

## Why Do Westerners Self-Enhance More than East Asians?

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### Abstract

*Much research finds that Westerners self-enhance more than East Asians, with the exception of studies using the implicit associations test for self-esteem (IATSE). We contrasted Japanese and Canadians on a new measure of self-enhancement under low- and high-attentional load to assess whether cultural differences vary across controlled and automatic processes. Participants also completed measures of relational mobility and the IATSE. Results indicated that Japanese and Asian-Canadians were more self-critical than Euro-Canadians, both under high- and low-attentional load. This cultural difference was partially mediated by relational mobility. The IATSE showed no cultural differences, but this measure did not positively correlate with any of the other measures in the study, suggesting that it is not a valid measure of 'true' self-feelings. Copyright © 2009 John Wiley & Sons, Ltd.*

Key words: culture; relational mobility; self-esteem; self-enhancement; automatic processes

### INTRODUCTION

The question of the universality of self-enhancement motivations has received considerable attention in the literature. Indeed, whereas much previous research among Western psychologists assumed that self-enhancement motivations were universal (Brown, 1986; Maslow, 1943; Tesser, 1988), a variety of studies conducted in other cultural contexts has revealed less evidence for this motivation (Heine, Lehman, Markus, & Kitayama, 1999; Mezulis, Abramson, Hyde, & Hankin, 2004). For example, Mexican-Americans (Tropp & Wright, 2003), Native Americans (Fryberg & Markus, 2003), Chileans (Heine & Raineri, 2009) and Fijians (Rennie & Dunne, 1994) score lower on various measures of self-enhancement than do Westerners. Indeed, in some cultural contexts, most notably East Asian ones, evidence for self-serving biases is particularly weak. A recent meta-analysis on

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self-enhancing motivations among Westerners and East Asians found significant cultural differences in 30 of the 31 methodologies that were used (Heine & Hamamura, 2007). The average effect size for the cultural differences across all studies was large ( $d = .84$ ). Furthermore, whereas the average effect size for self-enhancing motivations was large within the Western samples ( $d = .86$ ), these motivations were largely absent among the East Asian samples ( $d = -.02$ ) with Asian-Americans falling in between ( $d = .33$ ). Apparently, East Asians possess little motivation to self-enhance (Heine et al., 1999).

However, one methodology from the above meta-analysis did not find evidence for a cultural difference in self-enhancing motivations; namely, comparisons of implicit self-esteem using the implicit associations test for self-esteem measure (IATSE; Greenwald & Farnham, 2000) did not reveal cultural differences between East Asian and North American samples (Kitayama & Uchida, 2003; Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007; but for an exception to this null pattern, see Szeto, Sorrentino, Yasunaga, Otsubo, Kouhara, & Sasayama, in press). The IATSE operationalizes self-esteem as a function of people's reaction time in categorizing positive and negative words, and self-related and other-related words. In one trial during the task, response keys are congruent with associations that appear to be consistent with high self-esteem. For example, 'self' and 'pleasant' categories may share the same response key. This means that participants must press this same key in order to correctly categorize words such as 'mine' and 'comfortable', and it is assumed that a strong association between these concepts is indicative of (relatively) high self-esteem. In another trial, the configuration of response keys is congruent with associations that appear to be consistent with low self-esteem (e.g. 'self' and 'unpleasant' categories share the same key, and correctly categorizing 'my' and 'painful' words requires pressing this key). The difference in latencies between trials is used to compute the measure of implicit self-esteem. The lack of cultural variation found with the IATSE has been interpreted as evidence that there are no cultural differences in implicit self-esteem, and that the cultural differences that have emerged in other methodologies are the result of self-presentational biases (either East Asians feigning modesty, or Westerners feigning bravado; Yamaguchi et al., 2007).

This alternative account regarding why East Asians appear to self-enhance less than Westerners assumes that the IATSE is a measure that is capable of assessing people's true, underlying motivations for self-esteem. Is such a claim warranted? At present, the validity evidence for the IATSE measure is mixed. On the one hand, different trials of the IATSE that use the same reference categories with slightly different stimuli tend to correlate moderately with each other (e.g.  $r = .43$ ; Greenwald & Farnham, 2000), so there is some test-retest reliability. Different blocks of the IAT also are interrelated and predict each other in expected ways (Greenwald, Banaji, Rudman, Farnham, Nosek, & Mellott, 2002), and the IATSE has shown decent split-half internal consistency ( $r = .69$ ; Bosson, Swann, & Pennebaker, 2000). Moreover, relationships with the IATSE have been found with a number of external criteria, such as body dysmorphic disorder (Buhlmann, Teachman, Gerbershagen, Kikul, & Rief, 2008), somatic complaints/aches and pains (Robinson, Mitchell, Kirkeby, & Meier, 2006), neurotic distress (interacting with agreeableness; Robinson & Wilkowski, 2006), jealousy (DeSteno, Valdesolo, & Bartlett, 2006), gender identity (Aidman & Carroll, 2003), self-deception and responses to failure (Greenwald & Farnham, 2000; Meagher & Aidman, 2004). However, with the single exception of gender identity (Aidman & Carroll, 2003), these studies did not demonstrate that the IATSE was a superior predictor of the criteria than explicit measures of self-esteem.

The IATSE fluctuates somewhat in response to various experimental manipulations, such as priming with positive words (Dijksterhuis, 2004), threats to gender identity, social rejection and thoughts that one is racist (Rudman, Dohn, & Fairchild, 2007). In addition, mismatches between the IATSE and explicit self-esteem are predictive of narcissism and defensiveness (Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003; Schröder-Abé, Rudolph, Wiesner, & Schütz, 2007; Zeigler-Hill, 2006), anger suppression, nervousness and depressive attributional style (Schröder-Abé, Rudolph, & Schütz, 2007), suicidal ideation (Franck, De Raedt, Dereu, & Van den Abbeele, 2007), compensatory conviction (McGregor & Marigold, 2003), estimates that there is consensus regarding one's personal beliefs about social issues (McGregor, Nail, Marigold, & Kang, 2005), discrimination towards out-group members (Jordan, Spencer, & Zanna, 2005) and overrepresentation (Olson, Fazio, & Hermann, 2007). This evidence is all consistent with the notion that the IATSE is a valid measure of some kind of feelings of positive self-regard.

On the other hand, there are a number of ways that the validity evidence for the IATSE is not so promising (see also Fiedler, Messner, & Bluemke, 2006; Nosek, Greenwald, & Banaji, 2006). High IATSE can occur by having a negative attitude towards the 'other' reference category without having positive attitudes about oneself (Blanton, Jaccard, Christie, & Gonzales, 2007; Karpinski, 2004; see also Pinter & Greenwald, 2005). 'Positive associations' obtained by the IAT may also be an artefact of rule-based categorizations that are induced by the nature of the task, rather than by any actual associations between concepts (Mitchell, 2004). In one investigation, Karpinski (2004) found that two IATSE scores in which the 'other' reference category was defined in a different way (i.e. an unspecified other *or* a best friend) were uncorrelated ( $r = -.03$ ). Furthermore, the IATSE correlates weakly, if at all, with explicit measures of self-esteem (average  $r = .13$  from a recent meta-analysis; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005), and it does not correlate positively with other implicit measures of self-esteem, nor with various external criteria (Bosson et al., 2000). Several studies have also found evidence that scores on the IAT (with other attitudes) can be faked by savvy participants and may not be indicative of only automatic processes (Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005; Fiedler, & Bluemke, 2005; Kim, 2003; Steffens, 2004; see also Banse, Seise, & Zerbes, 2001; Eglloff & Schmukle, 2002). The fact that the IAT in general is so sensitive to experimental manipulations is suggestive that it may not represent a stable, enduring individual difference variable (Gawronski, LeBel, & Peters, 2007; see also Glen & Banse, 2004). Moreover, our own conversations with various researchers suggest that there have been an enormous number of studies conducted with the IATSE (indeed, it seems that there are relatively few researchers studying the self-concept who have not used the IATSE in at least one of their studies), and, in this sense, one would expect there to be more existing validity evidence if the IATSE really was a reliable and valid individual difference measure of positive self-feelings. We note, that in our above review of positive validity evidence of the IATSE that most of the evidence derives from studies assessing a mismatch between IATSE and explicit self-esteem scores (e.g. Jordan et al., 2003), which renders it difficult to assess the unique predictive power of the IATSE by itself. We could only find one study that demonstrated greater predictive validity of the IATSE compared with explicit self-esteem measures (Aidman & Carroll, 2003). In sum, there are a number of reasons to question the notion that the IATSE is a measure of true self-esteem.

We submit that the validity of the IATSE remains largely an open question, and thus it is not clear whether cultural differences in self-enhancement represent differences in people's

'true feelings' or in self-presentational biases (but see Heine et al., 2001; Heine, Takata, & Lehman, 2000; Kurman, 2003, for further discussion). To distinguish between these two explanations of self-enhancement, it would be informative to assess whether cultural differences in self-esteem measures better reflect differences in controlled or automatic processes. For example, would there be similar cultural differences when people evaluate themselves under cognitive load, and thus are more under the influence of automatic processes? The present study seeks to answer this question by testing whether cultural differences in self-evaluation are found while participants are under attentional load, and compare these results to the IATSE. If assessments of automatic self-evaluations converged with results found with the IATSE, we could be more confident that cultural differences in self-enhancement are largely a matter of self-presentation. If, however, the results between the IATSE and automatic assessments of self-evaluations do not converge, this would be a further validity challenge to the IATSE.

### **Explaining cultural differences in self-enhancement: the case of relational mobility**

A number of different theoretical accounts have been offered to explain the cultural differences in self-enhancement that have previously been found (see Heine, 2005; Heine & Buchtel, 2009, for reviews). For example, self-enhancement has been found to be positively associated with independence (e.g. Heine et al., 1999; Oyserman, Coon, & Kimmelmeier, 2002), and entity theories of self (e.g. Heine et al., 2001), and negatively associated with dialectical thinking (Spencer-Rodgers, Peng, Wang, & Hou, 2004). Another main goal of the present study is to consider a novel account—people's ease at forming new relationships is associated with a higher motivation for self-enhancement.

Recently, there has been resurgence in the focus on societal level factors (e.g. social structure, social context, institutions), when interpreting cultural differences in behaviour and psychological tendencies (e.g. Cohen, 2001; Matsumoto, 2007; Yamagishi, Hashimoto, & Schug, 2008). Particularly, there has been an increase in investigations into the ways in which both actual and possible movement between relationships, groups or localities in a society can affect the behaviours and psychological processes of the people who reside within the society (Adams, 2005; Anderson, Adams, & Plaut, 2008; Kitayama, Ishii, Imada, Takemura, & Ramaswamy, 2006; Oishi, Lun & Sherman, 2007; Yamagishi, & Yamagishi, 1994). Yuki et al. (2007) have named 'relational mobility' as the amount of opportunities available for individuals to select new relationship partners, when necessary, in a given society or social context. Yuki and colleagues' relational mobility scale (Yuki et al., 2007), which assesses individuals' perceptions of relational mobility in their immediate social environment, has successfully mediated various cross-cultural differences that have been found between Westerners and Easterners to date, such as general trust (Yuki et al., 2007), perceived similarity between friends (Schug, Yuki, Horikawa, & Takemura, in press), attribution style (Kamaya & Yuki, 2008) and correlates of subjective well-being (Sato, Yuki, Takemura, Schug, & Oishi, 2008).

Contemporary 'cultural' approaches try to explain cross-cultural differences in terms of various culture-specific concepts such as self-construal, dialectical thinking and approach/avoidance. The present approach has an advantage over these previous approaches in that it targets a socio-ecological variable—the degree to which one is living in a context where there are many opportunities to form new relationships—rather than a psychological trait variable, which raises questions about the origin of the cultural differences in the traits.

Sato, Yuki, and Oishi (2007) have proposed that the cross-cultural differences in self-enhancement can also be explained in terms of differences in *relational mobility*. Societies high in relational mobility, such as North America, are comprised of 'open markets' of interpersonal relations and group memberships, where people continue to invest efforts into finding more desirable interaction partners with whom to establish relationships, or more desirable groups to join. However, achieving this goal can be challenging because other people are also pursuing the same desirable partners and groups. Consequently, the partners/groups will have freedom to select those who they think meet their high standards. Self-enhancement may be especially adaptive in this competitive marketplace. This is because viewing oneself as having socially valued traits will increase the subjective likelihood that one will be accepted by the approached party. With this elevated confidence, one can, without worry, pursue relations with others who would otherwise be out of their own market. In addition, a genuine belief that one has socially valued traits will make one's self-advertisement more attractive and trustworthy to the approached party; and increase the actual likelihood of being accepted. In sum, one reason why high self-esteem is more prevalent in societies high in relational mobility, such as North America, is because it helps individuals to pursue and acquire more desirable relationships and group memberships.

On the other hand, in societies low in relational mobility, such as East Asia, one's success in acquiring desirable interpersonal relationships is not much affected by one's market value, because relationships are generally predetermined and stable. Thus, looking at oneself as having high socially valued traits would not enhance one's relational opportunities. Moreover, believing that one has unrealistically desirable traits, as compared to others, could even be detrimental to the maintenance of stable and harmonious interpersonal relationships, because this could cause dissatisfaction about and tension among one's current relational partners. Furthermore, even if one decided to leave an interpersonal network, they would have few other opportunities to pursue (also see Adams, 2005; Anderson et al., 2008).

This idea relates to the sociometer theory of self-esteem (Leary, Tambor, Terdal, & Downs, 1995), which treats self-esteem as a general psychological marker of one's *relational value* in the eyes of other people (Leary & Baumeister, 2000). However, there are two novel points of emphasis here. First, the current theory emphasizes the role of self-evaluation and self-esteem as *predictors* of future success in the achievement and maintenance of beneficial interpersonal relationships, rather than just as *assessors* of past or present success in existing interpersonal relationships. Second, the present theory explains the reason why biased, rather than accurate perceptions of self-worth, can be ecologically adaptive within certain social structures (Sato et al., 2007).

Sato et al. (2007) found evidence for this claim. In a cross-cultural study, they found that students in the United States and Japan differed in their perceived relational mobility, as hypothesized, and this difference significantly mediated the cultural difference in self-esteem, as assessed by Rosenberg's (1965) self-esteem scale. In the present study, we will examine if this pattern will be replicated for cultural differences in self-enhancement, using both controlled and automatic measures of positive self-feelings.

## Overview of the present study

In general, the present study seeks to add more evidence to the debate as to whether cultural differences in self-enhancement are largely due to automatic processes or self-presentation biases, and we seek to test whether relational mobility can explain cultural differences in

self-enhancement. To accomplish the above goals, the present study does the following: (1) Explore whether cultural differences in self-enhancement between Japanese and Canadians can also be detected with a novel methodology, (2) investigate cultural differences in self-enhancement under cognitive load, (3) test the relationship between the IATSE and the novel measure of self-enhancement and (4) assess whether relational mobility can account for any cultural differences in self-enhancement that might emerge from the novel method.

Our primary method for assessing self-enhancement in the present study is a self-evaluation task similar to that developed by Paulhus, Graf, and van Selst (1989). In their original study, participants were asked to endorse or reject a series of positive, neutral and negatively valenced personality traits both under high- and low-attentional load. The high-attentional load condition constitutes a situation in which more automatic processes operate and should thus constitute a more implicit measure of self-enhancement, whereas the low-attentional load condition represents an explicit form of self-enhancement. Self-enhancement motivations would be evident to the extent that people endorse more positive traits than they do negative ones. In previous studies, Western participants have been found to evaluate themselves more positively under high than low attentional load (Koole, Dijksterhuis, & van Knippenberg, 2001; Paulhus et al., 1989), and evaluations under high-attentional load have shown stronger correlations with another implicit measure of self-enhancement (i.e. the name-letter and birthday-effect; Koole et al., 2001). Furthermore, because it is possible that the trait terms used in this paradigm might be viewed differently across cultures (see Sedikides, Gaertner, & Vevea, 2005), we obtained idiographic measures of trait importance. In addition, we measured relational mobility and the IATSE for each participant.

## METHOD

### Participants

Sixty-four Japanese students from Hokkaido University (23.4% female; mean age = 18.98,  $SD = .86$ ), sixty-five Asian-Canadian (70.8% female; mean age = 20.14,  $SD = 1.90$ ) and sixty-one Euro-Canadian (73.8% female; mean age = 21.66,  $SD = 5.19$ ) students from the University of British Columbia participated in this study. The Japanese participants received 800 yen for participation, whereas the Canadian participants received either course credit or \$10.

### Materials and procedure

All study materials, instructions and tasks were simultaneously developed in both English and Japanese. Two translators, including one of the authors, worked together to ensure that the meanings were equivalent.

First, participants completed a paper questionnaire containing the relational mobility scale developed by Yuki et al. (2007; see also Schug et al., in press). It is comprised of 12 items, which aimed to measure relational mobility in the immediate society surrounding each individual ( $\alpha s = .77, .74$  and  $.85$  for the Euro-Canadian, Asian-Canadian and Japanese groups, respectively). In order to avoid the possibility that people might self-enhance in their own assessments of their relational mobility, participants were asked to report their perceptions of the levels of relational mobility about people in their immediate society, rather than about themselves personally. Specifically, participants were asked to

indicate how relationally mobile they thought the students at their own university were. Sample items included: 'It is easy for UBC/Hokkaido University students to meet new people', 'UBC/Hokkaido University students can choose who they interact with', 'UBC/Hokkaido University students are able to choose the groups and organizations they belong to' and 'even if UBC/Hokkaido University students were not satisfied with their current relationships, they would often have no choice but to stay with them' (reversed).

Then participants completed the self-evaluation task on a computer. Its administration constituted a 3 (culture: Japanese vs. Asian-Canadian vs. Euro-Canadian)  $\times$  2 (attentional load: Low load vs. high load) mixed-model factorial design with attentional load condition as the within-subjects factor. When in the low load condition, participants were asked to remember a one-digit number, whereas in the high load condition, participants were asked to remember an eight-digit number. This manipulation of attentional load has been used in previous studies using the same self-evaluation task (Koole et al., 2001). Participants were presented with 30 personality traits, one trait at a time on the screen. As the traits appeared, participants categorized each trait as characteristic of 'me' or 'not me' by pressing a corresponding key on a keyboard. They did this both in the low and high load conditions (the order was counterbalanced). This is the same procedure for evaluating oneself used by Paulhus et al. (1989) and Koole et al. (2001, Studies 3 and 4). The 30 traits used in the self-evaluation task were the same as used in Heine and Renshaw (2002), which varied substantially in their valence, and were shown to be comparably understood across the two cultural groups.

Following this, participants completed another paper questionnaire containing ratings for each of the 30 personality traits on a Likert scale from 1 (*not desirable at all*) to 7 (*very desirable*), and some demographics items.

Finally, participants completed an IATSE measure. Several versions of the IATSE have been employed in previous research. In general, we used the order of IATSE trials (and counterbalancing) identical to that described by Greenwald and Farnham (2000). *Pleasant* (warm, happy, joy, pleasure, comfortable) and *unpleasant* (ugly, filthy, painful, shameful, distress) constituted one pair of categories. For the second pair of categories, we chose *self* (I, me, my, mine, self) and *best friend* (friend, bud, companion, buddy, pal) as using these categories provides a strong test of cultural differences (i.e. it is more likely for Japanese to consider an in-group member as pleasant than if a general 'other' category were used). The words for all categories were previously used by Kobayashi and Greenwald (2003). The IATSE was computed using the latest scoring procedure (Greenwald, Nosek, & Banaji, 2003).

## RESULTS

### Cultural group equivalence

The three cultural groups (Japanese, Asian-Canadian and Euro-Canadian) differed in gender,  $\chi^2(2) = 41.07$ ,  $p < .001$ , age,  $F(2,187) = 11.04$ ,  $p < .001$ , and form of compensation,  $\chi^2(2) = 125.74$ ,  $p < .001$ . These variables were included as covariates in all analyses in order to rule them out as possible confounds.

### Attentional load manipulation check

To ensure that attentional load was an effective manipulation, we examined average reaction time (in milliseconds) with a 3 (culture: Japanese, Asian-Canadian, Euro-

Canadian)  $\times$  2 (load: High vs. low) mixed-factorial ANCOVA with culture as the between subjects factor, load as the within subjects factor, and with gender, compensation and age (centred) as covariates. If it was the case that participants were actually working on two tasks simultaneously (as opposed to ignoring one task), we would expect that latencies would be longer under the high-load condition versus the low-load condition. We found this predicted effect,  $F(1,184) = 60.87$ ,  $p < .001$ ,  $\eta_p^2 = .25$ , such that those in the high-load condition (adjusted  $M = 1273.63$ ) took on average 179.33 milliseconds longer to respond for each trait than those in the low-load condition (adjusted  $M = 1094.30$ ). Furthermore, there was no load  $\times$  culture interaction,  $F(2,184) = 1.50$ ,  $p = .23$ ,  $\eta_p^2 = .016$ , indicating that the load manipulation was comparably effective for all cultural groups. Age was also a significant predictor of response latencies,  $F(1,184) = 17.86$ ,  $p < .001$ ,  $\eta_p^2 = .088$ , such that those who were older were also slower on the task.

### Overview of analyses

Analysis of the self-evaluation task results was conducted using hierarchical linear modelling (HLM; or multilevel modelling; Raudenbush & Bryk, 2002). Three HLM models were constructed. The first, described below, constituted the basic model which examined self-enhancement across cultures and attentional load conditions. The other two models, described later, added terms to test the relationship of the IATSE and relational mobility with self-enhancement. In all models, individuals served as Level 2 clusters with measures nested inside individuals at Level 1. Data points within each cluster contained a binary value indicating the endorsement of a trait (0 = 'not me', 1 = 'me'), a binary value indicating whether the endorsement was measured under attentional load ( $-.5 =$  low load,  $.5 =$  high load) and the participants' subjective rating of the trait in terms of desirability (from 1 to 7). Since trait endorsement was evaluated twice for each of the 30 traits (once under low-attentional load and once under high-attentional load), 60 data points existed for each participant. Thus, the Level 1 equation predicted trait endorsement from trait desirability ratings (grand mean centred), attentional load and the interaction between ratings and load. The strength of the trait desirability rating–endorsement relationship indicated the level of self-enhancement whereas the interaction between load and trait desirability ratings indicated whether attentional load changed the nature of the rating–endorsement relationship. These relationships with the outcome were modelled with a logit link function and a binomial error distribution (the HLM equivalent of a logistic regression), and estimations were obtained using penalised quasilielihood.

For the basic HLM model, culture, gender ( $-.5 =$  female,  $.5 =$  male), age (centred) and compensation ( $-.5 =$  credit,  $.5 =$  paid) were Level 2 predictors of the Level 1 intercept and slopes. Culture was dummy coded with Euro-Canadians serving as the reference group (Culture1: Euro-Canadian = 0, Asian-Canadian = 1, Japanese = 0; Culture2: Euro-Canadian = 0, Asian-Canadian = 0, Japanese = 1). Therefore, Culture1 represented the difference between the Euro-Canadians and the Asian-Canadians, whereas Culture2 represented the difference between the Euro-Canadians and the Japanese. Random effects,  $r$ , were included for all Level 2 equations. The slopes for attentional load and culture  $\times$  load were not found to significantly vary, and these random effects were



eliminated from the model. The full basic mixed-model equation appears below and results for this basic model appear in Table 1:

$$\ln\left(\frac{p(\text{endorse}=1)}{1-p(\text{endorse}=1)}\right) = (\beta_{00} + \beta_{01}(\text{Culture1}) + \beta_{02}(\text{Culture2}) + \beta_{03}(\text{Age}) + \beta_{04}(\text{Gender}) + \beta_{05}(\text{Compensation}) + r_0) + (\beta_{10} + \beta_{11}(\text{Culture1}) + \beta_{12}(\text{Culture2}) + \beta_{13}(\text{Age}) + \beta_{14}(\text{Gender}) + \beta_{15}(\text{Compensation}) + r_1) \times (\text{Rating}) + (\beta_{20} + \beta_{21}(\text{Culture1}) + \beta_{22}(\text{Culture2}) + \beta_{23}(\text{Age}) + \beta_{24}(\text{Gender}) + \beta_{25}(\text{Compensation})) \times (\text{Load}) + (\beta_{30} + \beta_{31}(\text{Culture1}) + \beta_{32}(\text{Culture2}) + \beta_{33}(\text{Age}) + \beta_{34}(\text{Gender}) + \beta_{35}(\text{Compensation})) \times (\text{Rating} \times \text{Load}) + e$$

On a conceptual level, we were interested in the relationship between participants' desirability ratings of each personality trait and whether or not participants claimed to have the trait during the self-evaluation task (trait endorsement). The strength of this relationship indicates the degree to which participants rate positive traits as characteristic of themselves and negative traits as not characteristic of themselves. Essentially, this relationship constitutes the degree of self-enhancement for each participant and can be calculated for each participant. HLM allows us to then tell whether the strength of this relationship tends to vary on average due to the participant's cultural background, attentional load, the interaction between culture and attentional load, relational mobility and the IATSE.

### Culture and rating-endorsement

The trait rating-endorsement relationship constituted the primary measure of self-enhancement—a significant positive coefficient indicated that as trait importance increased, individuals claimed to have the trait more often. Thus, the extent to which culture moderated this relationship was of primary interest. Indeed, cross-level interactions with both culture dummy codes were found,  $\beta_{11} = -.27$ ,  $t(184) = -3.65$ ,  $p = .001$ , and  $\beta_{12} = -1.00$ ,  $t(184) = -6.46$ ,  $p < .001$  for Culture1 and Culture2, respectively.<sup>1</sup> This indicated that the Euro-Canadian group self-enhanced the most,  $\beta_{10} = 1.06$ ,  $t(184) = 12.63$ ,  $p < .001$ , whereas the Asian-Canadians showed significantly less self-enhancement,  $\beta_{10} = .79$ ,  $t(184) = 10.62$ ,  $p < .001$ , and the Japanese even less self-enhancement,  $\beta_{10} = .05$ ,  $t(184) = .63$ ,  $p = .53$ .<sup>2</sup> The Japanese coefficient, albeit nominally positive, was not significantly different from 0. These effects are similar to the results found using several alternative measures of self-enhancement in the meta-analysis by Heine and Hamamura (2007)—the effect sizes in that meta-analysis were  $ds = .86$ ,  $.33$  and  $-.02$ , for European-American, Asian-American and East Asian samples, respectively.

To enhance interpretation of the above coefficients, we computed the value of the regression equation for each cultural group for low ( $-1$  SD) and high ( $+1$  SD) trait desirability ratings, holding all other predictors constant at 0 (e.g. similar to Aiken & West,

<sup>1</sup>All coefficients from these analyses are unstandardized and are assumed to follow a  $t$ -distribution rather than a  $z$ -distribution (Bryk & Raudenbush, 1992). Approximate degrees of freedom for all coefficients not only depend on the number of data points and predictors for each model, but also whether the specific Level 1 parameter is appropriately modelled as fixed ( $df$ 's 183–184) or random ( $df$ 's 11370–11374).

<sup>2</sup>From the HLM equation,  $\beta_{10}$  is the coefficient that represents the rating-endorsement relationship when all covariates are equal to 0. Since we are technically decomposing an interaction here, we repeat the use of this coefficient (and its subscript) to indicate this rating-endorsement relationship for each cultural group. We use a similar convention of repeating coefficients when breaking down other interactions elsewhere in this paper.

Table 1. HLM fixed effects for the basic model

Fixed Effect	Coefficient	se	df	<i>t</i> Ratio	Odds ratio
Endorsement mean					
Intercept, $\beta_{00}$	.49	0.11	184	4.39***	1.64
Culture1, $\beta_{01}$	.09	0.11	184	0.89	1.10
Culture2, $\beta_{02}$	-.42	0.21	184	-2.05*	0.66
Age, $\beta_{03}$	.02	0.01	184	1.57	1.02
Gender, $\beta_{04}$	-.11	0.08	184	-1.34	0.90
Compensation, $\beta_{05}$	.08	0.18	184	0.41	1.08
Rating slope					
Intercept, $\beta_{10}$	1.06	0.08	184	12.63***	2.88
Culture1, $\beta_{11}$	-0.27	0.07	184	-3.65***	0.76
Culture2, $\beta_{12}$	-1.00	0.16	184	-6.46***	0.37
Age, $\beta_{13}$	-0.01	0.01	184	-1.44	0.99
Gender, $\beta_{14}$	0.01	0.07	184	0.21	1.01
Compensation, $\beta_{15}$	0.10	0.13	184	0.79	1.11
Load slope					
Intercept, $\beta_{20}$	-0.005	0.08	11374	-0.06	1.00
Culture1, $\beta_{21}$	-0.09	0.08	11374	-1.16	0.92
Culture2, $\beta_{22}$	0.02	0.15	11374	0.17	1.03
Age, $\beta_{23}$	0.01	0.01	11374	1.28	1.01
Gender, $\beta_{24}$	0.11	0.06	11374	1.87 <sup>†</sup>	1.11
Compensation, $\beta_{25}$	0.004	0.13	11374	0.03	1.00
Rating X load slope					
Intercept, $\beta_{30}$	-0.06	0.04	11374	-1.44	0.94
Culture1, $\beta_{31}$	0.02	0.04	11374	0.35	1.02
Culture2, $\beta_{32}$	0.05	0.07	11374	0.74	1.05
Age, $\beta_{33}$	0.01	0.005	11374	1.59	1.01
Gender, $\beta_{34}$	0.03	0.03	11374	0.93	1.03
Compensation, $\beta_{35}$	0.02	0.06	11374	0.44	1.02
Random effects					
	Variance component		sd	df	$\chi^2$
Intercept, $r_0$	0.20		0.45	184	531.82***
Rating slope, $r_1$	0.12		0.35	184	964.12***

<sup>†</sup> $p \leq .10$ ; \* $p \leq .05$ ; \*\*\* $p \leq .001$ .

1991). Because the resulting values were in terms of logits, we converted them to more interpretable odds ratios and probabilities. As shown in Figure 1, the odds of endorsing a trait high in desirability was 15.89 (Pr = 94.08%) for Euro-Canadians, 9.79 (Pr = 90.73%) for Asian-Canadians and 1.21 (Pr = 54.68%) for Japanese. For a trait low in desirability, the odds of endorsement were 0.16 (Pr = 14.45%) for Euro-Canadians, 0.33 (Pr = 24.85%) for Asian-Canadians and 0.96 (Pr = 48.96%) for Japanese.

### Culture and load X rating-endorsement

If cultural differences in self-enhancement were merely due to self-presentational biases, we would expect, for example, that Euro-Canadians would have a weaker rating-endorsement relationship under high load or that Japanese would have a stronger rating-endorsement relationship under high load, as high-attentional load may reduce the ability

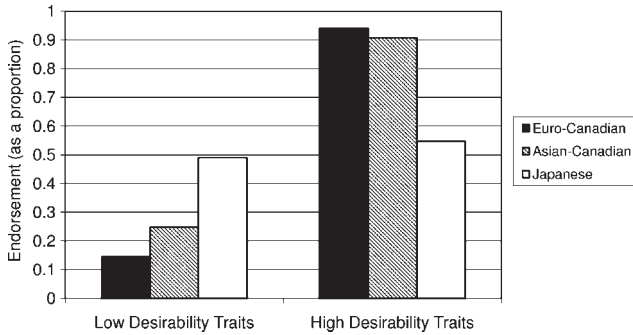


Figure 1. Proportion of low ( $-1$  SD) and high ( $+1$  SD) desirable traits endorsed by each cultural group. Proportions represent predicted values from the basic HLM model equation.

of controlled processes to operate in self-presentation. On the other hand, if it is the case that cultural differences in self-enhancement are due in part to automatic processes, we may expect that cultural differences in the rating-endorsement relationship may be maintained or even enhanced under high load. The load  $\times$  rating-endorsement coefficient indicated whether the rating-endorsement relationship was different between the low- and high-attentional load conditions. The results of this interaction term with culture were non-significant,  $\beta_{31} = .02$ ,  $t(11374) = .35$ ,  $p = .72$ , and  $\beta_{32} = .05$ ,  $t(11374) = .74$ ,  $p = .46$ , for Culture 1 and Culture 2, respectively. In addition, the load  $\times$  rating-endorsement relationship was nominally negative, but not significantly different from 0, for all three cultural groups,  $\beta_{30} = -.06$ ,  $t(11374) = -1.44$ ,  $p = .15$ ,  $\beta_{30} = -.05$ ,  $t(11374) = -1.61$ ,  $p = .11$ , and  $\beta_{30} = -.01$ ,  $t(11374) = -.31$ ,  $p = .75$  (Euro-Canadians, Asian-Canadians and Japanese, respectively). This indicates that load did not affect the level of self-enhancement for any of the three cultural groups. Therefore, inferences drawn regarding overall cultural differences in self-enhancement hold for both low- and high-attentional load conditions; the cultural differences do not appear to be due to self-presentational biases.

### IATSE analysis

We next investigated whether cultural differences existed in the IATSE, and whether the IATSE predicts self-enhancement when under either low- or high-attentional load. To test for cultural differences, we conducted a multiple regression analysis with the IATSE as the dependent variable and Culture1, Culture2, age, gender and compensation simultaneously entered as predictors. Predictors were coded/scaled in the exact same manner as in the HLM analysis and were the same predictors as in all Level 2 equations from the basic model. This analysis revealed no cultural differences in the IATSE,  $b = .002$ ,  $\beta = .002$ ,  $t(184) = .03$ ,  $p = .98$ , and  $b = -.11$ ,  $\beta = -.14$ ,  $t(184) = -.9$ ,  $p = .37$ , for Culture1 and Culture2, respectively. Although the Euro-Canadian (adjusted  $M = .20$ ) and Asian-Canadian (adjusted  $M = .20$ ) groups had nominally higher IATSE scores than the Japanese group (adjusted  $M = .10$ ), these differences were not significant. This is consistent with most findings from previous cross-cultural IATSE studies (Kitayama & Uchida, 2003; Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007; but see Szeto et al., in press, for an exception). No other variables in the regression model were significant predictors of the IATSE (all  $p$ 's  $> .2$ ). In addition, relational mobility was not correlated with the IATSE,  $r = -.00$ , ns.

To test whether the IATSE could predict self-enhancement on the self-evaluation task in an expected way, the IATSE (centred) was added as a predictor to all Level 2 equations of the basic HLM model. This allowed us to test whether the rating–endorsement relationship could be predicted by the IATSE and whether this relationship was stronger or weaker while under attentional load. The rating  $\times$  IATSE cross-level interaction was significant,  $\beta_{16} = -.17$ ,  $t(183) = -2.01$ ,  $p < .05$ , and the rating  $\times$  load  $\times$  IATSE cross-level interaction was marginally significant, and  $\beta_{36} = .08$ ,  $t(11370) = 1.87$ ,  $p = .06$ . To interpret these results, we examined the higher-order effect. Under low-attentional load, the IATSE significantly moderated the rating–endorsement relationship,  $\beta_{16} = -.21$ ,  $t(183) = -2.37$ ,  $p = .02$ , such that those who scored higher on the IATSE had a lower rating–endorsement relationship. In other words, higher implicit self-esteem (as measured by the IATSE) was associated with significantly *lower* levels of self-enhancement. Under high-attentional load, the direction of the relationship between the IATSE and the rating–endorsement relationship was the same, but did not reach significance,  $\beta_{16} = -.13$ ,  $t(183) = -1.52$ ,  $p = .13$ . That is, if self-evaluation under high-attentional load constitutes an implicit measure of self-esteem as suggested by previous research (e.g. Koole et al., 2001), the IATSE was nominally negatively related to another implicit measure of self-esteem. This is in addition to negative correlations between the IATSE with other implicit measures already noted by Bosson et al. (2000). These latter findings represent validity problems for the IATSE.

### Mediation analysis: Relational mobility

We examined whether relational mobility mediated the cultural differences in self-enhancement. Specifically, we expected that cultures would differ in relational mobility such that Euro-Canadians would be the highest, followed by Asian-Canadians and finally Japanese, as similar cultural differences have been found in previous research (Sato et al., 2007). Further, we anticipated that relational mobility would relate to the cultural differences in self-enhancement.

Since the cultural differences found in self-enhancement were identified with an HLM model, models appropriate for examining mediation within this context were employed (see Krull & MacKinnon, 2001).<sup>3</sup> The two mediation models we used are depicted in Figures 2 and 3. We expected that individual differences in relational mobility could be predicted from the Culture1 and Culture2 dummy codes. The same multiple regression model used to test for differences in the IATSE was used to test whether cultures differed in relational mobility. Both Culture1,  $b = -.41$ ,  $\beta = -.30$ ,  $t(184) = -3.71$ ,  $p < .001$ , and Culture2,  $b = -.50$ ,  $\beta = -.37$ ,  $t(184) = -2.51$ ,  $p = .01$ , were found to be significant predictors of relational mobility. Confirming our predictions, the Euro-Canadian group (adjusted  $M = 4.66$ ) was higher in relational mobility than both the Asian-Canadian (adjusted  $M = 4.25$ ) and Japanese group (adjusted  $M = 4.17$ ). This establishes the first path for both mediation models. Age was the only other significant predictor of relational

<sup>3</sup>Our procedure of testing the *a* and *b* paths of the mediational model is sufficient to establish mediation and has good power while controlling Type I error rates compared to other methods (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Furthermore, confidence intervals for the indirect effect were determined using asymmetric confidence limits, which are more accurate than methods based on normal theory (i.e. Sobel's test) and have high power while adequately controlling Type I error rates in most situations (MacKinnon, Fritz, Williams, & Lockwood, 2007; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004).

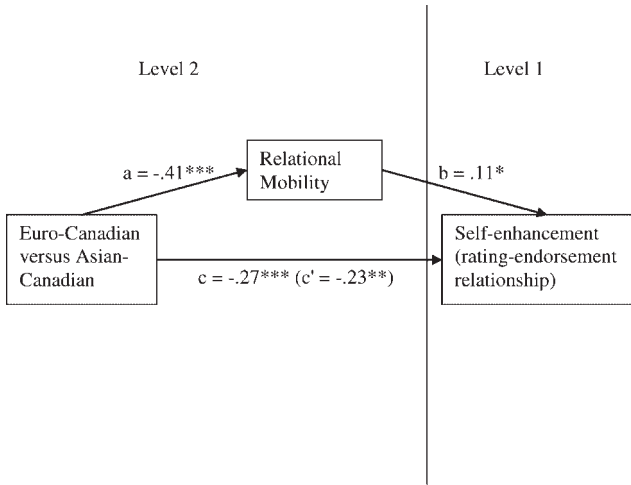


Figure 2. Model representing mediation of the effect of Culture1 (Euro-Canadian vs. Asian-Canadian) on self-enhancement via relational mobility. 'a' and 'b' indicate the two steps of the indirect path, 'c' the direct effect of Culture1, and 'c'' the direct effect of Culture1 controlling for relational mobility.

mobility,  $b = -.03$ ,  $\beta = -.15$ ,  $t(184) = -2.04$ ,  $p = .04$ , such that older individuals were lower in relational mobility.

The second step required testing whether relational mobility, when added to the HLM model, was a significant positive predictor of the rating-endorsement relationship, a Level 1 variable. To test this, relational mobility (centred) was added as a Level 2 predictor of the Level 1 intercept and slopes of the basic HLM model. As expected, it was a significant moderator of the rating-endorsement relationship,  $\beta_{16} = .11$ ,  $t(183) = 2.19$ ,  $p = .03$ , such that those higher in relational mobility had a higher relationship between trait rating and

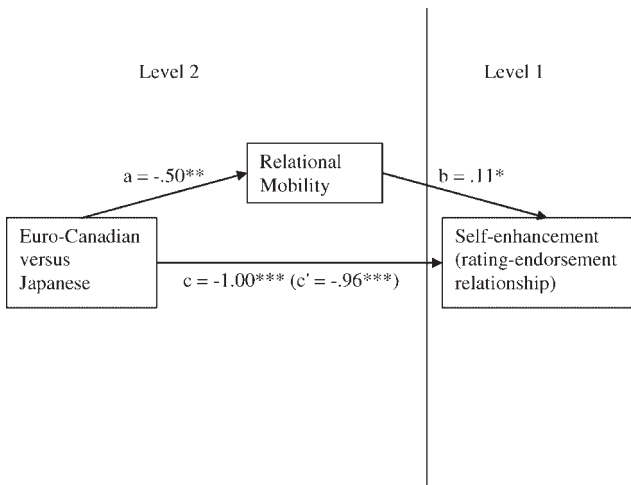


Figure 3. Model representing mediation of the effect of Culture2 (Euro-Canadian vs. Japanese) on self-enhancement via relational mobility. 'a' and 'b' indicate the two steps of the indirect path, 'c' the direct effect of Culture2 and 'c'' the direct effect of Culture2 controlling for relational mobility.

trait endorsement. This established the second path of each mediation model. The product of the first and second coefficients for both mediation models were significantly different from 0,  $ab = -.05$ , 95%CI  $[-.10, -.005]$ , and  $ab = -.06$ , 95%CI  $[-.14, -.004]$ , which also establishes evidence for mediation. Although reduced in magnitude, both Culture1 and Culture2 remained significant predictors of the rating-endorsement relationship,  $\beta_{11} = -.23$ ,  $t(183) = -3.06$ ,  $p < .01$ , and  $\beta_{12} = -.96$ ,  $t(183) = -6.30$ ,  $p < .001$ . Therefore, evidence was found for relational mobility as a partial mediator of both the differences in self-enhancement between Euro-Canadians and Asian-Canadians, and between Euro-Canadians and Japanese.

## DISCUSSION

The results of this study shed light on a number of questions. First, in addition to 30 previously documented methods that have revealed greater self-enhancement among Westerners than among East Asians (Heine & Hamamura, 2007), the present findings provide another demonstration with an altogether new method. There is thus much convergence for this cultural difference across many different methods.

Moreover, these results also speak to a controversy regarding whether cultural differences in self-enhancement emerge because the traits under investigation are not of equal importance across cultures. Studies with the 'better-than-average effect' find that both Westerners and East Asians self-enhance more for traits that they view to be especially important (Sedikides et al., 2005; Heine, 2005). However, studies that utilize a wide variety of other methods find that East Asians do not self-enhance more for important traits (Heine, Kitayama, & Hamamura, 2007a,b; Sedikides, Gaertner, & Vevea, 2007), and the relationship observed with the 'better-than-average effect' appears to be due to a cognitive artefact (Hamamura, Heine, & Takemoto, 2007). The present results further reveal that when methods other than the 'better-than-average effect' are employed, Japanese do not self-enhance more for traits that they view to be personally important, whereas North Americans do.

Also, parallel cultural differences in self-enhancement were found both under high- and low-attentional load. That even under high load Westerners were self-enhancing more than East Asians suggests that these cultural differences may extend to automatic processes. These findings are at odds with the argument that cultural differences in self-enhancement emerge because of cultural variation in self-presentation norms. Since we did not find any differences in self-enhancement due to attentional load, one could question the effectiveness of the manipulation. However, our manipulation check suggests that the load manipulation did induce a processing burden on our participants. In addition, the same manipulation is well established and has been used extensively in previous research to elicit automatic processing (e.g. Bargh & Tota, 1988; Gilbert & Hixon, 1991; Gilbert & Osborne, 1989; Koole et al., 2001; Osborne & Gilbert, 1992; Pontari & Schlenker, 2000; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). Furthermore, even if the attentional load manipulation in the present study was ineffective, the self-presentational explanation would still struggle to account for why self-enhancement among Westerners has been found to increase under attentional load in other studies (Koole et al., 2001; Paulhus et al., 1989).

Similar to past cross-cultural research with the IATSE (Kitayama & Uchida, 2003; Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007; but see Szeto et al., in press), the

present study did not find any cultural differences in the IATSE. There is growing evidence that the IATSE does not vary across cultures, and may even be an accessibility universal—that is, a process that is uninfluenced by cultural experiences (Norenzayan & Heine, 2005). However, interpreting this null effect is problematic. Similar to past research that has found that the IATSE correlates only weakly with explicit measures of self-esteem (Hofmann et al., 2005), and fails to positively correlate with other implicit measures of self-esteem (Bosson et al., 2000), the present findings did not reveal anything that positively correlated with the IATSE, including self-evaluations under high- or low-attentional load, or relational mobility. These findings, particularly the nominally negative correlations with self-evaluations under high-attentional load, further call into question the validity of the IATSE.

The obtained cultural difference in self-enhancement was partially mediated by relational mobility. One reason, then, why Westerners self-enhance more than East Asians is that they have more opportunities to forge new relationships, and this helps one to challenge and obtain more desirable relational partners and group memberships (Sato et al., 2007).

The fact that relational mobility was only a partial mediator of cultural differences in self-enhancement could be viewed as a shortcoming of the present study. However, full mediation is rare and not realistic to expect (MacKinnon, Fairchild, & Fritz, 2007). Nonetheless, the partial mediation with relational mobility raises the intriguing possibility that cultural differences in self-enhancement are mediated by multiple processes. Indeed, a number of other processes have been demonstrated to relate to cultural differences in self-enhancement (for a review see Heine & Buchtel, 2009). For example, a dialectical thinking style has mediated cultural differences in self-esteem (Spencer-Rodgers et al., 2004). Similarly, cultural variation in lay theories of self has been shown to relate to how people respond to success and failure feedback, suggesting a link with self-enhancement motivations (Heine et al., 2001). Likewise, independent and interdependent views of self relate to self-enhancement motivations both within and between cultures (Heine et al., 1999; Heine & Renshaw, 2002; Oyserman et al., 2002). Furthermore, manipulations of an external frame of reference (i.e. placing participants in front of a mirror) affects the positivity of self-views (e.g. Duval & Wicklund, 1972), and cultural variation in people's habitual frame of reference has also been used to account for self-enhancement differences (Heine, Takemoto, Moskalkenko, Lasaleta, & Henrich, 2008). Finally, cultural differences in promotion and prevention motivations parallel those found with self-enhancement (e.g. Elliot, Chirkov, Kim, & Sheldon, 2001; Hamamura, Meijer, Heine, Kamaya, & Hori, 2009; Lee, Aaker, & Gardner, 2000), and have been argued to be related to motivations to maintain self-esteem and face across cultures (Hamamura & Heine, in press). Together with the partial mediation with relational mobility found here (Sato et al. 2007), there are thus at least six different mechanisms that have been proposed to underlie cultural differences in self-enhancement.

These six mechanisms hardly provide a parsimonious account for cultural variation in self-enhancement. Indeed, the tendency for North Americans to self-enhance more than East Asians appears to be *over-determined*. We suggest that the similar pattern across cultures for each of the six mechanisms indicates that it is not productive to think of these as independent mechanisms underlying self-enhancement. Rather, we propose that we can understand the cultural variation in each of these phenomena as indicating a stable equilibrium point in a dynamical system (Cohen, 2001; Kitayama, 2002). That is, the elements of a culture are interdependent with each other, and this interdependence reduces

the variability of possible cultural arrangements. Each aspect of a culture is influenced by, and in turn influences, other aspects of the culture, resulting in a relatively small number of stable equilibria within a system. If any individual deviates from an equilibrium point, the interrelations among the various parts of the system will constrain her options, and she will likely gravitate back towards the cultural norm (Boyd, Richerson, Borgerhoff-Mulder, & Durham, 1997).

We submit that the dynamic systems of the cultures of East Asia and North America may not be so different from each other on a single variable, such as their independence, promotion orientation or their relational mobility, but rather they represent different systems which gravitate towards divergent equilibria. Change in these cultures is likely to be noticed across the entire system when a tipping point is reached, rather than being restricted to any transformation of a single variable. This systems view of culture represents an alternative way of understanding the underlying causes of cultural differences in psychological processes. On the other hand, we note that relational mobility is a socio-ecological variable, rather than a psychological variable, and it might thus stand to be a critical variable for determining where the equilibrium point lies within the system. Future research is important for assessing the explanatory power of relational mobility in contrast to other psychological variables.

In sum, cross-cultural differences in self-enhancement tend to be pronounced and emerge with a variety of different methods (Heine & Hamamura, 2007). The present study further demonstrates the robustness of cultural differences in self-enhancement, challenges alternative explanations for these differences (e.g. Sedikides et al., 2005; Yamaguchi et al., 2007) and identifies relational mobility as an important mediator of these differences.

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