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Abstract

In 2001, the Chinese were the largest visible minority group in Canada, with over one million individuals identifying themselves as Chinese. There is a growing concern about the extent to which the Chinese and other minority members can adjust to and become assimilated into the majority society. However, there is currently no instrument available that can be used to measure the acculturation levels of Chinese residing in Canada. This paper develops an acculturation measure specifically designed for Chinese in Canada. The measure consists of seven dimensions: social interactions, language preference, self-construal, ethnic identity, gift giving and holiday celebration, food and community preference, and filial piety. The measure demonstrates content, discriminant, and predictive validity, as well as high overall reliability. Research limitations and future research needs are also discussed.

Résumé

En 2001, les Chinois formaient la minorité visible la plus importante au Canada avec plus d'un million de personnes s'identifiant comme telles. La question se pose de plus en plus quant à savoir jusqu'où les Chinois et d'autres membres de groupes minoritaires peuvent s'ajuster et s'assimiler à la société majoritaire. Cependant, il n'existe pour le moment aucun instrument utilisable pour mesurer les niveaux d'acculturation des Chinois résidant au Canada. Cet article en présente un spécifiquement conçu pour ces derniers. Il porte sur sept aspects à évaluer : interactions sociales, préférence langagière, perception de soi, identité ethnique, présentation de cadeaux et célébration de fêtes, nourriture et préférence communautaire, ainsi que piété filiale. Cette approche fournit des données mesurables quant au contenu, à leur fonction discriminante, et à leur validité prédictive ainsi qu'un haut degré de fiabilité. Mais il ne faut pas ignorer les limitations de cette recherche, ni les besoin d'une autre à venir.

Introduction

Canada has experienced a continuing decline in the number of people identifying themselves as being of British or French origin (Boyd and Vickers 2000; Renaud and Badets 1993). In contrast, the number of Asian immigrants began to increase during the 1980s and increased substantially from 1991 onwards (Statistics Canada 2003a). For instance, of the 1.8 million immigrants who arrived between 1991 and 2001, 58% came from Asia (ibid.). By 1996, Chinese immigrants became the largest visible minority not only among Asian groups, but also among all other immigrant groups

in Canada (Chard and Renaud 1999). This situation has continued. In 2001, Chinese account for the largest visible minority group with a total of 1,029,395 individuals identifying themselves as Chinese. These numbers represent 3.5% of the total national population and 26% of the visible minority population (Statistics Canada 2003a). The People's Republic of China (mainland China) was the leading country of birth among individuals who immigrated to Canada in the 1990s (ibid.). By May 2001, 332,825 Chinese living in Canada were born in mainland China (Statistics Canada 2003b).

Historically, Chinese were not accepted in Canada, and, from 1885 to 1962, were "subjected to more racist laws than any other group in Canadian history" (Law Union of Ontario 1981, 22, quoted in Taylor 1991). The first group of Chinese immigrants arrived in British Columbia in the 1850s and worked in the gold fields. When the fields became depleted, most worked as labourers building the western portion of the Canadian Pacific railroad (Haggart 2001). On the completion of the railway, the 1885 *Chinese Immigration Act* was passed to discourage the entry of Chinese immigrants by introducing a "head tax" of $50 per person. This tax increased to $500 in 1906 (Taylor 1991). The majority of Chinese immigrants were men. This situation did not change until the 1950s when most men were allowed to reunite with their wives and children. The point system was introduced for selecting emigrants to Canada in 1967, and this system also applied to Chinese applicants. In the 1970s and 1980s, most Chinese emigrants were wealthy entrepreneurs from Honk Kong and Taiwan, accounting for fully half of all business-category immigrants in 1990 (Haggart 2001). In 1989, a large number of students and scholars also became permanent residents of Canada, owing to the humanitarian policy implemented by the Canadian government in response to the 1989 Tiananmen Square incident (Liu 1998). Since 1997, emigrants from Hong Kong have decreased in number. During the same period, the number of emigrants from mainland China increased, and they were the largest proportion of the immigrant population from 1998 through 2000 (*Edmonton Chinese News* 2001).

Most Chinese live in a few major metropolitan areas, with Vancouver having the largest proportion of Chinese immigrants (40%), followed by Toronto (33%), Montreal (5%), Calgary (5%), and Edmonton (4%, Chiu et al. 2005). In these cities, they resided in well- established Chinese communities (Bauder and Sharpe 2002). "Chinatowns" are the spatial concentration of commercial activities and residential locations for the Chinese. The existence of Chinatowns worldwide is the result of racial ideology translated into institutional practices and physical place, and often a reflection of official and informal policies of segregation (Hou and Garnett 2003; Saito 2003).

An old Chinese proverb states that "one who stays near vermilion gets stained red, and one who stays near ink gets stained black." Upon contact with a new culture,

an individual may change in a number of ways. Berry (1980), for example, proposed that this process of change involves six psychological areas: use of language, personality, identity factors, attitudes, learning styles, and levels of stress. During this process of cultural interaction, a newcomer becomes acculturated or assimilated into the major society. Measurement of this process is critical; however, a measure of acculturation has yet to be developed specifically for Chinese in Canada.

Finally, it is important to remember that ethnic groups are not homogeneous (Li 1998) and that they invariably demonstrate intra-group differences. For example, Chinese from mainland China retain more of their traditional Chinese culture than the Chinese from Hong Kong, Singapore, and Taiwan, the latter three being more democratic and westernized than the first (Yu and Berryman 1996). Thus, Chinese immigrants from different countries or regions should, ideally, be studied separately. In view of this, and taking into consideration that the majority of Chinese emigrants to Canada during the past ten years were from mainland China, the purpose of this paper is to develop an instrument that can measure the extent to which mainland Chinese in Canada have become acculturated.

ACCULTURATION

The classic definition of acculturation was proposed by Redfield et al. (1936, 149): "acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups." Acculturation involves the learning and adoption of the values and norms of the adopted society. Although acculturation will inevitably be experienced by all newcomers with the same cultural and ethnic backgrounds, the outcomes may vary. Berry (1980) proposed four basic strategies of acculturation: integration, assimilation, separation/segregation, and marginalization. Other studies have found that most immigrants can be classified as integrated and separated (see Goldmann 1998; Korzenny 1999), suggesting that "many immigrants actually desire to maintain a substantial part of their cultural heritage and identity in the society of settlement" (Berry and Sam 1997, 305). This appears to be the case for Chinese in Canada, as Goldmann found that 74% of Chinese reporting a single ethnic origin were integrated, while 17.1% were separated/segregated, and only 8.4 % were assimilated (1998, 138).

The above findings suggest that most immigrants are characterized by selective acculturation or functional acculturation, which "does not necessarily require individuals to disclaim their cultural values or disown their ethnic identities" (Duan and Vu 2000, 226). In North America, according to Husbands and Idahosa (1995), it is

very rare for a visible minority to be totally absorbed into the mainstream society, although it is generally accepted that assimilation may occur among those who are second generation or at least "1.5 generation" (Rumbaut 1994). The Chinese appear to have much stronger ethnic retention. Kriger and Kroes (1962) argued that even the second-generation Chinese Americans would very likely retain much of their cultural heritage (1962, quoted in Mah 1995). This argument has been empirically supported. For instance, Rosenthal and Feldman (1992) found that second-generation Chinese Americans, as well as Chinese Australians, still consider maintaining Chinese cultural practices important, despite their apparent shift of Chinese cultural norms in behaviour and knowledge. Moreover, they also found few differences in the measure of cultural values with respect to individualism versus collectivism. Yang (1986) concluded, after comparing the motives of native Chinese and overseas Chinese using the Edwards Personal Preference Schedule (Edwards 1959), that "we must say that this 'experiment' [as aforementioned] over many generations has been unable to change the overall need pattern of the Chinese 'subjects'" (110–11). There could be two explanations for Yang's finding: first, that traditional Chinese culture is deeply rooted in its members' personality and way of life (Mah 1995), and, second, that the cultural distance between China and North America is very large. Finally, studies in other areas also support this pattern of acculturation of Chinese groups (e.g., leisure, meaning, and participation, Allison and Geiger 1993; child rearing and education, Mah 1995).

MEASUREMENT OF ACCULTURATION

When ethnic values, attitudes, and behaviours are compared with those of the majority group, it is essential that the concept of acculturation be measured also. Therefore, a tailor-made measure that can properly reflect the type, dimension, and process of acculturation, as well as the profound cultural traits of both the "mainstream" culture and the culture in question, is critical. Otherwise, any explanation of findings involving the measure may incorrectly incorporate "common-sense meanings, which are embedded in implicit assumptions about cultural and ethnic difference" (Hunt 1999, par. 1). In view of this, the following section will (a) examine the characteristics of acculturation, (b) review the major acculturation measurement scales generally and those dealing with the Chinese specifically, and, (c) based on the above, propose an acculturation instrument specifically designed for Chinese individuals.

Characteristics of Acculturation

Acculturation has been widely recognized as a process in which an individual, owing to immediate contact with an adopted society, undergoes the loss of his or her original cultural traits and values while gaining those of the host culture. Although

acculturation and assimilation are often used interchangeably in the literature, acculturation is conceptually different from assimilation in that assimilation is either just the "terminal stop" in the process of acculturation (Suinn et al. 1992) or a sort of "perfect" form of acculturation (Pires and Stanton 2000). Indeed, most of the acculturation scales that utilize multiple indices measure not only acculturation (based, for example, on language use and food consumption), but also assimilation traits (such as cultural orientation and ethnic identity). In general, however, acculturation is described in terms of two separate domains: the acculturation process and acculturation dimensions.

Acculturation Process

Traditionally, the process of acculturation has been viewed as being linear, unidimensional, and unidirectional, with the individual eventually and inevitably being assimilated into the mainstream society. Today, the process of acculturation is generally viewed as being bidirectional, multidimensional, and dynamic, such that an individual may either maintain his or her cultural traits and values, or become assimilated into the mainstream society.

Acculturation is a multidimensional process in that an individual may experience different aspects of acculturation. For instance, Gordon (1964) identified seven progressive dimensions of the acculturation/assimilation process: (a) cultural assimilation (acculturation), (b) structural assimilation, (c) marital assimilation, (d) identificational assimilation, (e) attitude receptional assimilation, (f) behaviour receptional assimilation, and (g) civic assimilation. This pattern of acculturation indicates that acculturation is a progressive process in which an individual begins with cultural acculturation and ends with complete assimilation, the latter characterized by the "absence of value and power conflict" with the host society (Hazuda et al. 1988, 690). It should also be noted that the arrival at the final stop — civic assimilation — does not necessarily mean the complete, or even partial, loss of one's original cultural traits, such as language and food preferences. Rather, Orozco et al. (1993, 150) stress that an individual "may adopt specific traits from the new culture, may discard some native traits, but may retain or even strengthen still other traditional cultural values and behaviours."

In contrast with the model described above, the process of acculturation is now widely accepted as being orthogonal, rather than linear. For example, according to Oetting and Beauvais (1990-1991), cultures are not placed at opposite ends of a continuum, but at right angles to one another. In addition, increased identification with one culture does not require decreased identification with another. This suggests that it is possible for an individual to have a high identification with culture A and low identification with culture B, or low identification with culture A and high identification with culture B, or high identification with both, or low identification with both.

Gans (1997, 883) also endorsed this argument by stating that "ethnic identity is even compatible with assimilation. For example, ethnic group leaders may lead public lives in the ethnic community while devoting part of their private lives to assimilatory activities." In this sense, therefore, ethnic identity may vary across situations, a possibility discussed more fully in the next section.

Finally, after reviewing earlier studies, LaFromboise et al. (1993) proposed a five-model orthogonal acculturation framework (table 1). These five models are assimilation, acculturation, alternation, multicultural, and fusion. Each model is rated on the emphasis it places on seven process variables related to second-culture acquisition: (1) contact with culture of origin, (2) loyalty to culture of origin, (3) involvement with culture of origin, (4) acceptance by members of culture of origin, (5) contact with the second culture, (6) affiliation with the second culture, and (7) acceptance by members of the second culture.

Acculturation Dimension

Although two acculturation dimensions have been identified by researchers, differences in what these dimensions exactly are do exist. For example, Szapocznik et al. (1978) identify behavioural acculturation and value acculturation; Padilla (1980) describes cultural awareness and ethnic loyalty; and Gentry et al. (1995) propose a behavioural dimension and an attitudinal dimension. In general, the behavioural acculturation dimension and the cultural awareness dimension refer to language preferences, habits, and/or food consumption, whereas the value/attitudinal acculturation and ethnic loyalty dimensions involve "cultural identification, pride, ethnic attitude, ethnicity, self-identification, spouse's ethnic identity and social interaction" (Pires and Stanton 2000, 47).

Acculturation Scale

A soundly conceptualized measurement instrument should potentially be able to reflect the three acculturation domains of process, dimensionality, and typology. In reality, however, few measurement scales currently do. Furthermore, although no acculturation measure can be applied universally, all should share many common indicators because all ethnic groups are put in the same "cultural experiment lab" (i.e., the United States or Canada) and are, therefore, referenced by the same cultural standards of the adopted society.

Acculturation was initially measured using a single index, such as language use (e.g., Angel and Worobey 1988; Floyd and Gramann 1993; Marin and Marin 1991; Schultz et al. 2000; Shaull and Gramann 1998; Walker et al. 2001), economic status (Noe and Snow 1989), place of birth (e.g., Caro and Ewert 1995), or arrival age/length of residence (ibid.). Among these, language as an index was widely recog-

nized as an inherent component of culture, and even as the proxy for culture, and, therefore, was viewed as "an important factor in acculturation" (Goldmann 1998, 127). According to Marin and Marin (1991), linguistic items alone give equally good results as do more complex sets of questions for determining acculturation levels. In spite of the importance of language as an index, however, language alone is generally seen as being insufficient. Rather, most acculturation measures now include multiple indices, including language, ethnic identity, religious beliefs, social relationships, knowledge about one's original culture and historical events, cultural pride, and attitudes toward intermarriage, sex roles, and family values/practices. These categories are more or less reflective of the seven acculturation dimensions identified by Gordon (1964).

A number of acculturation scales have been developed to target specific ethnic groups, such as: (a) Mexican Americans (e.g., the Acculturation Rating Scale for Mexican Americans, or ARSMA; Cuéllar et al. 1980; the Acculturation and Structural Assimilation Scales; Hazuda et al. 1988; and the Acculturation Rating Scale of Mexican Americans-II, or ARSMA-II; Cuéllar et al. 1995); (b) African Americans (e.g., the African American Acculturation Scale; Landrine and Klonoff 1994); (c) Asian Americans (e.g., the Suinn-Lew Asian Self-Identity Acculturation Scale, or SL-ASIA; Suinn et al. 1987; and the SL-ASIA-II; Suinn et al. 1992); and (d) Chinese Americans (e.g., the General Ethnic Questionnaire–Chinese version; Tsai 2000). Most of these scales, along with others not specifically identified, are bidirectional with lower scores indicating low acculturation (separation/ethnic identified), higher scores indicating high acculturation (assimilation/Western identified), and scores falling in between indicating biculturalism (integrated). Hence, these types of scales reflect three of the four types of acculturation. Among these scales the ARSMA-II and SL-ASIA-II distinguish themselves from the others by considering the orthogonal attribute of acculturation and by reflecting all four typologies, as well as other subcategories. For instance, SL-ASIA-II not only can be used to identify the fourth typology (i.e., alienated or marginalized), but also the three subcategories of "bicultural, Asian self-identity," "bicultural, Western self-identity," and "bicultural, bicultural self-identity" (Suinn et al. 1992, 3).

The SL-ASIA and its updated version, the SL-ASIA-II, were specifically developed to measure acculturation within Asian groups (see Ponterotto et al. 1998 for a more detailed discussion of this development). The SL-ASIA has 21 composite items that cover six dimensions of acculturation: language, identity, friendship choice, behaviours, generation/ geographic history, and attitudes. The multiple-choice questions, characterized by multiple cultural traits, allow an individual to focus on more than one type of cultural trait. The SL-ASIA-II is composed of 26 items with five new items being added to the original, thus allowing an identification of marginalized

acculturation and subcategories, as mentioned above. Despite the advantage of these scales, it should be noted, however, that they were both modeled after the ARSMA and, further, that the reliability and validity of the SL-ASIA is based on samples composed of college students.

Moreover, using one scale for all Asian groups may not reflect the cultural traits of a specific group (Suinn et al. 1987), such as the Chinese. According to the authors, it appears that a separate scale for a specific Asian group is more appropriate in light of another instance, wherein "it has been felt necessary to design separate instruments for Mexicans and Cubans" among Hispanic groups (ibid., 405). The SL-ASIA has been applied to such Asian groups as Japanese Americans (Atkinson and Matsushita 1991), Vietnamese Americans (Duan and Vu 2000), and Chinese Americans (Tata and Leong 1994), but almost all of these subjects were college students. Although there is little discussion of the SL-ASIA's applicability and appropriateness to these three groups in the respective studies, Duan and Vu did endorse Suinn and his colleagues' concern that the scale fails to identify behaviours that are situational — and this limitation is particularly important because situational behaviour is a characteristic of Chinese culture (He 1991, quoted in Yang 1993). Specifically, according to He, relatedness to others distinguishes Chinese culture from other cultures, and this relationship pattern is situationally centered. Even in terms of ethnic identity, a person's behaviour is changeable, as an "individuals' preferences at different times [depend] on the circumstances" (Pires and Stanton 2000, 49). The failure of the SL-ASIA and SL-ASIA-II scales to reflect situational behaviours raises the issue of which ethnic group's cultural values or traits should be included in an acculturation scale. This issue is not uncommon with many acculturation scales, but remains largely unaddressed.

Arguably, measuring behavioural acculturation is less challenging than measuring attitudinal/value acculturation. As acculturation is defined as an individual's learning of the cultural traits of the host culture, the greater the progression toward the attitudes and values of the host culture, the greater the degree of acculturation (Laroche et al. 1997). Thus, following this line of thought, in order to measure the degree of acculturation, it is necessary to measure the degree to which an individual shares similar attitudes and values with those in the host culture. According to Kim et al., "adherence to ancestral values and the values of the dominant culture are essential components of an individual's acculturation" (1999, 343). Given that, a measure may need to be developed which includes the distinct cultural traits of both the parent culture and the host culture.

It is difficult to accurately assign traits to "mainstream" versus ethnic culture in an already mixed society influenced by globalization, which draws different cultures closer to one another (Hunt 1999). Moreover, attitudes and values can be extremely

varied and numerous. Recognizing this challenge, Suinn (n.d., 10), in their updated version of the SL-ASIA, used the following statements: "Rate yourself on how much you believe in Asian values (e.g., about marriage, families, education, work)" and "Rate yourself on how much you believe in American (Western) values." While this kind of wording can reflect an individual's value acculturation to some degree, it is also too loose and too broad to get at its essence. Rather, a specific cultural trait (e.g., self-construal; Markus and Kitayama 1991) that can sharply distinguish between the host (Western) culture and the original culture (Asian in general, Chinese, specific) will likely work better. For example, based on the theoretical concept of independence-interdependence, Shiang (1998) developed an instrument to measure cultural change in terms of family, social, and work relationships, which can be seen as an extended version of the two value measurement items included in SL-ASIA-II.

In view of the limitations of SL-ASIA-I and SL-ASIA-II in measuring the acculturation level of Chinese in North America, it would appear that a measure specific to the Chinese is needed. Tsai (2000) developed such a measure; however, even it is not entirely satisfactory.

The General Ethnic Questionnaire–Chinese version (Tsai 2000) is composed of 38 single statements that examine cultural exposure (childhood and adult), cultural pride, cultural attitude, behaviour (e.g., food, music, and dance), residential location choice, customs, cultural orientation, and language use and ability. Because all of the statements are skewed toward Chinese culture, measurement of acculturation level ranges from low to high (vs. acculturation types, with the SL-ASIAs). Although a majority of the 38 items reflect Chinese cultural traits such as cultural pride (generally, most Chinese people are proud of Chinese culture and history; if one self-identified himself or herself as Chinese, he or she might feel the same way), childrearing (most overseas Chinese emphasize the importance of having their children learn Chinese), and Chinese customs/festivals; it seems other important aspects of cultural traits such as religious beliefs, interpersonal interactions, cultural values and attitudes (i.e., some distinct beliefs based on the theory of self-construal) are not included in the measure.

An examination of the General Ethnic Questionnaire–Chinese version wording (Tsai 2000) also suggests that some statements might not be entirely appropriate, including: (a) item 4, "Compared to how much I negatively criticize other cultures, I criticize Chinese culture less"– a sensitive issue; (b) item 10, "I go to places where people are Chinese" and item 13, "I admire people who are Chinese"– both very ambiguous questions; (c) item 16, "I perform Chinese dance"– dance is not a typical Chinese behaviour; (d) item 20, "At restaurants, I eat Chinese food"– would be better expressed if written: "I prefer to go to Chinese restaurants to eat food"; and (e) item 24, "The people I date are Chinese"– may not be suitable for all ages of peo-

ple, especially married couples. Finally, in terms of language measurement, the use of items such as "How much do you speak," or "How fluently do you speak" would be better expressed as "How much do you prefer to speak," as the latter better represents the emotional value of expression. Korzenny (1999, 4), for instance, found that individuals who are obviously fluent and proficient in the English language still "recognize the expressive and emotional values of Spanish for themselves."

With reference to mass media acculturation, four scale items are used to measure this aspect. They are: (a) item 31, "How much do you view, read, or listen to Chinese *on TV*?" (b) item 32, "How much do you view, read, or listen to Chinese *on film*?"; (c) item 33, "How much do you view, read, or listen to Chinese on *the radio*?"; and (d) item 34, "How much do you view, read, or listen to Chinese *in literature*?" Although it may be inferred from these items that lower scores mean higher acculturation, it should be noted that owing to various structural constraints (e.g., disposable income; Jackson 1999), even a newcomer to a host country may have little choice but to spend his or her time engaged with English media. Hence, using the phrase "prefer to" would seem more appropriate.

As acculturation is concerned with the degree to which an individual psychosocially and socially adapts to his/her host society, it would then seem necessary for an effective measure to focus more on psychological dimensions than behavioural ones. Additionally, because language may be merely the necessary condition for acculturation to occur, ability and proficiency in English can be developed in a separate, distant society, such as China. On the other hand, even an individual who has a poor understanding of English can become acculturated by personally observing what happens in the host society. Thus, it would seem that it is immediate contact with the host society that plays the key role in shaping one's acculturation process and outcomes. Based on this proposition, we contend that more attention must be paid to an individual's social interactions.

Development of an Acculturation Instrument for Chinese Individuals

Based on the theoretical and empirical findings described above, the following guiding principles should be incorporated in developing an acculturation scale for Chinese individuals: (a) item wording should reflect the psychological (vs. behavioural) dimension of acculturation; (b) more items should focus on an individual's social relationships; (c) although an instrument should reflect all domains of acculturation, a bidirectional instrument should be used because a minority of Chinese in Canada may fall into the marginalized category; (d) the instrument should include items that can reflect most dimensions of the acculturation process; (e) a balance should be achieved by measuring attitudinal/value acculturation (i.e., self-construal); and (f) although multiple item scales generally work better than single item

scales, participant fatigue must be taken into consideration. This is particularly true in this instance, as an acculturation scale is generally used in conjunction with other scales (e.g., leisure attitudes, environmental attitudes), rather than by itself.

In conclusion, a measure of acculturation that is able to scientifically reflect the nature of Chinese cultural values as well as the psychological and behavioural traits of Chinese immigrants is essential for examining potential attitude changes resulting from acculturation, as findings based on invalid and/or unreliable measures obfuscate the truth. Consequently, a new measure specific to Chinese immigrants was developed by drawing upon the established measures described above, as well as other measures developed by Mah (1995), Kim et al. (1999), Marin and Marin (1991), Shiang (1998), and Walker et al. (2001).

DATA COLLECTION

Data were collected between November 2002 and February 2003 from a stratified, systematic random survey of Chinese living in Edmonton, Alberta. Potential respondents were identified from the 2002 Edmonton telephone directory (cf., Stodolska and Jackson 1998). Advance telephone calls were conducted to recruit and screen respondents, and then a self-completed questionnaire was mailed to all qualified participants. Chinese individuals who agreed to participate were offered the choice of completing either an English or a Chinese language version of the study questionnaire. The Chinese version was developed using the following approach: first, two bilingual Chinese scholars (one being the first author of this paper) separately translated the Chinese version (in English) of the questionnaire into Chinese; second, the two translators discussed the accuracy and appropriateness of both translated versions; and third, the Chinese version, developed according to the principles outlined in the discussion above, was presented (together with its English counterpart) to a third Chinese scholar for final review.

After their preferred language was identified, a copy of the questionnaire, a cover and information letter, two copies of an informed consent form, and a stamped, self-addressed envelope were mailed to people who stated that they were willing to participate in the study. Following Dillman's Total Design Method (2000), a follow-up reminder card was sent to those who received the questionnaire, but had not returned it after two weeks. Another follow-up reminder card was sent to those who did not return their questionnaires within three weeks. Finally, a follow-up letter, together with a full package of survey documents, was sent to those individuals who still had not responded four weeks later.

DATA ANALYSIS

Data analysis consisted of six steps. First, a correlation matrix was calculated for all 24 variables. Second, factor analysis was used to examine the content validity of the measure. Third, the acculturation score for each respondent, as well as for each factor, was calculated. Fourth, discriminant validity was examined using the correlation method (Campbell and Fiske 1959; Garson 2006). Fifth, predictive validity was examined by classifying respondents into different levels and by multiple regression analysis where the relationships between acculturation and socio-demographic variables were examined. Finally, reliability of the acculturation measure was examined by the Cronbach's coefficient alpha.

RESULTS

Response Rate and Return Rate

After eliminating ineligible households, vacant houses, etc. (see Fowler 1993), 223 Chinese households agreed to complete a questionnaire. Of those who agreed to participate, 198 returned usable questionnaires (88.8%). Twenty of these were subsequently excluded because the respondent was not from mainland China (12 were from Hong Kong, while the remainder were from Vietnam, Malaysia, Taiwan, etc.). Of the remaining 178 respondents, 143 (80.3%) completed the Chinese-language version of the questionnaire. Finally, the study's overall return rate for Chinese participants was 50.6 percent.

Socio-demographic Characteristics

Socio-demographic characteristics of Chinese participants are presented in table 2. As shown, only 6.7% of the Chinese respondents were born in Canada, while 93.3% were born in mainland China. A large number of Chinese (92%) identified themselves as being first generation (vs. 8.0% who were second generation or more recent). Approximately half of the Chinese respondents reported themselves as Chinese (54.5%), compared with 40.0% who said they were Chinese-Canadians and 4.6% who said they were Canadians. Chinese participants' length of residence in Canada ranged from a few months to 50 years, with the average length of residency being 9.5 years; 57.3% of participants were male; and 87.6% were married or had common-law partners. In addition, 75.5% of participants were between 30 and 49 years of age; 81.9% had an undergraduate degree or other post-secondary education; and 50.6% had an annual income of over $50,000.

Missing Data

Before being able to perform the statistical analyses, the issue of missing data was addressed. Three of the 178 cases were deleted since one had 19 missing values, while the other two had 16 missing values. In addition, 16 cases had either one (13 cases) or two (3 cases) missing values. These missing values were replaced by their corresponding means because (1) the missing values were scattered randomly through the 24 acculturation items; and (2) 13 out of the 16 cases had only one missing value (less than 5%). According to Tabachnick and Fidell (1996), when a large data set has less than 5% missing values and, as in this case, these values are in a random pattern, further statistical analyses are appropriate.

Correlation Matrix

Table 3 presents the correlation matrix for the 24 variables. As shown, most variables are significantly related with each other, indicating that they measure the same thing: acculturation. However, the relationship significance levels vary with variables and some variables are not consistently significantly related with others, suggesting that different dimensions could exist among those 24 variables. As a consequence, factor analysis was used to determine these exact dimensions.

Content Validity

Factor analysis is useful for examining the content validity of an empirical measure (Ponteroto et al. 1998). Two types of factor analysis — exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) — have been widely used by social scientists to discover the factorial structures among diverse measures. EFA is used to elicit unspecified factors, while CFA is usually used to test explicit hypotheses. For this study, as the nature of Chinese acculturation is unexplored, EFA is applied to identify potential domains of the acculturation measure. Principal component analysis has been commonly used to extract factors. Two types of rotational procedures — orthogonal rotation and oblique rotation — can be used in principal component analysis. Orthogonal rotation, which restricts the factors as uncorrelated, has been used more often than oblique rotation, which allows factors to be correlated (Pohlmann 2004). The most common orthogonal rotation is varimax, as it provides the simplest interpretation of the structure. This was the approach selected for use in this study.

Raw scores are more appropriate than standardized scores when the factor structure is examined. Factor analysis was, therefore, performed on the raw scores of the acculturation measure. An eigenvalue of over 1.00 and a factor loading of over .45 (20% overlapping variance) were used to identify latent variables. In addition, a loading of .10 was used to separate the primary and secondary loadings. The results are presented in table 4.

Seven factors emerged from the factor analysis of the 24 items measuring Chinese respondents' acculturation (table 4). These seven factors cumulatively explained 60% of the variance. As indicated in the table, factor one includes four items (items 5, 6, 8, and 9), accounting for 22.6% of the variance. This factor reflects the social interactions of Chinese respondents. The internal consistency of this sub-scale is .79. Factor two has five items (3, 15, 16, 17, and 18), accounting for 8.4% of variance. This factor can be labeled "language preference." The internal consistency is .81. Factor three has two items (22 and 24) and accounts for 7.5% of the variance. This factor measures distinct cultural value between the Western and Eastern societies self-construal (Markus and Kitayama 1991). The internal consistency of this factor is .58. Factor four has five items (1, 2, 7, 10, and 20) accounting for 6.4% of the variance, with an internal consistency of .51. This factor can be labeled "ethnic identity." Item 20 was included in this factor despite the fact that the difference between the primary and secondary loading is less than .10. However, the difference between the two is .08, which is sufficiently close to the criterion. Factor five includes two items (12 and 21) and accounts for 5.3% of the variance with an internal consistency of .45. This factor can be labeled "gift giving and holiday celebration." Factor six has three items (4, 11, and 23), accounting for 5.1% of the variance, with an internal consistency of .49. This factor can be labeled "food and community preference." Finally, factor seven consists of three items (13, 14, and 19) and accounts for 4.7% of the variance with an internal consistency of .38. This factor is labeled "filial piety."

As indicated above, seven factors were extracted from the acculturation measure. These factors reflected different dimensions of acculturation such as social interactions, language preference, ethnic identity, and other cultural traits (i.e., self-construal, filial piety, food preference, and holiday celebration). The first factor, social interactions, accounted for the majority of the variance, reflecting the role of social interactions in the process of acculturation as discussed in the measurement of acculturation section. There exist considerable similarities in factor structure when compared to the well-developed and widely-used Suinn-Lew Asian Self-identity Acculturation Scale measure (SL-ASIA). For instance, Suinn et al. (1992, 1995) reported five interpretable factors emerging from the SL-ASIA. They are reading, writing, and cultural preference, ethnic interaction, affinity for ethnic identity and pride, generational identity, and food preference. Similarly, seven factors emerged from the same measure in a study conducted by Kodama and Canetto (1995). These factors are: cultural/language preference and ethnic interaction, ethnic identity, written language, ethnic involvement and pride, ethnicity of friends up to age eighteen, food preference, and spoken language. Owing to the use of different items, the acculturation measure developed in this study does not completely match that of the SL-ASIA. However, as exhibited above, the two measures did converge in terms of factor structure. Therefore, the structure of the measure was validated.

Calculations of Acculturation Scores

Four items (10, 13, 20, and 23) in the acculturation measure are reverse worded. The measure is designed in such a way that a low score reflects high acculturation, while a high score reflects low acculturation. In scoring the scale, a total value for each respondent is calculated by summing up all 24 items. A final acculturation score is then calculated by dividing the total value by 24 (Suinn et al. 1987). As a result, a score will range from a minimum value of 1 (highest acculturation) to a maximum value of 5 (lowest acculturation). Similarly, the mean values for each of the seven factors were calculated by first summing up all items loading on each factor and then dividing the total value for that factor by the number of factor items.

Discriminant Validity

Discriminant validity describes the degree to which a construct diverges from other constructs that are theoretically different from it. Low correlations are indicative of discriminant validity, especially when the same informants are measured (Bryant 2000). To examine the discriminant validity of the acculturation measure, correlation analysis was conducted to see if low correlations would exist between the acculturation measure and two other constructs: leisure attitudes and environmental attitudes. These two constructs were chosen for three reasons. First, they are not only conceptually different from the acculturation measure, but are well developed and widely accepted measures for leisure attitudes (Ragheb and Beard 1982) and environmental attitudes (Dunlap et al. 2000). Second, the same informants who responded to the acculturation measure also responded to measures of these two attitudes. Finally, factors for each of these three measures were obtained using the same method-principal component analysis with varimax rotation.

As shown in table 5, the seven acculturation factors were generally highly correlated. However, Ac3, Ac5, and Ac7 were not always highly related with other factors. This suggests that all seven factors measure the same thing — acculturation — but from different perspectives. Likewise, the three leisure attitude factors are highly correlated with one another, as are the four environmental attitude factors (except E4 and E2). These findings suggest that these factors measure leisure attitudes and environmental attitudes, respectively. In contrast, the acculturation measure's seven factors are not highly related with most of the leisure attitude measure's three factors or the environmental attitude measure's four factors, which suggests that acculturation is conceptually different from leisure and environmental attitudes. Thus, the acculturation measure displays high discriminant validity.

Predictive Validity

Two methods have been widely used to classify individuals into different levels of

acculturation. The first was proposed by Suinn et al. (1987), who classified individuals into three levels: low (1.00–2.33 mean score), medium (2.33–3.66) or high (3.66–5.00). This method has been followed by a number of researchers (e.g., Atkinson and Gim 1989; Atkinson et al. 1995; Park and Harrison 1995; Tata and Leong 1994). However, depending on study design or sample sizes, individuals can also be divided into two levels; low acculturation and high acculturation with the mid-score (scores 1.00–3.00 = low-medium; scores 3.01–5.00 = high) being the dividing point (e.g., Atkinson and Gim 1989; Park and Harrison 1995).

The second method is to classify individuals based on mean and standard deviation (Cuellar et al. 1995; Lessenger 1997). For instance, Cuellar et al., classified Mexican Americans into five levels of acculturation with standard deviation (*SD*) ranging from -1.0 *SD* (scores < mean – 1 *SD* = very Mexican oriented) to +1.5 *SD* (scores > mean + 1.5 *SD* = very assimilated or Anglicized).

In order to categorize Chinese respondents into different groups with varied acculturation levels, the method proposed by Suinn et al. (1987) was first tried. However, it was found that only one Chinese respondent fell into the high-acculturated respondent category using the three-level and only eight were so classified using the two-level-classification. As these results were not useful, the standard deviation method was tried and had the following result: there are 20 (11.4%) and 24 (13.7%) respondents in the low and high acculturation level categories, respectively, while 132 (74.9%) fell into the middle category. This outcome reflects the generally accepted acculturation patterns of Chinese in Canada. For example, according to Goldmann (1998), 8.4% of the Chinese in Canada are assimilated (high acculturation), 74.5% are integrated (middle), and 17.1% are segregated (low acculturation).

Finally, an alternative approach based on percentiles was tried, where Chinese respondents were classified into three groups according to 33, 50, and 66 percentiles. Those whose acculturation scores were less than 3.63 (33rd percentile) were categorized into the high acculturation group and those whose acculturation scores were greater than 3.92 (66th percentile) were categorized into the low acculturation group, while the remainder were categorized into the middle acculturation group. As a result, 63, 55, and 57 Chinese respondents were classified into three groups with high, middle, and low acculturation, respectively.

A further examination of the relationship of acculturation to gender, age, income, education, and length of residence indicated that age ($p < .001$), education ($p < .05$) and length of residence ($p < .001$) were significantly related to acculturation, while gender was not and income only marginally so ($p = .09$) (table 6). This finding indicated that youth tend to be more readily acculturated than the aged, and those with a higher level of education, higher income, or a longer length of residence are more likely to be acculturated than those with lower levels of education and/or

income or a shorter length of residence. This finding is largely consistent with previous findings, indicating a high level of predictive validity.

Reliability

The alpha coefficient was considered the preferred measure of internal consistency because it is the mean of all possible split-half reliabilities (Ponterotto et al. 1998). According to Ponterotto (1996), an alpha of at least .70 is necessary for research-use instruments with large groups. The overall internal consistency measured by Cronbach's coefficient alpha is .82 for the acculturation measure used in this study, indicating that the measure has high reliability. It is worth noting that some of the sub-scales (e.g., filial piety) do demonstrate lower reliability levels; however, this is not unusual with an exploratory study (Nunnally 1978; Schmitt 1996), especially when the number of constructs being measured is also taken into account (Cronbach and Gleser 1965).

DISCUSSION AND CONCLUSION

There has been a growing concern that Chinese and other minority group members in Canada have experienced different levels of difficulties during the adjustment process. On the one hand, they hope to retain their own cultural traits and identity. On the other hand, they hope to enjoy the same lifestyle as the dominant group, which requires assimilation. This dilemma has been experienced by many immigrants to a greater or lesser degree, and it may well affect a minority member's perception of his or her new life in the unfamiliar environment. Previous studies tended to examine minority members' attitudes and behaviour based on their acculturation levels. Therefore, a properly designed and developed acculturation measure for a specific minority group is essential for understanding the issues in question. This paper develops an acculturation measure for Chinese in Canada. As reported above, the Chinese acculturation measure consists of 24 items and can be grouped into seven domains. These seven domains reflect the most important aspects of the immigrant's life and experience in the process of acculturation. To some extent, this measure matches other widely used measures such as SL-ASIA for overseas Asians, thus validating the measure's structure. The measure we designed differs from these previous measures in its emphasis on social interaction and the inclusion of more value and attitudinal items, thus addressing the increasing concern from the literature over acculturation measures that lack reflection on attitudinal aspects of acculturation.

It should be noted that both Chinese and English versions of the questionnaire were used in this study. The use of the Chinese questionnaire may place respondents in a Chinese cultural context, and these respondents could respond to the survey in

a manner that is different from those who responded to the English version survey. Recent psychological research shows that individuals exposed to two cultures tend to switch between cultural frames based on accessible cultural cues. The cultural frame switching (CFS) can influence their responses on measures of values, attributions and cognitions (e.g., Hong et al. 2000) and self-concept and emotions (e.g., Ross et al. 2002). Simply put, CFS refers to a phenomenon where "bicultural individuals shift values and attributions in the presence of culture-relevant stimuli" (Ramírez-Esparza et al. 2006, 100). For example, Hong et al. (2000) found that Hong Kong Chinese students exposed to Chinese cultural icons (e.g., a Chinese dragon, the Great Wall) were more likely to endorse Chinese cultural traits than their counterparts who were exposed to American icons (e.g., the American flag, the U.S. Capitol Building). Inferred from this finding is the possibility that respondents using different versions of a questionnaire could generate biased results — a phenomenon that has been verified in some previous studies. For example, Bond and Yang (1982) reported that Chinese bilinguals who responded to a questionnaire in English were more likely to endorse Western values and norms than were Chinese bilinguals who responded to the same questionnaire in Chinese. More recently, Ramírez-Esparza et al. (2006) tested CFS in three samples of Spanish–English bilinguals, located in the US and Mexico, and found that language played a role in affecting participants' responses to extraversion, agreeableness, and conscientiousness.

As outlined above, the two versions of the questionnaire used in this study may affect research participants' responses. However, this phenomenon may not be a problem for two reasons. First, what was measured in the survey was acculturation, which is itself a reflection of cultural cues. That is, those who responded to the survey in English could be more acculturated than those who responded to the survey in Chinese or, in other words, the choice of the survey language could be an indicator of the level of acculturation, much like acculturation was typically measured by language itself in previous studies. Second, some respondents were not bilingual. That is, they choose a Chinese- or English-language version questionnaire because they did not know English or Chinese.

In addition, methods used to classify respondents into different levels of acculturation can produce varied results. As discussed above, mainland Chinese in Canada could be considered less acculturated if the absolute classification method proposed by Suinn et al. (1987) were used. Chinese from mainland China can then be considered homogenous in terms of acculturation. In contrast, the use of relative methods can successfully classify respondents into different levels of acculturation with each level having a certain number of respondents, allowing further statistical analysis to be conducted. For instance, Deng et al. (2005 a, b; 2006), have used the percentile method to classify mainland Chinese into two acculturation groups —

high and low levels of acculturation — and respondents' attitudes toward national parks, the environment, and leisure were then examined between acculturation groups. In this way, the absolute classification method could be used to reflect the actual situation of the extent to which minority group members were acculturated, while relative classification methods are useful for in-group analysis.

Based on the absolute classification method, mainland Chinese tended to maintain their own cultural traits to a large extent. This could be partially explained by the fact that research participants are deliberately targeted Chinese who were originally from mainland China in order to avoid the issue of heterogeneity within Chinese groups. This also meant that, because the majority of mainlanders arrived in Canada in the last ten years or so, many of the participants may not have been highly acculturated. On the other hand, this finding endorses previous studies which argue that in North America it is very rare for a visible minority to be totally absorbed into the mainstream society (Husbands and Idahosa 1995) and Chinese seem to have much stronger ethnic retention (Goldmann 1998; Mah 1995). Indeed, cultural retention has been evidenced by Chinese immigrants in many other respects, including filial piety (Ho and Jaclyn 2001), child rearing and education (Mah 1995), hard work and wealth accumulation (Hibbins 2002), and familialism and localism (Hoe 1989).

Chinese settlement patterns could also contribute to the retention of Chinese cultural traits. As mentioned in the introduction, Chinese tend to live in a few major metropolitan areas. Moreover, in these areas they also tend to reside in places where Chinese are highly concentrated. For example, using 1996 census data, Bauder and Sharpe (2002) found that Chinese had the highest likelihood of exposure to other Chinese in Vancouver and Toronto compared to other minority groups in the two cities. They also found that Chinese were highly segregated from the majority group in these cities. The high level of exposure and concentration for Chinese were reinforced with incoming immigrants who chose to live in well-established Chinese communities. For example, more than 50% of Chinese immigrants arriving in 2000-2001 reported that their reason for settling in a given region was because their family and friends already lived there (Chiu et al. 2005). Hong et al. (2000, 718) argued that "people desiring to acculturate quickly surround themselves with symbols and situations that prime the meaning system of the host culture," while the opposite is true for those who desire to maintain their cultural traits. Understandably, therefore, the settlement patterns of Chinese communities are at least partially the reason for low levels of acculturation experienced by Chinese.

Similarly, Chinatowns are regarded by many as a symbol of "small China." In the past, overcrowded Chinatowns in urban areas were seen as places of cultural insularity where unassimilable Chinese congregated. Although in modern times

Chinatowns are no longer regarded as residential ghettos, they are still important places for commercial/social activities or tourist destinations that are associated with the Chinese or Chinese culture. In summary, the above findings suggest that some "basic" values held by Chinese immigrants are not willingly or readily changed during the acculturation process.

The retention of Chinese culture by overseas Chinese could also be attributed to globalization. Although one potential victim of globalization is the loss of local cultural traits, the authors of this paper would argue that it is globalization that contributes to the retention of cultural traits by Chinese immigrants (see figure 1). Potentially, the outcome of globalization could be either cultural homogenization or cultural diversity. With respect to the former, the local culture gradually loses its features and is eventually assimilated by the foreign culture. In the case of the latter, the local culture resists the invasion of the foreign culture and, instead, coexists with it. As shown in figure 1, for indigenous Chinese, Chinese culture is the powerful culture; for Chinese immigrants, western culture is the powerful one, while Chinese culture is subordinated. As a result of globalization, cultural diffusion is bidirectional. As Chinese culture is highly resistant as well as tolerant, cultural diffusion from Western society could be buffered to a large extent. This "buffering capacity" could be further strengthened by the government which plays a critical role in determining what is "good" and what is "bad" when introducing western culture to the country. As a result, cultural integration is the outcome of globalization. For Chinese immigrants to survive in their adopted countries, they need to assimilate into the mainstream society. However, in order to maintain their Chinese cultural identity, they need to keep something of their own. This kind of cultural retention could be further strengthened by the diffusion of Chinese culture through the Internet, economic and cultural activities, international travel, and incoming immigrants. Globalization facilitates economic activities and cultural/ideas exchanges between China and other countries, making it more possible for overseas Chinese to be exposed to their own culture. For instance, many Chinese living in the United States visit mainland China frequently, and even second-generation Chinese, who were born and raised in the United States, have begun to visit mainland China for pleasure or business due to increasing economic globalization (Creaders.net 2006). This, too, could contribute to the retention of Chinese culture among overseas Chinese. Once again, the outcome of acculturation for a majority of Chinese immigrants is, therefore, cultural integration.

In view of cultural diffusion in both directions resulting from globalization, acculturation should be measured using the same instrument both in indigenous countries like mainland China and in countries such as Canada so that the net acculturation can be calculated. Future research should also be conducted to develop an

acculturation index by which individual immigrants can easily assess their acculturation levels. Finally, to reveal the full picture, the acculturation process with Chinese from different origins, countries, and regions should also be examined.

APPENDIX

Table 1. Extent of attention on select process variables associated with models of second-culture acquisition

Model	1	2	3	4	5	6	7
Assimilation	Low	Low	Low	Low	High	High	High
Acculturation	Low	Low	Low	High	Low	Low	Low
Alternation	High	High	High	High	High	High	High
Multicultural	High	High	High	High	Moderate	Low	Low
Fusion	Low	Low	Low	Low	High	High	High

Note: 1 = Contact with culture of origin; 2 = loyalty to culture of origin; 3 = involvement with culture of origin; 4 = acceptance by members of culture of origin; 5 = contact with the second culture; 6 = affiliation with the second culture; 7 = acceptance by members of the second culture

Source: LaFromboise et al. 1993, Psychological Impact of Biculturalism: Evidence and Theory, *Psychological Bulletin* 114: 402. © 1993 by the American Psychological Association. Reproduced with permission. The use of APA information does not imply endorsement by APA.

Table 2. Socio-demographic characteristics of Chinese respondents

Category	Chinese No. (%)
Birth place	
Canada	12 (6.7)
Mainland China	166 (93.3)
Ethnicity	
Chinese	97 (55.4)
Canadian Chinese	70 (40.0)
Canadian	8 (4.6)
Average length of residence	9.5
First generation	161 (92.0)
Second generation and over	14 (8.0)
Education	
Less than high school	7 (4.0)
High school or equivalent	25 (14.1)
Undergraduate degree or other post-secondary education	63 (35.6)
Graduate school degree	82 (46.3)
Income	
Under $24,999	36 (22.0)
$25,000–$49,999	45 (27.4)
$50,000–$74,999	52 (31.7)
$75,999–$99,999	19 (11.6)
Over $100,000	12 (7.3)

Table 3. Correlation matrix for the 24 acculturation variables (N = 175)

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
A1	–											
A2	.24**	–										
A3	.19*	.31**										
A4	.13	.13	.11	–								
A5	.18*	.21**	.07	.40**	–							
A6	.25**	.04	.08	.21**	.53**	–						
A7	.48**	.16*	.16*	.12	.25**	.35**	–					
A8	.24**	.08	.03	.28**	.54**	.64**	.41**	–				
A9	.20**	-.11	-.02	.13	.32**	.38**	.32**	.47**	–			
A10	-.11	-.15	-.11	.12	.06	.03	-.17*	.10	.15*	–		
A11	.31**	.06	.16*	-.15	.26**	.27**	.30**	.30**	.22**	-.06	–	
A12	.14	.16*	-.02	.04	.17*	.05	.03	.12	.13	.19*	.17*	–
A13	-.05	.06	.09	.15*	.04	.05	-.02	.11	.02	.10	.03	.03
A14	.13	.12	.14	.12	.15*	.14	.16*	.06	.14	-.05	.10	.07
A15	.25**	.14	.22**	.16*	.43**	.44**	.40**	.45**	.32**	-.04	.39**	.05
A16	.25**	.16*	.27**	.14	.47**	.40**	.44**	.46**	.36**	-.04	.37**	-.05
A17	.24**	.23**	.24**	.21**	.41**	.35**	.40**	.44**	.32**	-.01	.34**	.02
A18	.11	.13	.17*	.17*	.25**	.29**	.20**	.43**	.15*	-.01	.25**	.15
A19	.22**	.18*	.22**	.07	.16*	.21**	.19*	.15*	.07	-.02	.16*	.19
A20	.13	-.02	.00	-.11	-.03	.07	.14	.03	.08	.16*	.02	-.03
A21	.19*	.22**	.11	.17*	.24**	.21**	.19*	.32**	.12	.07	.10	.29**
A22	.01	.20**	.07	.11	.02	-.10	.01	-.10	-.09	-.07	.15	.01
A23	-.03	-.19*	.04	-.11	-.06	.02	.06	-.03	.08	-.07	.25**	-.13
A24	.04	.27**	.08	.20**	.21**	.21**	.10	.15*	.02	.06	.08	.07
	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24
A13	–											
A14	-.26**	–										
A15	.33	.25**	–									
A16	.15*	.18*	.69**	–								
A17	.18*	.20**	.70**	.78**	–							
A18	.18*	.13	.52**	.48**	.53**	–						
A19	-.01	.22**	.25**	.22**	.11	.17*	–					
A20	-.08	-.01	.15*	.05	.02	.04	-.04	–				
A21	.03	.18*	.19*	.11	.14	.15*	.06	.08	–			
A22	.10	.07	-.01	.01	.11	-.03	.05	-.18*	.11	–		
A23	.03	.07	.04	.08	.06	.09	.06	.09	-.10	-.01	–	
A24	.07	.20**	.09	.07	.13	.08	.16*	-.11	.53*	.40**	-.17*	–

$*p < .05$; $**p < .01$.

Table 4. Acculturation factor loadings, variances and alpha values

Factor (Proportion): Scale name & items	Rotated (varimax) factors						
	1	2	3	4	5	6	7
Factor 1: Social interactions (22.6%, *a* = .79)							
5. I prefer to go to Chinese restaurants for friend gatherings	**.65**	.26	.15	.00	.11	-.22	.07
6. My friends are Chinese/Chinese Canadians	**.74**	.17	.03	.10	.05	-.04	.07
8. Given a choice, I would prefer to go to Chinese social occasions to mainly White gatherings	**.79**	.23	-.02	.06	.16	-.07	-.10
9. When I am around White people, I am conscious of being "different"	**.69**	.02	-.10	-.03	.08	0.18	.06
Factor 2: Language preference (8.4%, *a* = .81)							
3. I believe that my children should read, write, and speak Chinese	-.21	**.57**	.10	.25	.10	-.08	.10
15. I prefer to speak Chinese	.46	**.66**	-.05	.13	.02	.09	.14
16. I prefer to read in Chinese	.46	**.72**	.02	.13	-.10	.11	.00
17. I prefer to write in Chinese	.42	**.74**	.11	.09	-.07	.06	-.05
18. I prefer to listen to Chinese music	.24	**.69**	-.09	-.10	.13	.05	-.06
Factor 3: Self-construal (7.5%, *a* = .58)							
22. I feel that my relationships with others are more important than my own accomplishments	-.09	.01	**.83**	.06	-.01	.10	-.06
24. It is important to me to consider my friends' opinions before I act	.18	.01	**.73**	-.01	.08	-.18	.13
Factor 4: Ethnic identity (6.4%, *a* = .51)							
1. I was raised in a way that was Chinese	.27	.09	.03	**.62**	.30	.04	.06
2. I am proud of Chinese culture	-.16	.35	.33	**.48**	.31	-.36	.01
7. Overall, I am Chinese	.47	.19	.06	**.57**	.04	.10	.06
10. I sometimes wish I could be White instead of being Chinese	.20	-.09	-.03	**-.63**	.30	-.04	-.08
20 I am a frequent Western church goer	.07	-.02	-.41	**.49**	-.01	.03	.00
Factor 5: Gift giving and holiday celebration (5.3%, *a* = .45)							
12. When one receives a gift, one should reciprocate with a gift of equal or greater value	.06	.00	-.02	-.12	**.85**	.03	.00
21. I celebrate Chinese holidays	.24	.06	.08	.15	**.53**	-.21	.03
Factor 6: Food and community preference (5.1%, *a* = .49)							
4. I would prefer to live in a Chinese/Chinese Canadian community	.35	.18	.20	-.14	-.03	**-.56**	.02
11. I prefer to eat Chinese food at home	.30	.25	.21	.23	.24	**.63**	-.04
23 I enjoy being unique and different from others in many respects	.00	.12	-.04	-.05	-.18	**.66**	.08
Factor 7: Filial piety (4.7%, *a* = .38)							
13. One needs not achieve academically to make one's parents proud	.01	.30	.16	-.16	.06	-.03	**-.72**
14. One should be humble and modest	.10	.22	.15	-.02	.06	-.01	**.79**
19. I will financially support (or currently do support) my parents when they are old	.03	.31	.14	.03	.35	.12	**.47**

Note: Loadings of 0.45 and above are in bold; difference of 0.10 was used to separate the primary and secondary

Loadings; and missing values were replaced by the respective mean of each variable.

Table 5. Correlations between acculturation factors and leisure/environmental attitude factors

	Ac1	Ac2	Ac3	Ac4	Ac5	Ac6	Ac7				
Acculturation[1]	–										
Ac1	–										
Ac2	53**	–									
Ac3	.06	.09	–								
Ac4	.21**	.32**	.24**	–							
Ac5	.27**	.14	.12	.12	–						
Ac6	.41**	.32**	.27**	.30**	.28**	–					
Ac7	.13	.15*	.10	.20**	.13	.05	–				
Leisure[2]								L1	L2	L3	
L1	-.02	-.03	-.16*	-.16*	-.19*	-.06	-.09	–			
L2	-.03	-.10	.00	-.14	-.07	-.01	-.10	.40**	–		
L3	-.02	.03	-.05	-.17*	-.07	.03	-.11	.64**	.54**	–	
Environment[3]								E1	E2	E3	E4
E1	-.03	.01	.01	-.06	-.08	.01	-.02	–			
E2	.07	.03	.08	.15	.01	.14	.02	.29**	–		
E3	-.02	.06	-.02	.09	.03	-.00	.01	.30**	.36**	–	
E4	.01	-.04	-.15	-.09	-.01	-.05	-.01	.46**	.07	.22**	–

Note: 1. Ac1 to Ac7 refers to factors 1-7 presented in Table 4;
2. L1 to L3 refers to the three dimensions (i.e., cognitive, affective, and behavioural) of leisure attitudes (see Deng et al. 2005b);
3. E1 to E4 refers to the four factors of environmental attitudes (see Deng et al. 2006).
*$p < .05$; **$p < .01$.

Table 6. Regression analysis of acculturation on sex, age, education, income, and length of residence[1]

Model[2]	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	Sig
Sex	0.05	0.06	.06	0.77	.443
Age	0.09	0.03	.22	2.94**	.004
Education	-0.10	0.04	-.21	-2.45*	.016
Income	-0.05	0.03	-.14	-1.71	.090
Length of residence	-0.02	0.00	-.37	-4.50**	.000

Note:

1. Acculturation is negatively related to scores. That is, higher scores mean low acculturation, while lower scores refer to higher acculturation. Therefore, a variable with a positive coefficient (e.g., age) implies it is negatively related to acculturation, while a variable with a negative coefficient means it is positively related to acculturation (e.g., education).

2. As length of residence, generation, and ethnicity identity were positively significantly related to each other, length of residence, which has the strongest relationship with acculturation, was chosen for regression analysis so that multicolinearity could be avoided.
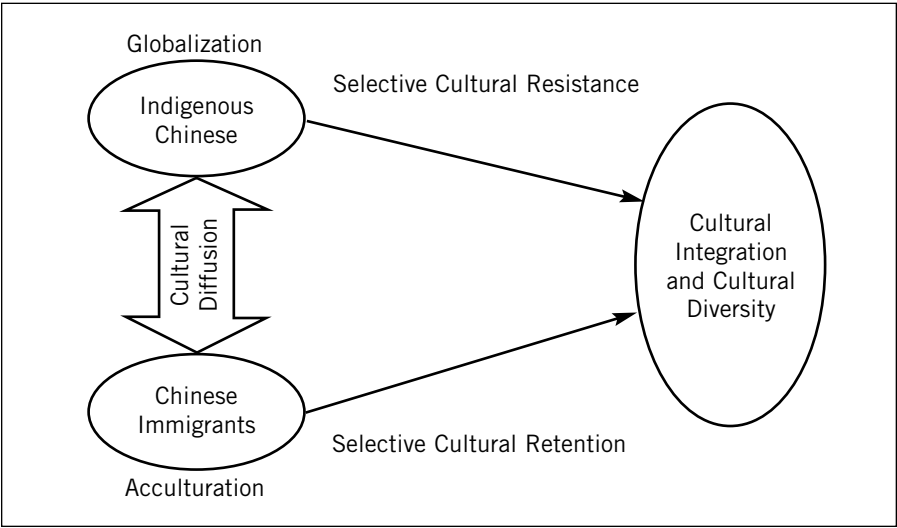
   $^*p < .05$, $^{**}p < .001$.

Fig. 1. Dynamic pattern of globalization and acculturation

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