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The Effects of Personal, Contextual, and Situational Factors on the Facilitation of Intrinsic Motivation: The Case of Chinese/Canadians

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Abstract

Thirty-one Chinese/Canadians completed a questionnaire that measured their self-construals and then responded to alarms programmed to ring randomly once every 2 hours, 7 times a day, for 12 days. Each time an alarm rang participants reported what activity they were doing; their motivation for, competence in, and autonomy during, the activity; and whether they considered the context to be leisure or non-leisure. Multilevel linear modeling confirmed that both autonomy and competence fostered intrinsic motivation but that: (a) autonomy's facilitative effect was greater during leisure whereas competence's facilitative effect was greater during non-leisure, and (b) the interaction between horizontal individualism and autonomy facilitated intrinsic motivation whereas the interactions between vertical individualism and autonomy and vertical collectivism and autonomy inhibited intrinsic motivation.

KEYWORDS: Chinese, Intrinsic motivation, Leisure, Self-construal

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North America's socio-demographic composition is changing. In the United States 4% of the population was Asian or Pacific Islander in 2000, with this percentage expected to double by 2025 (Cheeseman Day, 2007). According to 2002 Census figures Chinese were the largest Asian group (Barnes & Bennett, 2002) and greater China (i.e., Taiwan, Hong Kong, and the People's Republic of China) was the second largest region of birth of the U.S. foreign-born population after Mexico (Malone, Baluja, Costanzo, & Davis, 2003). In Canada, while British/Canadians remain the majority the visible minority population exceeded 13% in 2000 (Statistics Canada, 2003). Although this figure is much greater than the 5% reported in 1981 it is much lower than that projected for 2017, when around 20% of Canada's population is expected to be visible minority group members (Statistics Canada, 2005). Chinese are the largest and fastest growing visible minority group in Canada (Statistics Canada, 2003; 2005).

As the number of Chinese North Americans has increased so too has the number of studies that have examined this group's leisure. Recent research, for example, has found that intrinsic motivation (i.e., doing an activity because it is interesting, enjoyable, and for its own sake; Ryan & Deci, 2000) was a major reason why Chinese/Canadian (Walker & Deng, 2003), as well as Hong Kong and Mainland Chinese (Tsai & Coleman, 2007; Walker & Wang, 2008, respectively), people participated in leisure.

Because intrinsic motivation is "essential to cognitive and social development" and it "represents a principal source of enjoyment and vitality throughout life" (Ryan & Deci, 2000, p. 70), considerable research has focused on its facilitation and frustration. According to self-determination theory (SDT) (Deci & Ryan, 2000), intrinsic motivation is fostered when three innate needs—autonomy, competence, and relatedness—are satisfied and undermined when these needs are thwarted. Understanding this process is clearly important for leisure researchers given intrinsic motivation's eminence in our field (cf. Iso-Ahola, 1999; Kelly, 1978; Neulinger, 1981); but as Mannell and Kleiber (1997) recognized, it is equally important for leisure service providers if they want to afford their clients with environments that promote "extremely meaningful and psychologically powerful activities and experiences." (p. 145).

Unfortunately, although SDT acknowledges that autonomy, competence, and relatedness can vary across contexts (Ryan, 1995; Vallerand, 2000) and, consequently, so too can their facilitative effect on intrinsic motivation (Ryan & Deci, 2000), little is known about how this process may be influenced by ethnicity. After reviewing research in cross-cultural psychology Walker, Deng, and Dieser (2005) proposed that autonomy and competence may facilitate intrinsic motivation more for certain ethnic groups (e.g., British/Canadians) during their leisure, whereas relatedness and three non-SDT variables (e.g., effort) may facilitate intrinsic motivation more for certain other ethnic groups (e.g., Chinese/Canadians) during their leisure. Walker (2008) empirically tested these propositions by asking British/Canadian and Chinese/Canadian people how they perceived six facilitators would affect their intrinsic motivation during leisure with a close friend. Findings generally supported the facilitative effects of the SDT rather than non-SDT variables. Walker (2008) recommended that future researchers consider: (a) com-

paring potential differences in intrinsic motivation facilitation across contexts, (b) examining the potential effects of person-level factors on intrinsic motivation facilitation, and (c) employing everyday experience methods (Reis & Gable, 2000) to ameliorate problems inherent in scenario-based research.

Thus, the purpose of this study is to extend Walker (2008) and colleagues' (Walker et al., 2005) work by using an experience sampling method (Csikszentmihalyi, Larson, & Prescott, 1977) to: (a) confirm that the situational variables of autonomy and competence do facilitate Chinese/Canadians' intrinsic motivation, (b) investigate whether these facilitative effects differ between two contexts: self-identified leisure and non-leisure, and (c) examine if, depending upon the importance a person ascribes to different types of self-construal (Markus & Kitayama, 1991; Triandis, 1995), autonomy and competence facilitate, inhibit, or have no effect on intrinsic motivation.

Literature Review

The first section of this review defines intrinsic motivation and examines its relevance for Chinese and Chinese/Canadian people while the second section describes in more detail how, according to self-determination theory (Deci & Ryan, 1985), intrinsic motivation is facilitated and how this process can vary across contexts. The third section defines culture and describes its influence on self-construal while the fourth section explicates how culture, self-construal, and context could affect how autonomy and competence affect intrinsic motivation. In the final section eight hypotheses are proposed.

Intrinsic Motivation and Chinese People

The emotions of interest and enjoyment are integrally related to intrinsic motivation (Deci & Ryan, 1985). Interest and enjoyment, along with surprise, distress, anger, disgust, contempt, fear, guilt, and shame/shyness, are sometimes deemed basic emotions (Izard, 1977). Silvia (2006) proposed two evolutionary-based reasons for interest being panhuman. First, Izard and Ackerman (2000) held that "interest motivates exploration and learning, and guarantees the person's engagement in the environment. Survival and adaptation require such engagement" (p. 257). Second, Fredrickson (2001) contended that interest serves not only short- but also long-term developmental goals, as it motivates people to "broaden-and-build" their experiences; and doing so can prove beneficial when unforeseen events occur. Interest and enjoyment may also be panhuman from a neurophysiological perspective, as both are closely associated with increased dopamine levels in the human brain (Volkow et al., 2004). Although this neurotransmitter is often linked with addictive behaviors it is worth noting that Nora Volkow, the Director of the U.S. National Institute on Drug Abuse, has also stated that: "If you get great excitement out of a great multiplicity of things, and intensely enjoy these things—seeing a movie or climbing a mountain—and then you try a drug, you'll think: What's the big deal?" (McGowan, 2004, p. 103; see also Marr, 2004).

Research supports the relevance these emotions have for Chinese people, with Russell and Yik (1996) finding that the word for interest was equivalent in Chinese and English. The role of interest in Chinese people's leisure has also been sup-

ported. Tsai and Coleman (2007) found, for example, that Hong Kong Chinese undergraduates reported being less interested, overall, in a variety of leisure activities compared with Australian students. In a study of Chinese/Canadians, Walker and Deng (2003) compared the Chinese experience of *rùmí* (i.e., to be absorbed in an activity) with the subjective leisure experience (Mannell & Kleiber, 1997). Based in part on their discovery that interest was the most intense emotion experienced during *rùmí*, Walker and Deng (2003) concluded that although the two phenomena were not equivalent they were comparable. Similarly, in a study of leisure motivations of Canadian and Mainland Chinese undergraduate students, Walker and Wang (2008) discovered that the two groups did not differ in their levels of intrinsic motivation. Finally, in a study similar to Shaw's (1984), Walker and Wang (2009) found that intrinsic motivation was the best predictor of whether Chinese/Canadians described an activity as leisure or non-leisure. In summary, there is support for Chinese people experiencing interest and, correspondingly, for the appropriateness and importance of using intrinsic motivation to understand Chinese people's leisure experiences.

Intrinsic Motivation Facilitation and Context

As noted earlier, Deci and Ryan (2000) posited that intrinsic motivation is fostered when three needs are satisfied: autonomy, competence, and relatedness. According to these theorists, however, whereas autonomy is essential to intrinsic motivation's facilitation relatedness' role may be more distal as "people often engage in intrinsically motivated behaviors (e.g., playing solitaire, hiking) in isolation, suggesting that relational supports may not be necessary as proximal factors in maintaining intrinsic motivation" (p. 235). Competence apparently falls somewhere in-between autonomy and relatedness, although this is somewhat unclear as Deci and Ryan (2000) also stated that, in order for intrinsically motivated behaviors "to be maintained, they require satisfaction of the needs for autonomy *and* [italics added] competence" (p. 233). Thus, because SDT holds that the need for relatedness is less common, proximal, and crucial, this study focuses on autonomy and competence and how satisfaction of these needs influences intrinsic motivation.

Also, as noted earlier, Ryan and Deci (2000) held that intrinsic motivation facilitation can vary across contexts. For example, Iso-Ahola (1999) has argued that autonomy was a necessary condition for intrinsic motivation "in general" and intrinsically-motivated leisure "in particular" (p. 44). An experience sampling method study by Csikszentmihalyi and Graef (1980) supported this argument, with participants reporting that leisure was free while paid work was largely "unfree." The researchers concluded that the relationship between freedom and intrinsic motivation was "quite unambiguous." Mannell and Bradley's (1986) research also supported Iso-Ahola's (1999) assertion, although it did uncover important interaction effects involving choice (i.e., no choice, choice), setting structure (i.e., low, high), and Rotter's (1966) concept of locus of control (i.e., internal, external). Specifically: (a) when the setting structure was high, both internals and externals became more psychologically involved under high choice conditions, however: (b) when the setting structure was low, externals became less involved with greater

choice whereas internals became more involved with greater choice.

Competence's facilitative effect on intrinsic motivation could also vary across contexts. Caldwell (2005) contended that: "although work is a context where competence can be experienced, people tend to choose to engage in activities in their leisure in which they feel they either are competent or can develop competence, thereby heightening the chance to feel competent and self-efficacious" (p. 19). Research by Iwasaki and Mannell (1999) did find that competence affected intrinsic motivation during a puzzle game, although the authors added that the nature of this activity may have increased competence's salience versus other types of leisure activities. Sansone and Morgan's (1992) work lends credence to this caveat, as they believed that different sub-contexts could be associated with different facilitators (e.g., competence with skill-based activities vs. curiosity with learning-based activities) and, moreover, that "attempts to facilitate intrinsic motivation through a certain pathway (such as perceived competence) may actually interfere with a concurrent pathway that is already successful" (p. 266). Additionally, Harackiewicz and Sansone (1991) proposed that competence valuation (i.e., an individual's emotional commitment to obtaining competence or the extent to which he or she cares about doing well in that situation) could also affect intrinsic motivation. The relevance of the above findings for this study will be described more fully shortly, but first it is necessary to define culture and to explicate how it affects the type of self-construal a person holds.

Culture and Self-Construal

After identifying six major classes of definitions of culture, Kroeber and Kluckhohn (1952) concluded their review with a definition of their own:

> Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievements of humans groups, including their embodiments in artefacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values; cultural systems may on the one hand be considered as products of action, on the other a conditioning elements of further action. (p. 181).

As the above illustrates, defining culture is an extremely difficult and often contentious task. (See Berry, Poortinga, Segall, & Dasen, 2002, for more on this topic.) Consequently, Chick (2006) and colleague (Chick & Dong, 2005) have stressed Goodenough's (1996) differentiation between culture as a phenomenal order (i.e., group characteristics that allow distinct cultures to be distinguished from one another) and culture in its ideational sense (i.e., what members of a group have to know in order to be accepted). Because conflating the two is problematic, the phenomenal approach typically informs the ideational approach (Chick & Dong). It is this phenomenal approach with its emphasis on claimed cultural identity that this study employs.

Markus and Kitayama (1991) contended that: "people in different cultures have strikingly different construals of the self" (p. 224). For example, people in the United States and Canada (or, more accurately, European/Americans and Eu-

ropean/Canadians) are more likely to have *independent* self-construals (and, therefore, to value being unique, asserting oneself, expressing one's inner attributes, and promoting one's own goals). In contrast, people in or from Asia are more likely to have *interdependent* self-construals (and, therefore, to value belonging, fitting in, maintaining harmony, restraining oneself, and promoting others' goals). Although Markus and Kitayama's conceptualization of self-construal is often seen as seminal, some social scientists have criticized it for being too broad. Various alternative frameworks have therefore been proposed. Triandis (1995), for instance, has developed a model of the self that includes equality and hierarchy as well as independence and interdependence (or what he refers to as individualism and collectivism), resulting in a two-by-two matrix composed of horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism (Figure 1). As with Markus and Kitayama's conceptualization this model recognized that individuals, and the cultures that encompass them, are multi-dimensional but that some dimensions are predominant over others (see also Chick, 2006; Li et al., 2007). For example, Walker and Wang (2005) found that 63% of Chinese/Canadians were collectivists, with approximately equal percentages being vertical and horizontal. These results were very similar to Triandis' expectations for non-immigrant Chinese, which seems reasonable given that 72% of Chinese in Canada are immigrants, the majority of whom arrived post-1990 (Lindsay, 2007).

Figure 1. Self-construal Matrix (Based on Triandis, 1995).

	Interdependent	**Independent**
Hierarchy	Vertical Collectivism	Vertical Individualism
Equality	Horizontal Collectivism	Horizontal Individualism

Culture, Self-Construal, Context, and Intrinsic Motivation Facilitation

Although SDT holds that the desire to be competent and autonomous is innate, Ryan and Deci (2000) have stated that because need satisfaction is itself fostered by the internalization of culturally-endorsed values these two needs' "relative salience" could vary cross-culturally. If so, it would follow that the relative salience of autonomy and competence on the facilitation of intrinsic motivation could also vary cross-culturally. Iyengar and Lepper (1999) found, for example, that while Anglo American children were intrinsically motivated the most when they personally chose aspects of an experiment, Asian American children were

intrinsically motivated the most when they were told that an in-group member (i.e., their mothers) had chosen for them. Similarly, Walker (2008) asked British/Canadian and Chinese/Canadian people how they perceived various facilitators would affect their intrinsic motivation during leisure with a close friend. As expected, competence and mutual choice (i.e., "Doing this activity because you *both* really want to") fostered intrinsic motivation more for British/Canadians than Chinese/Canadians but, unexpectedly, personal choice (i.e., "Doing this activity because you really want to") did not differ between the groups. Among Walker's (2008) recommendations was that future research: (a) examine self-construal's potential effect on the factors that facilitate intrinsic motivation, (b) investigate potential differences in intrinsic motivation facilitation between leisure and non-leisure contexts, and (c) employ everyday experience methods (Reis & Gable, 2000) to ameliorate problems associated with scenario-based research.

Based on Markus and Kitayama (1991) proposition that the type of self-construal a person has affects his or her cognitions, emotions, and motivations, Walker, Jackson, and Deng (2008) posited that self-construal could also be an intervening variable between culture and leisure constraints. Walker's et al. study of British/Canadian and Chinese/Canadians university students' leisure constraints empirically supported this proposition. Thus, because leisure constraints and leisure motivations are theorized to be in balance (Jackson & Scott, 1999), self-construal could also prove to be an intervening variable between culture and leisure motivations.

Triandis (1995) stated that individualists generally stressed fun, pleasure, and happiness and in generalizing Rokeach's (1973) work, he also held that individualists value freedom more than collectivists. Because fun is often associated with intrinsic motivation (Self-Regulation Questionnaires, 2003), and freedom fosters intrinsic motivation (Deci & Ryan, 1985), it follows that individualism likely positively affects this motivation, either directly, or in interaction with autonomy, or both. In contrast, Triandis stated that collectivists consider doing their duty to be more important than happiness and he cited a study (Caplan, Whitmore, & Choy, 1989) that indicated that Asian/Americans rejected individualistic values such as fun and excitement and emphasized instead collectivist values such as fulfilling obligations, respect for elders, and harmonious family life. Thus, for this study's Chinese/Canadian participants, when collectivism and autonomy interact intrinsic motivation will be inhibited, whereas when individualism and autonomy interact intrinsic motivation will be facilitated.

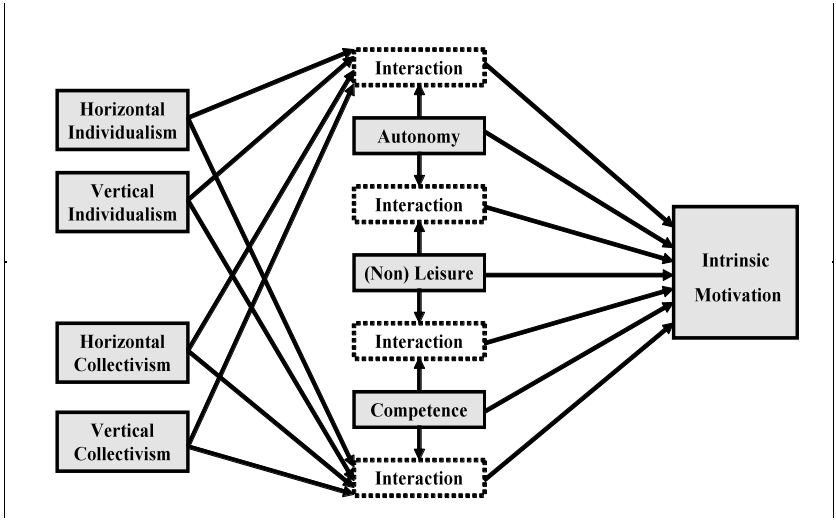
Triandis (1995) also stated that collectivists emphasize effort while individualists emphasize ability. Empirical research has supported this proposition. Heine et al. (2001) found that while Canadians persisted significantly longer on a second creativity test after they were told they had successfully completed an earlier test Japanese persisted significantly longer on the second test after they were told they had *failed* the first test. These findings were expected as a previous study (Heine, Lehman, Markus, & Kitayama, 1999) had led many of the same researchers to state that, in cultures such as Japan: "the individual has neither the liberty nor the inclination to inflate his or her perceptions of competence…[because] doing so likely would only serve to alienate the individual from others" (p. 771). Heine

et al. (1999) added, for Japanese it is less "being" good (i.e., competence) that is important than "becoming" better (i.e., effort). Unfortunately, Heine and colleagues did not measure self-construal in the above studies. However, as research has found that Canadians are generally more individualistic and Chinese are more collectivistic (Walker & Wang, 2005), it is extrapolated that for the Chinese/Canadian participants in this study, when collectivism and competence interact intrinsic motivation will be inhibited, whereas when individualism and competence interact intrinsic motivation will be facilitated.

In the same way that culture could affect self-construal and thus intrinsic motivation facilitation, so too could it influence context and therefore intrinsic motivation facilitation. For example, when Freysinger and Chen (1993) asked Mainland Chinese people what social setting their favorite leisure activities occurred in, 43% stated it was when they were alone. Similarly, Tafarodi, Lo, Yamaguchi, Lee, and Katsura's (2004) discovered that Mainland Chinese university students felt best able to express their "inner selves" during solitary hobbies and free time spent alone. Based on these findings it is anticipated that Chinese/Canadian will report that autonomy facilitated intrinsic motivation more during leisure than non-leisure.

In contrast, Chinese/Canadian participants in this study may report that competence facilitates intrinsic motivation less during leisure than non-leisure. The rationale for this proposition twofold. First, research has found that Chinese (Freysinger & Chen, 1993; Wang & Stringer, 2000; Yin, 2005) and Chinese/North Americans' (Yu & Berryman, 1996) leisure activities are typically more passive than Euro-North Americans. This finding, in conjunction with Sansone and Morgan's (1992) contention that competence may be may be more facilitative for skill-based and competition-focused activities, suggests an inhibitive effect. Second, Chinese and Chinese/North Americans' general leisure attitudes are typically less positive than Euro-North Americans, as well as less positive than their non-leisure (e.g.,

Figure 2. Variable Relationships Examined In This Study.



work, education) attitudes (Walker, Deng, & Chapman, 2007). These findings, in conjunction with Harackiewicz and Sansone's (1991) contention that competence valuation (i.e., the extent to which an individual cares about doing well in that situation) is also important, suggests that a low competence valuation in interaction with a high level of competence will have an inhibitive effect.

Hypotheses

Based on the literature reviewed above, the following eight hypotheses are put forth:

H1: Autonomy will facilitate Chinese/Canadians' overall intrinsic motivation.

H2: Competence will facilitate Chinese/Canadians' overall intrinsic motivation.

H3: Autonomy will facilitate Chinese/Canadians' intrinsic motivation more during leisure than non-leisure.

H4: Competence will facilitate Chinese/Canadians' intrinsic motivation less during leisure than non-leisure.

H5: Chinese/Canadians who are more individualistic and who experience high levels of autonomy will report higher levels of overall intrinsic motivation.

H6: Chinese/Canadians who are more collectivistic and who experience high levels of autonomy will report lower levels of overall intrinsic motivation.

H7: Chinese/Canadians who are more individualistic and who experience high levels of competence will report higher levels of overall intrinsic motivation.

H8: Chinese/Canadians who are more collectivistic and who experience high levels of competence will report lower levels of overall intrinsic motivation.

To aid readers' clarity and recollection of these eight hypotheses, Figure 2 illustrates the variable relationships examined in this study.

Method

Study Protocol and Instruments

Because scenario-based studies have inherent limitations (e.g., ecological validity), Walker (2008) recommended future research in this area employ everyday experience methods. According to Reis and Gable (2000), everyday experience studies not only "permit researchers to understand the relevance of social processes within everyday, self-selected situations but also to characterized those contexts in some detail" (p. 191). The consequences, they contended, are social psychological principles that have greater validity, comprehensiveness, and applicability.

The experience sampling method (ESM)(Csikszentmihalyi et al., 1977) is an often used everyday experience method. In this ESM study watch alarms were programmed to ring randomly once every 2 hours, between 8 am and 10 pm, for

12 days (including two weekends). When an alarm rang participants completed a diary composed of the six sets of questions. One, what time did the alarm ring and when did they begin their report. Two, what was the main activity they were doing. Three, who were they with. Four, how much did they agree or disagree (using a 7-point Likert scale) with three items measuring intrinsic motivation (i.e., "Because it was interesting;" "Because it was enjoyable;" "Because it was fun"; items based on SDT Intrinsic Motivation Inventory, 2006) and 18 items measuring extrinsic motivation and amotivation. Five, how much did they agree or disagree (using a 7-point Likert scale and a "not applicable" option) with an item measuring autonomy (i.e., "I felt it was my own choice to do this activity"), an item measuring competence (i.e., "I felt competent doing this activity"), and five items measuring five other potential facilitators, four of which Walker (2008) had tested previously. And six, whether, in their opinion, the main activity they were doing was work, leisure, both, or neither (Shaw, 1984). (*Note*: Only intrinsic motivation, autonomy, competence, and self-defined leisure/non-leisure are discussed hereafter.)

During an orientation session held shortly before data collection began, participants completed a two-part questionnaire. The first part asked them about their socio-demographic background (e.g., age, gender, income and education level, citizenship status). The second part asked them to indicate how much they agreed or disagreed (using a 7-point Likert scale) with 13 items measuring the four types of self-construal (e.g., horizontal individualism: "My personal identity independent from others is very important to me"; vertical individualism: "Winning is everything"; horizontal collectivism: "I feel good when I cooperate with others"; vertical collectivism: "It is my duty to take care of my family: even when I have to sacrifice what I want"; Triandis, 1995; Triandis & Gelfand, 1998). Participants then completed a sample diary before receiving a watch and 84 diaries arranged into 12 booklets.

The diary, background questionnaire, orientation information, and recruitment materials were translated from English into simplified Chinese by one individual and then a professional translator—who had not seen the original English-language documents—translated them from simplified Chinese back into English. The original English-language documents and the translated English-language documents were compared and minor revisions were made as necessary (i.e., back-translation; Brislin, 1970). It is important to note that the diary and the background questionnaire were only available in simplified Chinese. By limiting this choice two potential interaction variables were controlled for; participants': (a) level of acculturation, based on their language proficiency; and (b) ethnic salience (i.e., the psychological prominence of their ethnic identity), which Yip (2005) found was significantly higher when Chinese Americans used Chinese versus another language.

Study Sample

To recruit as broad a sample as possible, posters were distributed at a major public university and at a variety of other public (e.g., a Chinese community centre) and commercial settings (e.g., Chinese restaurants and supermarkets) in Edmonton, Canada. Paid advertisements were also placed in one English-language

and three Chinese-language newspapers and messages were posted on two Chinese internet bulletin boards. As a result, 41 individuals agreed to participate in the study, with 39 attending the orientation session.

Eight study participants' information was subsequently excluded because of data issues. (See the results section for more on this topic.) Thus, of the 31 remaining participants, 16 were female (52%) and 16 were single (52%). Fourteen participants (45%) were 25-34 years old while 29% were below and 26% were above this range. Twenty-one (68%) were either Canadian citizens or had permanent resident status. A slight majority had completed at least an undergraduate degree (52%); were employed full- or part-time (55%); and had household incomes of less than $25,000 Canadian (55%). Finally, thirty (97%) participants self-identified as being solely Chinese (the other was Chinese/Canadian), whereas 28 (81%) reported they usually spoke *Putonghuà* (i.e., Mandarin) or a Chinese dialect (e.g., Cantonese). The last is consistent with Chick's (2006) description of claimed cultural identity as phenomenally defined (Goodenough, 1996).

Finally, upon completion of the study participants were remunerated $100 Canadian.

Data Analysis

Data analysis consisted of three stages. First, activities identified by participants as work, both work and leisure, or neither work nor leisure were re-classified as "non-leisure" and dummy-coded "0" (self-identified leisure was coded "1"). Second, descriptive data (e.g., scale means, standard deviations, and intercorrelations) were calculated. And third, multilevel linear modeling (MLM), using the SAS mixed procedure, was performed. Sibthorp, Witter, Well, Ellis, and Voelkl (2004) have noted MLM's potential for park, recreation, and tourism research, and Reis and Gable (2000) have stated that it is the "gold standard" (p. 213) for analyzing daily experience data in psychological research. MLM's advantages, according to Reis and Gable (p. 211), included its ability to: (a) simultaneously estimate between- and within-person effects and their interaction; (b) handle multiple continuous predictors with an unbalanced number of cases per person (e.g., because of missing data); (c) use maximum likelihood estimation, a more precise and efficient method than least squares estimation; and (d) treat predictor variables as random, which most analysis of variance (i.e., ANOVA) programs can not. The last is important for experience sampling research because instantiation is the result of spontaneous activities and not, as in most experimental research, manipulations and counterbalancing (Reis & Gable, p. 211).

Before MLM was conducted the situational or level-1 variables (i.e., autonomy and competence) were centered around the person's mean; the personal or level-2 variables (i.e., horizontal individualism, vertical individualism, horizontal collectivism, and vertical individualism) were centred around the sample mean; and the cross-level interaction variables (e.g., autonomy and horizontal individualism) were centred around the sample mean (cf. Reis & Gable, 2000).

Based on the eight study hypotheses four nested MLM models, using maximum likelihood estimation and predicting intrinsic motivation, were developed. One, a random intercept only model. Two, a model with the intercept and the

two (i.e., autonomy, competence) level-1 predictors being random. Three, a model with the intercept and the three (i.e., autonomy, competence, leisure/non-leisure) level-1 predictors being random and the two level-1 interactions (i.e., autonomy and leisure/non-leisure, competence and leisure/non-leisure) being fixed. And four, a model with the intercept and the three (i.e., autonomy, competence, leisure/non-leisure) level-1 predictors being random, the two level-1 interactions (i.e., autonomy and leisure/non-leisure, competence and leisure/non-leisure) being fixed, and the four (i.e., horizontal individualism, vertical individualism, horizontal collectivism, and vertical individualism) level-2 predictors and the eight (e.g., autonomy and horizontal individualism, competence and horizontal individualism) cross-level interaction predictors also being fixed. As per Hox (2002), because it was hypothesized the cross-level interactions would be significant, all of direct effects, including the four types of self-construal, were included in this final model. Additionally, a chi-square test was conducted between each model and its successor to determine if there was a significant improvement in predicting intrinsic motivation. Finally, because of the number of predictors in each model and the total number of models a significance level of $p < .005$ was used to control for Type I error (i.e., incorrectly assuming that an observed difference exists).

Results

Of 3,276 possible diary reports, 401 were missing (12%) while another 273 (8%) were made 30 minutes or more after the alarm had rung. Examination of the data also showed that one participant had completed only two of his/her 84 reports; three participants had over 40% of their possible reports either missing or they were made 30 minutes or more after the alarm had rung (cf. Scollon, Kim-Prieto, & Diener, 2003); and four participants' autonomy and competence data was either missing or invariant. After deleting these individuals' data, 2,033 of 2,604 possible reports had complete data for all of this study's variables (i.e., intrinsic motivation, autonomy, competence, leisure/non-leisure, and the four types of self-construal). Put another way, the remaining 31 participants provided, on average, complete information on 66 of 84 (78%) experiences. This size sample exceeds Kreft's (1996) "30/30" rule (i.e., at least 30 participants and at least 30 diary entries) for MLM.

Table 1 reports the means and standard deviations of, and intercorrelations among, intrinsic motivation and its hypothesized facilitators.

The first MLM model (Table 2, far left column) included only the intercept, and the resulting intraclass correlation indicated that 33% of the variability in intrinsic motivation was associated with differences among the Chinese/Canadian study participants.

The second MLM model's results are shown in the second column of Table 2. Both autonomy and competence were significant at the pre-determined probability level of $p < .005$, and both had positive coefficients. A chi-square test of the intercept-only model and this model indicated that the latter was a significant improvement, χ^2 ($df = 7$) = 6852.0 - 5867.5 = 984.5, $p < .0001$.

The third MLM model's results are reported in the third column of Table 2. Z values confirmed that random slope coefficients were appropriate for autonomy,

Table 1: Means, Standard Deviations, and Intercorrelations of Intrinsic Motivation and Facilitators

	M	*SD*	Intercorrelations							
Measure			**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Intrinsic Motivation	4.83	1.40	—							
2. Autonomy	6.17	1.05	.38	—						
3. Competence	5.42	1.29	.42	.39	—					
4. (Non-) Leisure	0.42	0.49	.29	.19	.09	—				
5. Horizontal Individualism	5.75	0.85	.24	.12	.23	-.03	—			
6. Vertical Individualism	4.70	1.16	.21	.07	.01	-.06	.35	—		
7. Horizontal Collectivism	6.10	0.60	.14	.16	.35	-.02	.53	.12	—	
8. Vertical Collectivism	5.46	0.86	.18	.21	.23	.02	.43	.11	.46	—

Note. Intrinsic motivation, autonomy, competence, and the four types of self-construal were measured using a seven-point

Likert scale (1 = strongly disagree, 7 = strongly agree). (Non-) Leisure was dummy coded 0 = non-leisure, 1 = leisure.

competence, and leisure/non-leisure ($z = 2.27$, $p < .05$; $z = 1.88$, $p < .05$; $z = 3.47$, $p < .005$, respectively). Autonomy, competence, leisure/non-leisure, and the interactions between autonomy and leisure/non-leisure and competence and leisure/non-leisure were all significant at the predetermined probability level. All of the predictor coefficients were positive except for the interaction between competence and leisure/non-leisure. Because of the way leisure/non-leisure was dummy-coded the interactions indicated that the association between autonomy and intrinsic motivation was stronger during leisure whereas the association between competence and intrinsic motivation was stronger during non-leisure. A chi-square test of the previous model and this model suggested that the latter was a significant improvement, χ^2 ($df = 7$) = 5867.5 - 5427.5 = 440.0, $p < .0001$.

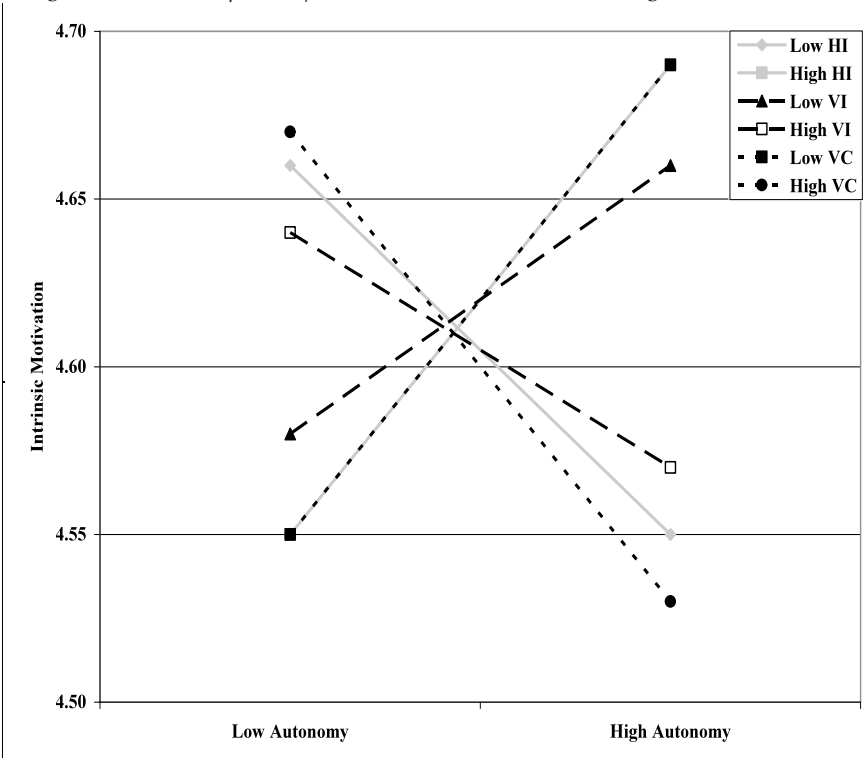
The final MLM model's results are reported in the far right column of Table 2. Autonomy, competence, leisure/non-leisure, and the interactions between autonomy and leisure/non-leisure and competence and leisure/non-leisure remained significant at the predetermined probability level and, once again, only the interaction between competence and leisure/non-leisure had a negative coefficient. Three cross-level interactions were also significant at the pre-determined probability level: (a) autonomy and horizontal individualism, with a positive coefficient; (b) autonomy and vertical individualism, with a negative coefficient; and (c) autonomy and vertical collectivism, with a negative coefficient. Data points at the 25th and 75th percentiles were selected to estimate the cross-level interaction regression lines (Hox, 2002). As shown in Figure 3, the association between low autonomy and increased intrinsic motivation was stronger for Chinese/Canadian participants who reported low horizontal individualism, or high vertical individualism, or high vertical collectivism. In contrast, the association between high autonomy and increased intrinsic motivation was stronger for participants who

Table 2: Multilevel Modeling of Intrinsic Motivation by Facilitators

	Model											
	Intercept Only			Level 1			Level 2			Levels 1 & 2		
Parameter	**Est.**	***SE***	***t***	**Est.**	***SE***	***t***	**Est.**	***SE***	***t***	**Est.**	***SE***	***t***
Intercept	4.81	0.15	32.85****	4.84	0.15	33.11****	4.56	0.16	27.86****	4.61	0.15	30.83****
Autonomy (A)	—	—	—	0.36	0.05	7.14****	0.22	0.05	4.51****	0.22	0.03	6.56****
Competence (C)	—	—	—	0.28	0.04	7.79****	0.35	0.04	9.63****	0.34	0.03	9.71****
(Non-) Leisure (L)	—	—	—	—			0.61	0.12	4.99****	0.60	0.12	4.94****
A x L	—	—	—	—			0.27	0.06	4.44****	0.29	0.06	5.00****
C x L	—	—	—	—			-0.17	0.04	-3.77***	-0.16	0.04	3.59***
Horizontal Ind. (HI)	—	—	—	—						0.16	0.16	0.97
Vertical Ind. (VI)	—	—	—	—						0.23	0.11	2.19*
Horizontal Col. (HC)	—	—	—	—						-0.01	0.25	-0.03
Vertical Col. (VC)	—	—	—	—						0.09	0.16	0.55
A x HI	—	—	—	—						0.17	0.04	4.27****
A x VI	—	—	—	—						-0.09	0.02	-3.52***
A x HC	—	—	—	—						-0.14	0.06	-2.33*
A x VC	—	—	—	—						-0.13	0.04	-3.85****
C x HI	—	—	—	—						-0.04	0.04	-1.01
C x VI	—	—	—	—						0.03	0.03	1.34
C x HC	—	—	—	—						-0.06	0.06	-1.10
C x VC	—	—	—	—						0.02	0.04	0.46
-2 Log Likelihood	6852.0			5867.5			5427.5			5392.8		
df	3			17			10			29		
$\chi 2$ Difference Test	—			984.5****			440.0****			34.7***		

Note. The intercept, autonomy, competence, and leisure/non-leisure were permitted to be random in all models. (Non-) Leisure was dummy coded 0 = non-leisure, 1 = leisure.
*p < .05. **p < .01. ***p < .005. ****p < .0001.

Figure 3. Autonomy X Self-construal Interaction Predicting Intrinsic Motivation



reported high horizontal individualism, or low vertical individualism, or low vertical collectivism. A chi-square test of the previous model and this model indicated that the latter was significantly better, χ^2 (df = 12) = 5427.5 - 5392.8 = 34.7, p < .005; however, the statistically significant residual (p < .0001) meant that model improvement was still possible.

Discussion

This study's purpose was to examine if autonomy and competence facilitated Chinese/Canadians' intrinsic motivation and to investigate whether these effects either differed between two contexts or interacted with self-construal or both. Findings indicated that both autonomy and competence fostered Chinese/Canadians' intrinsic motivation overall (*H1* and *H2*, respectively), and this is consistent with two of self-determination theory's (Deci & Ryan, 1985) propositions concerning how this process transpires. Although this outcome was unsurprising given SDT's status in mainstream psychology (and, to a slightly lesser extent, leisure studies) it is worth acknowledging as it supports the continued use of this framework when conducting research on Chinese people's motivations.

It was also found that autonomy fostered intrinsic motivation more during leisure than non-leisure (*H3*); a result concordant with SDT (i.e., in terms of variation across contexts not being unexpected; Ryan, 1995; Vallerand, 2000), as well

as leisure research (Csikszentmihalyi & Graef, 1980; Mannell & Bradley, 1986) and leisure theory (Iso-Ahola, 1999; Kelly, 1978; Neulinger, 1974). This result suggests that researchers may, however, want be cautious when generalizing findings involving autonomy across contexts (e.g., from leisure to education).

In contrast, but still in line with what was hypothesized, competence facilitated intrinsic motivation less during leisure than non-leisure (*H4*). There are at least three likely reasons for this finding. First, Chinese people's leisure attitudes are generally less positive than their work and education (i.e., non-leisure) attitudes (Walker et al., 2007) and, therefore, because leisure has a low competence valuation (Harackiewicz & Sansone, 1991) when a high level of competence does occur in this context an inhibitive rather than facilitative effect results. Second, Chinese people generally engage in passive leisure activities (Freysinger & Chen, 1993; Wang & Stringer, 2000), and because competence's facilitative effect is associated with skill-based and competition-focused activities (Sansone & Morgan, 1992) more common in work and education (i.e., non-leisure), when a high level of competence does occur during leisure an inhibitive rather than facilitative effect results. Lastly, because relationships with significant others occur more frequently during leisure (Kelly & Godbey, 1992), and Asian people view personal competence as a potential threat to social harmony (Heine et al., 1999), when a high level of competence does occur in this context an inhibitive rather than facilitative effect results.

The discovery that competence facilitated intrinsic motivation less during leisure than non-leisure is important because it conflicts with what leisure researchers have found (Iso-Ahola, 1999; Iwasaki & Mannell, 1999) and espoused (Caldwell, 2005) in the past. One reason this may have occurred is because at least some of these leisure studies (e.g., Iwasaki & Mannell), like many mainstream psychology studies (Heine et al., 1999), examined competence and intrinsic motivation in laboratory settings using puzzles games. That such activities are likely more competence-dependent than other activities has already been discussed, but also at issue is whether or not what takes place is really intrinsic motivation or, for that matter, truly leisure. As Waterman et al. (2003) have stated, "the trade-off for being able to control relevant variables has been the use of activities of limited personal importance or salience in the lives of research participants" (p. 1447). Finally, this result should not be misconstrued to mean that competence never facilitates Chinese/Canadians' intrinsic motivation during leisure. Rather, though it appears not do so during leisure overall, it seems likely that it does do so in certain relatively infrequent leisure sub-contexts (e.g., playing sports).

On the other hand, Chinese/Canadians who were more individualistic and who experienced high levels of competence did not report higher levels of intrinsic motivation overall (*H7*) nor did Chinese/Canadians who were more collectivistic and who experienced high levels of competence report lower levels of intrinsic motivation overall (*H8*). These findings suggest that either culture, rather than self-construal, may be the main factor affecting competence's facilitative effect on intrinsic motivation (as per Heine et al., 1999), or that self-construal does affect competence's facilitative effect on intrinsic motivation but only in certain sub-contexts. A recently published study of physical activity supports the latter,

as Sit, Kerr, and Wong (2008) found that Chinese women who were characterized by individuation and personal gains (values consistent with individualism) rated competence as a more important reason for participation than women who were concerned with others (a value consistent with collectivism).

Finally, as hypothesized, self-construal and autonomy did interact and influence intrinsic motivation, but only partially as hypothesized. Specifically: (a) Chinese/Canadians who were more vertical collectivistic and who experienced high levels of autonomy did report lower levels of intrinsic motivation overall, but while those who were more horizontal collectivistic also reported lower levels they did not do so at the more rigorous pre-determined probability level (*H6*). And (b) Chinese/Canadians who were more horizontal individualistic and who experienced high levels of autonomy did report higher levels of intrinsic motivation overall, but those who were more vertical individualistic actually reported lower levels of intrinsic motivation overall (*H5*). These results suggest that, while it is important to understand how the interactions between individualism and collectivism and autonomy affect intrinsic motivation, equally if not more important are how the interactions between horizontalism and verticalism and autonomy influence this process. For example, for horizontal individualists it appears that equality and independence may have an additive effect such that autonomy strongly facilitates intrinsic motivation whereas, for horizontal collectivists, it seems that equality may regulate interdependence such that autonomy inhibits intrinsic motivation to a small degree if at all. In contrast, for vertical individualists, it appears that independence may regulate hierarchy slightly such that autonomy inhibits intrinsic motivation, whereas for vertical collectivists it seems that hierarchy and interdependence may have an additive effect such that autonomy inhibits intrinsic motivation to a stronger degree. One reason for this last finding is that people who are vertical are more likely to have an external locus of control (Chen, Fok, Bond, & Matsumoto, 2006). This likelihood, in conjunction with Chinese people's penchant for less active (Freysinger & Chen, 1993; Wang & Stringer, 2000) leisure activities seems congruent with Mannell and Bradley's (1986) finding that externals in a low setting structure who had more free choice were also less psychologically involved (i.e., intrinsically motivated) in a puzzle game.

Although these results challenge the importance SDT places on autonomy as the primary facilitator of intrinsic motivation, this issue may be more a matter of operationalization than conceptualization. Specifically, in mainstream psychology autonomy has generally been operationalized in terms of personal choice (Walker et al., 2005), not unlike how perceived freedom has typically been operationalized (and, for that matter, also conceptualized) in leisure studies. But the following statement by a group of SDT researchers suggests a broader conceptualization of autonomy is possible, one that could provide insight into how an alternative form of autonomy could facilitate intrinsic motivation for vertical individualists and collectivists:

> Because autonomy concerns volition, persons who are strongly connected with others often function with those others' interest in mind. Put differently, if others are integrated within oneself (e.g., Aron & Aron, 1997), doing for or conforming with those others could be fully volitional. (Chirkov, Ryan, Kim, & Kaplan, 2003, p. 107)

Chirkov's et al. (2003) description is similar to Tyler's (2006) notion of legitimacy, whereby people "feel that they ought to defer to decisions and rules, following them voluntarily out of obligation rather than out of fear of punishment or anticipation of reward" (p. 375). Thus, for vertical collectivists and individualists autonomy as "voluntary deference" (Tyler, 2006, p. 378) may be more pertinent than autonomy as personal choice and, consequently, more facilitative of intrinsic motivation as well. (See also Bontempo, Lobel, & Triandis, 1990.)

Conclusion

According to Iso-Ahola (1980), "perceived freedom and competence are at the heart of intrinsically motivated leisure behavior" (p. 229). This study's results revealed, however, that for Chinese/Canadians autonomy facilitated intrinsic motivation for one type of self-construal but inhibited it for two others while competence fostered intrinsic motivation during non-leisure but inhibited it during leisure. The real value in this type of research is not what it tells us about a specific minority group but rather that it provides us with a rare opportunity to expand theory applicable to human leisure experience in general (Stodolska, 2000). In the case of this study, for example, it appears that an expanded self-determination theory, one that integrates personal factors (e.g., self-construal), compares contexts (e.g., leisure vs. non-leisure; and possibly even sub-contexts, e.g., pleasure reading vs. playing sports), and includes different forms of autonomy (e.g., personal choice, voluntary deference) and different facets of competence (e.g., perceived competence, competence valuation), is needed to understand people's intrinsically motivated experiences more fully. As Kelly (1999) so succinctly stated:

> One current cliché is that "it's a multivariate world out there." That is surely the case with leisure. Viewed simply from a methodological perspective, narrowing leisure explanations to a few variables that fit neatly into a research method, any method, is deceptive. Truncated designs, no matter how sophisticated the statistical programs employed or how accepted the instrumentation, cannot encompass the variegated reality of leisure. (p. 147).

In an earlier article, Walker et al. (2005) outlined some implications the concept of self-construal could have for leisure practice, using Rossman and Schlatter's (2000) description of benefits-based programming (BBP) as an exemplar. BBP is an outcome-oriented approach whereby practitioners' efforts focus upon the production of identified benefits using a four-component model that includes: (a) targeting social issues and selecting protective factors; (b) writing performance objectives and identifying, processing, and monitoring specific activities; (c) summarizing benefit outcomes; and (d) communicating successes (Rossman & Schlatter, 2000). Walker et al. asserted that many of the benefits identified, while appropriate for individualistic selves, could be detrimental to collectivistic selves—and the current study's findings regarding autonomy at least partially support their assertion. (Similarly, study results suggest that competence could be a benefit for Euro-North Americans but, at least at in terms of the leisure context, a detriment for Chinese/Canadians.) To ameliorate these issues Walker et al. recommended leisure practitioners: (a) understand culture, self-construal, and intrinsic motivation

before using the benefits approach to leisure philosophy or implementing BBP; (b) be aware of the language they use when communicating the benefits of leisure to the general public, funding sources, and stakeholders; and (c) fully understand the benefits approach to leisure philosophy (Driver, 2002), especially the underlying proposition that leisure services can result in both positive and negative outcomes (Driver & Bruns, 1999). Walker et al. added that to not do so could lead a practitioner or his or her agency to commit indirect institutional discrimination; that is: "Organizationally or community prescribed practices, motivated by neither prejudice nor intent to harm that nevertheless have a negative and differential impact on members of a subordinate group" (Feagin & Eckberg, 1980, p. 12).

Walker's et al. (2005) practical implications are described at some length because a new edition of Rossman and Schlatter's textbook has recently been published. In their introductory chapter, Rossman and Schlatter (2008) state that "Programmers should remember that leisure must be freely chosen from the perspective of the individual making the choice" (p. 7) and "Participants will conclude that they were intrinsically motivated when programs provide opportunities for developing competence, self-expression, self-development, or self-realization" (p. 8). Unfortunately, neither culture nor self-construal are discussed nor are these concepts raised later when benefits-based programming is described. These omissions beg the question: Is it not only that we are "speaking only to ourselves" (Samdahl & Kelly, 1999) but also, at least for minority group researchers and recreation educators (and by extension future practitioners), we are not even speaking to each other? If the answer is indeed yes then perhaps this topic should be featured at a future National Recreation and Parks Association conference or in a special issue of the *Journal of Leisure Research, Journal of Park and Recreation,* or *Schole*. Another, more authoritarian, approach would be for publishing companies such as Venture and Sagamore to insist that authors include a chapter on ethnic and/or cultural similarities and differences and the implications thereof for leisure theory and recreation practice.

As with all research there are limitations to this study. Chief among these is the interpretation of Chinese leisure, intrinsic motivation facilitation, and self-construal based on a sample of Chinese/Canadians. Triandis (1972; as cited in Yang, 1986) considered this type of research to be "pseudoetic" rather than "etic" and Yang added that, "any cross-cultural differences found in this type of study should be interpreted with special caution" (p. 108). It is possible, for example, that one reason participants in this study came to Canada is that they were more individualistic than most Mainland Chinese and so "fit" better into Canadian society. As well, even though participants had to be able to read Chinese in order to complete their diaries, their non-linguistic acculturation levels are unknown. Similarly, because participants did not report their birth country this variable's potential effect is also unknown. Finally, as one of the reviewers correctly observed this study's conceptualizations of autonomy and competence reflected a very Western view of the factors believed to affect intrinsic motivation. The decision to focus on these two variables and to operationalize them in this manner was not accidental, however. Rather, the researcher chose to do so for two reasons: (a) based on his desire to be consistent with SDT as it is currently conceptualized; and

(b) because multilevel linear models often fail to converge when there are a large number of variables and a small number of situations. (And the latter would likely have been the case if the other potential facilitators that were measured—many of which are consistent with past cross-cultural research [e.g., mutual autonomy, social support, role satisfaction]—were also included, as the number of variables and interactions would have more than quintupled while, because all of these factors involve social interaction, the number of applicable situations would have been more than halved.)

These issues could be overcome however if future research is conducted with Euro-North Americans, Mainland Chinese, and members of other ethnic and cultural groups. Future research should also include different forms of autonomy (e.g., personal choice, voluntary deference), facets of competence (e.g., perceived competence, competence valuation), and social interaction-dependent variables (e.g., belongingness, mutual autonomy, social support, role satisfaction). As well, comparisons across different leisure sub-contexts (e.g., pleasure reading vs. playing sports) should be made. Further research on self-construal's vertical and horizontal dimensions and their potential effects on leisure behavior is also needed. Unfortunately, to date, hierarchy and equality have seldom been studied in the social sciences generally (Oyserman, 2006) or in leisure studies specifically (Walker & Kiecolt, 1995). The recent development and validation of an individual-difference measure (i.e., Status Differentiation Scale; Matusumoto, 2007) could, potentially, abet such research. Also recommended is the continued use of the experience sampling method (Csikszentmihalyi et al., 1977), ideally with large sample sizes.

In a recent article on race and ethnicity in leisure behavior, a group of leading scholars stated: "Due to the restructuring of society along racial and ethnic lines, research that examines the factors that facilitate and constrain the leisure experiences of various groups will be needed" (Shinew et al., 2006, p. 405). This study answers their call by examining Chinese/Canadians' intrinsic motivation, and its discovery that the intervening variable of self-construal can both foster and inhibit this variable makes a substantial contribution to leisure theory and practice.

References

Aron, A., & Aron, E. (1997). Self-expansion motivation and including other in the self. In S. Duck (Ed.), *Handbook of personal relationships: Theory, research, and interventions* (2nd ed. pp. 251-270). Chichester, England: Wiley.

Barnes, J., & Bennett, C. (2002). *The Asian population: 2000*. Retrieved January 10, 2008, from http://www.census.gov/prod/2002pubs/c2kbr01-16.pdf.

Berry, J., Poortinga, Y., Segall, M., & Dasen, P. (2002). *Cross-cultural psychology: Research and applications* (2nd ed.). Cambidge, UK: Cambridge University Press.

Bontempo, R., Lobel, S., & Triandis, H. (1990). Compliance and value internalization in Brazil and the U.S.: Effects of allocentrism and anonymity. *Journal of Cross-Cultural Psychology, 21*, 200-213.

Brislin, R.W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1,* 185–216.

Caldwell, L. (2005). Leisure and health: Why is leisure therapeutic? *British Journal of Guidance & Counselling, 33*, 7-26.

Caplan, N., Whitmore, J., & Choy, M. (1989). *The boat people and achievement in America: A study of family life, hard work, and cultural values*. Ann Arbor, MI: University of Michigan Press.

Cheeseman Day, J. (2007). *National population projections*. Retrieved October 26, 2007, from http://www.census.gov/population/www/pop-profile/natproj.html.

Chen, S., Fok, H., Bond, & M., Matsumoto, D. (2006). Personality and beliefs about the world revisited: Expanding the nomological network of social axioms. *Personality and Individual Differences, 41*, 201-211.

Chick, G. (2006). Leisure and cultural identity. In Edgar L. Jackson (Ed.), *Leisure and the quality of life: Impacts on social, economic, and cultural development: Hangzhou Consensus* (pp. 164-178). Zhejiang, China: Zhejiang University Press.

Chick, G., & Dong, E. (2005). Cultural constraints on leisure. In E. L. Jackson (Ed.), *Constraints to leisure* (pp. 169-183). State College, PA: Venture.

Chirkov, V., Ryan, R., 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*, 97-110.

Csikszentmihalyi, M., & Graef, R. (1980). The experience of freedom in daily life. *American Journal of Community Psychology, 8*, 401-414.

Csikszentmihalyi, M., Larson, R., & Prescott, S. (1977). Validity and reliability of the experience-sampling method. *Journal of Nervous and Mental Disease, 175*, 526-536.

Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.

Deci, E., & Ryan, R. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Driver, B. L. (2002). Reality testing. *Journal of Leisure Research, 34*, 79-88.

Driver, B. L., & Bruns, D. L. (1999). Concepts and use of the benefits approach to leisure. In E. J. Jackson & T. L. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century* (pp. 349-370). State College, PA: Venture.

Feagin, J. R., & Eckbert, D. L. (1980). Discrimination: Motivation, action, effects, and context. *Annual Review of Sociology, 6*, 1-20.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218-226.

Freysinger, V., & Chen, T. (1993). Leisure and family in China: The impact of culture. *World Leisure and Recreation, 35*, 22-24.

Goodenough, W. H. (1996). Culture. In D. Levinson & M. Ember (Eds.), *Encyclopedia of cultural anthropology* (Vol 1: pp 291-299). New York: Henry Hold and Company.

Harackiewicz, J., & Sansone, C. (1991). Goals and intrinsic motivation: You can get there from here. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement: goals and self-regulatory processes* (Vol. 7, pp. 21-45). Greenwich, CT: JAI.

Heine, S., Lehman, D., Markus, H., & Kitayama, S. (1999). Is there a universal need for positive self-regard? *Psychological Review, 106*, 766-794.

Heine, S., Kitayama, S., Lehman, D., Takata, T., Ide, E., Leung, C., & Matsumoto, H. (2001). Divergent consequences of success and failure in Japan and North America: An investigation of self-improving motivations and malleable selves. *Journal of Personality and Social Psychology, 81*, 599-615.

Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, NJ: Lawrence Erlbaum.

Iso-Ahola, S. (1999). Motivational foundations of leisure. In E. Jackson & T. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century* (pp. 35-51). State College, PA: Venture.

Iwasaki, Y., & Mannell, R. (1999). Situational and personality influences on intrinsically motivated leisure behavior: Interaction effects and cognitive processes. *Leisure Sciences, 21*, 287-306.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspectiveon intrinsic motivation. *Journal of Personality and Social Psychology, 76*, 349-366.

Izard, C. E. (1977). *Human emotions*. New York: Plenum.

Izard, C. E., & Ackerman, B. (2000). Motivational, organizational, and regulatory functions of discrete emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 253-264). New York: Guilford.

Jackson, E., & Scott, D. (1999). Constraints to leisure. In E. Jackson (Ed.), *Leisure sciences: Prospects for the twenty-first century* (pp. 299-321). State College, PA: Venture.

Kelly, J. R. (1978). A revised paradigm of leisure choices. *Leisure Sciences, 1*, 345-363.

Kelly, J. R., & Godbey, G. (1992). *The sociology of leisure*. State College, PA: Venture.

Kelly, J. R. (1999). Leisure behavior and styles: Social, economic, and cultural factors. In E. Jackson & T. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century*. State College, PA: Venture.

Kreft, I. (1996). *Are multilevel techniques necessary? An overview, including simulation studies*. Los Angeles, CA: California State University.

Li, C., Chick, G., Zinn, H., Absher, J., & Graefe, A. (2007). Ethnicity as a variable in leisure research. *Journal of Leisure Research, 39*, 514-545.

Lindsay, C. (2007). *The Chinese community in Canada*. Retrieved February 12, 2008 from www.statcan.ca/english/freepub/89-621-XIE/89-621-XIE2006001.pdf.

Malone, N., Baluja, K., Costanzo, J., & Avis, C. (2003). *The foreign-born population*. Retrieved October 26, 2007, from http://www.census.gov/prod/2003pubs/c2kbr-34.pdf.

Mannell, R., & Kleiber, D. (1997). *A Social Psychology of Leisure*. State College, PA: Venture.

Mannell, R., & Bradley, W. (1986). Does greater freedom always lead to greater leisure? Testing a person X environment model of freedom and leisure. *Journal of Leisure Research, 18*, 215-230.

Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.

Marr, A. (2004). *In the zone: A bio-behavioristic analysis of Csikszentmihalyi's flow experience*. Retrieved November, 15, 2004, from http://www.homestead.com/flowstate/files/Csikszentmihalyi_three.html.

Matsumoto, D. Individual and cultural differences on status differentiation. The status differentiation scale. *Journal of Cross-Cultural Psychology, 38*, 413-431.

McGowan, K. (2004). Pay attention to this. *Psychology Today, 37*, 84-91,103.

Neulinger, J. (1981). *The psychology of leisure* (2nd ed.). Springfield, IL: Charles C. Thomas.

Oyserman, D. (2006). High power, low power, and equality: Culture beyond individualism and collectivism. *Journal of Consumer Psychology, 16*, 352-356.

Reis, H., & Gable, S. (2000). Event-sampling and other methods for studying everyday experience. In H. Reis & C. Judd (Eds.), Handbook of research methods in social and personality psychology (pp. 190-222). Cambridge, UK: Cambridge University Press.

Rokeach, M. (1973). *The nature of human values*. New York: Basic Books.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80*, 1-28.

Rossman, J. R., & Schlatter, B. E. (2000). *Recreation programming: Designing leisure experiences* (3rd ed.). Champaign, IL: Sagamore.

Rossman, J. R., & Schlatter, B. E. (2008). *Recreation programming: Designing leisure experiences* (5th ed.). Champaign, IL: Sagamore.

Russell, J., & Yik, M. (1996). Emotions among the Chinese. In M. H. Bond (Ed.), *The Handbook of Chinese Psychology* (pp. 166-188). Hong Kong: Oxford University Press.

Ryan, R. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397-427.

Ryan, R., & Deci, E. (2000). Self-Determination Theory and the facilitation of intrinsic motivation, social development, & well-being. *American Psychologist, 55*, 68-78.

Samdahl, D., & Kelly, J. (1999). Speaking only to ourselves? Citation analysis of *Journal of Leisure Research* and *Leisure Sciences*. *Journal of Leisure Research, 31*, 171-180.

Sansone, C., & Morgan, C. (1992). Intrinsic motivation and education: Competence in context. *Motivation and Emotion, 16*, 249-270.

Scollon, C., Kim-Prieto, C., & Diener, E. (2003). Experience sampling: Promises and pitfalls, strengths and weaknesses. *Journal of Happiness Studies, 4*, 5-34.

SDT Intrinsic Motivation Inventory. (2006). Retrieved March 26, 2008, from http://www.psych.rochester.edu/SDT/measures/intrins_scl.html.

Self-Regulation Questionnaires. (2003). Retrieved February 7, 2003, from http://www.psych.rochester.edu/SDT/measures/selfreg.html.

Shaw. S. (1984). The measurement of leisure: A quality of life issue. *Loisir et Societe / Society and Leisure,7*, 91-107.

Shinew, K., Stodolska, M., Floyd, M., Hibbler, D., Allison, M., Johnson, C., & Santos, C. (2006). Race and ethnicity in leisure behavior: Where have we been and where do we need to go? *Leisure Sciences, 28*, 403-408.

Sibthorp, J., Witter, E., Wells, M., Ellis, G., & Voelkl, J. (2004). Hierarchical linear modeling in park, recreation, and tourism research. *Journal of Leisure Research,* 36, 89-100.

Silvia, P. (2006). *Exploring the psychology of interest*. Oxford: Oxford University Press.

Sit, C., Kerr, H., & Wong, I. (2008). Motives for and barriers to physical activity participation in middle-aged Chinese women. *Psychology of Sport and Exercise, 9*, 266-283.

Statistics Canada. (2003). *Canada's ethnocultural portrait: The changing mosaic*. Retrieved February 21, 2003, from www12.statcan.ca/english/ census01/Products/Analytic/companion/etoimm/canada.cfm.

Statistics Canada. (2005). *Canada's visible minority population in 2017*. Retrieved March 22, 2005 from http://www/statcan.ca?Daily/English/050322/d050332b.htm.

Stodolska, M. (2000). Looking beyond the invisible: Can research on leisure of ethnic and racial minorities contribute to leisure theory? *Journal of Leisure Research, 32*, 156-160.

Tafarodi, R., Lo, C., Yamaguchi, S., Lee, W., & Katsura, H. (2004). The inner self in three countries. *Journal of Cross-Cultural Psychology, 35*, 97-117.

Triandis, H. (1995). *Individualism & collectivism*. Boulder, CO: Westview Press.

Triandis, H., & Gelfand, M. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*, 118-128.

Tsai, E., & Coleman, D. (2007). Preferences for active recreation and perceived constraints to regular active recreation participation: A cross-cultural study of Hong Kong and Australian university students. *Leisure / Loisir, 31*, 155-189.

Tyler, T. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology, 57*, 375-400.

Vallerand, R. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*, 312-318.

Volkow, N., Wang, G-J., Fowler, J., Telang, F., Maynard, L., Logan, J., Gatley, S., Pappas, N., Wong, C., Vaska, P., Zhu, W., & Swanson, J. (2004). Evidence that methylpheniadate enhances the saliency of a mathematical task by increasing dopamine in the human brain. *American Journal of Psychiatry, 161*, 1173-1180.

Walker, G. J. (2008). The effects of ethnicity and gender on facilitating intrinsic motivation during leisure with a close friend. *Journal of Leisure Research, 40,* 290-311.

Walker, G. J., & Deng, J. (2003). Comparing leisure as a subjective experience with the Chinese experience of *rùmí*. *Leisure / Loisir, 28*, 245-276.

Walker, G. J., Deng, J., & Chapman, R. (2007). Leisure attitudes: A follow-up study comparing Canadians, Chinese in Canada, and Mainland Chinese. *World Leisure Journal, 49,* 207-215.

Walker, G. J., Deng, J., & Dieser, R. (2005). Culture, self-construal, and leisure theory and practice. *Journal of Leisure Research,* 37, 77-99.

Walker, G. J., Jackson, E. L., & Deng, J. (2008). The role of self-construal as an intervening variable between culture and leisure constraints: A comparison of Canadian and Mainland Chinese university students. *Journal of Leisure Research, 40,* 90-109.

Walker, G. J., & Kiecolt, K. J. (1995). Social class and wilderness use. *Leisure Sciences, 17*, 295-308.

Walker, G. J., & Wang, X. (2005). Further considerations on culture, self-construal, and leisure theory and practice. *Book of abstracts: Eleventh Canadian Congress on Leisure Research; 2005 May 18-20* [CD]. Nanaimo, BC: Canadian Assoc. for Leisure Studies.

Walker, G. J., & Wang, X. (2008). A cross-cultural comparison of Canadian and Mainland Chinese university students' leisure motivations. *Leisure Sciences, 30,* 179-197.

Walker, G. J., & Wang, X. (2009). The meaning of leisure for Chinese/Canadians. *Leisure Sciences, 31,* 1-18.

Wang, J., & Stringer, A. (2000). Impact of Taoism on Chinese leisure. *World Leisure, 42*, 33-41.

Waterman, A., Schwartz, S., Goldbacher, E., Green H., Miller, C., & Philip, S. (2003). Predicting the subjective experience of intrinsic motivation: The roles of self-determination, the balance of challenge and skills, and self-realization values. *Personality and Social Psychology Bulletin, 29*, 1447-1458.

Yang, K. (1986). Chinese personality and its change. In M. Bond (Ed.), *The psychology of the Chinese people* (pp. 106-170). Hong Kong: Oxford University Press.

Yang, K., & Bond, M. (1980). Ethnic affirmation by Chinese bilinguals. *Journal of Cross-Cultural Psychology, 11*, 411-425.

Yin, X. (2005). New trends of leisure consumption in China. *Journal of Family and Economic Issues, 26*, 175-182.

Yu, P., & Berryman, D. L. (1996). The relationship among self- esteem, acculturation, and recreation participation of recently arrived Chinese immigrant adolescents. *Journal of Leisure Research*, *28*, 251-273.