices, identity and well-being. *Journal of Cross-Cultural Psychology*, 36(4), 423–443.
- Cohen, D. (2001). Cultural variation: Considerations and implications. *Psychological Bulletin*, 127(4), 451–471.
- Cozzarelli, C., & Karafa, J. A. (1998). Cultural estrangement and terror management theory. *Personality and Social Psychology Bulletin*, 24(3), 253–267.
- D'Andrade, R. G. (1992). Schemas and motivation. In R. G. D'Andrade, & C. Strauss (Eds.), *Human motives and cultural models* (pp. 23–44). Cambridge: Cambridge University Press.
- Derogatis, L., & Spencer, P. (1982). *The brief symptom inventory (BSI)*. Baltimore: Psychometric Research.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Fiske, A. (2002). Using individualism and collectivism to compare cultures—a critique of the validity and measurement of the constructs: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), 78–88.
- Fiske, A. P. (1992). The four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review*, 99(4), 689–723.
- Fiske, S. T. (1998). Stereotyping, prejudice and discrimination. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology*. Boston, MA: McGraw-Hill.
- Furnham, A., & Bochner, S. (1982). Social difficulty in a foreign culture: an empirical analysis of culture shock. In S. Bochner (Ed.), *Cultures in contact*. Oxford: Pergamon Press.

- Gelfand, M. J., & Holcombe, K. M. (1998). Behavioral patterns of horizontal and vertical individualism and collectivism. In T. M. Singelis (Ed.), *Teaching about culture, ethnicity and diversity: Exercises and planned activities* (pp. 121–130). Beverley Hills, CA: Sage.
- Ghorpade, J., Hattrup, K., & Lackritz, J. R. (1999). The use of personality measures in cross-cultural research: A test of three personality scales across two cultures. *Journal of Applied Psychology*, 84(5), 670–679.
- Grob, A., Wearing, A. J., Little, T. D., & Wanner, B. (1996). Adolescents' well-being and perceived control across 14 sociocultural contexts. *Journal of Personality and Social Psychology*, 74, 785–795.
- Haslam, N. (1997). Four grammar for primate social relations. In J. A. Simpson, & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 297–316). Mahwan, NJ: Lawrence Erlbaum.
- Hofstede, G. (1997). *Culture and organization: Software of the mind*. New York: McGraw-Hill.
- Kim, U., & Berry, J. W. (1993). *Indigenous psychologies: Experience and research in cultural context*. Newbury Park, CA: Sage.
- Kitayama, S. (2002). Culture and basic psychological processes—Toward a system view of culture: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), 89–96.
- Leung, K., Bond, M. H., De Carrasquel, S. R., Munoz, C., Hernandez, M., Murakami, F., et al. (2002). Social axioms: The search for universal dimensions of general beliefs about how the world functions. *Journal of Cross-Cultural Psychology*, 33(3), 286–302.
- Little, T. D. (1997). Mean and covariance structures (MACS) analysis of cross-cultural data: Practical and theoretical issues. *Multivariate Behavioral Research*, 32, 53–76.
- Little, T. D. (2000). On the comparability of constructs in cross-cultural research: A critique of Cheung and Rensvold. *Journal of Cross-Cultural Psychology*, 31, 213–219.
- Mumford, D. B., & Babiker, I. E. (1998). Validation of a self-administered version of the Cultural Distance Questionnaire among young British volunteers working overseas. *European Journal of Psychiatry*, 12(4), 244–253.
- Nelson, M. R., & Shavitt, S. (2002). Horizontal and vertical individualism and achievement values: A multimethod examination of Denmark and the United States. *Journal of Cross-Cultural Psychology*, 33(5), 439–458.
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analysis. *Psychological Bulletin*, 128(1), 3–72.
- Peng, K., Nisbett, R. E., & Wong, N. Y. C. (1997). Validity problems comparing values across cultures and possible solutions. *Psychological Methods*, 2(4), 329–344.
- Radloff, L. (1977). The CED-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Redmond, M. V. (2000). Cultural distance as a mediating factor between stress and intercultural communication competence. *International Journal of Intercultural Relations*, 24(1), 151–159.
- Rokeach, M. (1973). *The nature of human values*. New York: Basic Books.
- Rosenberg, M. (1965). *Society and adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ryan, R. M., Chirkov, V. I., Little, T. D., Sheldon, K. M., Timoshina, E., & Deci, E. L. (1999). The American dream in Russia: Extrinsic aspirations and well-being in two cultures. *Personality and Social Psychology Bulletin*, 25(12), 1509–1524.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 25 (pp. 1–16). San Diego, CA: Academic Press.
- Schwartz, S. H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim, H. C. Triandis, C. Kagitcibasi, S.-C. Choi, & G. Yoon (Eds.), *Individualism and collectivism* (pp. 85–119). Thousand Oaks, CA: Sage.
- Searle, W., & Ward, C. (1990). The prediction of psychological and sociocultural adjustment during cross-cultural transitions. *International Journal of Intercultural Relations*, 14, 449–464.
- Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-Cultural Research*, 29(3), 240–275.

- Spini, D. (2003). Measurement equivalence of 10 value types from the Schwartz Value Survey across 21 countries. *Journal of Cross-Cultural Psychology*, 34(1), 3–23.
- Steenkamp, J.-B. E. M., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, 25, 78–90.
- Strauss, C. (1992). Models and motives. In R. G. D'Andrade, & C. Strauss (Eds.), *Human motives and cultural models* (pp. 1–20). Cambridge: Cambridge University Press.
- Stromberg, C., & Boehnke, K. (2001). Person/society value congruence and well-being: The role of acculturation strategies. In P. Schmuck, K. M. Sheldon, & M. Csikszentmihalyi (Eds.), *Life goals and well-being: Toward a positive psychology of human striving*. Seattle: Hogrefe & Huber.
- Strunk, D. R., & Chang, E. C. (1999). Distinguishing between fundamental dimensions of individualism—collectivism: relations to sociopolitical attitudes and beliefs. *Personality and Individual Differences*, 27(4), 665–671.
- Triandis, H. C. (1995). *Individualism and collectivism*. Boulder, CO: Westview Press.
- Triandis, H. C. (1997). Where is culture in the acculturation model. *Applied Psychology: An International Review*, 46(2), 55–58.
- Triandis, H. C., Chen, X. P., & Chan, D. K. S. (1998). Scenarios for the measurement of collectivism and individualism. *Journal of Cross-Cultural Psychology*, 29(2), 275–289.
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, 74(1), 118–128.
- Triandis, H. C., McCusker, C., & Hui, C. H. (1990). Multimethod probes of individualism and collectivism. *Journal of Personality and Social Psychology*, 59(5), 1006–1020.
- Triandis, H. C., & Singelis, T. M. (1998). Training to recognize individual differences in collectivism and individualism within culture. *International Journal of Intercultural Relations*, 22(1), 35–47.
- Vandello, J. A., & Cohen, D. (1999). Patterns of individualism and collectivism across the United States. *Journal of Personality and Social Psychology*, 77(2), 279–292.
- Veenhoven, R. (1999). Quality-of-life in individualistic society. *Social Indicators Research*, 48(2), 157.
- Verma, J., & Triandis, H. C. (1999). The measurement of collectivism in India. In W. J. Lonner, D. L. Dinnel, D. K. Forgays, & S. A. Hayes (Eds.), *Merging past, present and future in cross-cultural psychology: selected papers from the fourteenth international congress of the international association for cross-cultural psychology* (pp. 256–265). Lisse, The Netherlands: Swets & Zeitlinger B.V.
- Visser, P. S., Krosnick, J. A., & Lavrakas, P. J. (2000). Survey research. In H. T. Reis, & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology*. Cambridge, UK: Cambridge University Press.
- Ward, C., Bocher, S., & Furnham, A. (2001). *The psychology of culture shock* (2nd ed.). Hove, East Sussex: Routledge.
- Ward, C., & Chang, W. C. (1997). “Cultural fit:” A new perspective on personality and sojourner adjustment. *International Journal of Intercultural Relations*, 21, 525–533.
- Ward, C., & Searle, W. (1991). The impact of value discrepancies and cultural identity on psychological and sociocultural adjustment of sojourners. *International Journal of Intercultural Relations*, 15, 209–225.