IS THERE CULTURAL VARIABILITY IN IMPLICIT SELF-ESTEEM?

by

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ABSTRACT

Cultural psychology research has cast doubt upon the assumption that self-enhancement motivations are universal – the majority of empirical research finding that those from East Asian cultural backgrounds self-enhance less than those from Western cultural backgrounds. However, measures of *implicit self-esteem* (ISE) – automatic and unconscious global self evaluations – do not often yield cultural differences. By using a diverse range of approaches, this dissertation seeks to shed light on the question of whether variability exists in implicit self-esteem across individuals from East Asian and Western cultural backgrounds. In Study 1, two different ISE measures provided divergent results regarding possible cultural variability in implicit self-esteem. In search for a valid measure of ISE, Study 2 simultaneously tested the convergent and predictive validity and cultural variation of popular and new ISE and explicit self-esteem measures. Since no single ISE measure in Study 2 was found to have adequate validity, Study 3 attempted to boost the validity of ISE measures. This was done based on the argument that ISE is better defined as a context-dependent/domain specific construct rather than a global self-evaluation, yet did not yield evidence in favour of the validity of any ISE measure. Supplementary analyses for Study 2 and the final two studies took an alternative approach to the problem of this dissertation and found cultural variability in phenomena theoretically connected to implicit self-esteem. In particular, cultural variability was evident in the theoretical correlates of implicit self-esteem from Study 2. Study 4 found evidence that cultural variability in the tendency to value an object *after* one owns the object (i.e., *the endowment effect*) is likely due in part to cultural variability in feelings about the self. Study 5 provided evidence that cultural variability exists in the tendency to display in-group favouritism after being arbitrarily assigned to a group (i.e., *the minimal group effect*), and that this cultural variability is explained in part by self-esteem. Taken together, these studies provide converging evidence that 1) implicit self-

esteem measures are currently not a viable option for assessment of cultural variability, and 2) cultural variability in implicit self-esteem is likely.

PREFACE

I am the primary author of this PhD dissertation. I was the primary individual responsible for study design, data collection, statistical analyses, and manuscript preparation. Additional contributions for each chapter are listed below.

Chapter 1. Introduction.

I am the primary author of this chapter. Some material from the publication listed for Chapter 2 and 3 was adapted for inclusion in this chapter.

Chapter 2. Different Implicit Self-Esteem Measures Yield Different Conclusions. A version of this chapter has been published: Falk, C.F., Heine, S.J., Yuki, M., & Takemura, K. (2009). Why do Westerners self-enhance more than East Asians? *European Journal of Personality, 23*, 183-203. I designed the study in consultation with S. Heine, collected data, performed all statistical analyses, and prepared the manuscript. Data collection for Japanese participants for this study was in collaboration with K. Takemura, and additional editing of the manuscript was done by S. Heine, M. Yuki, and K. Takemura.

Chapter 3. The Validity of Implicit Self-Esteem Measures. I designed the study in consultation with S. Heine, collected data, performed all statistical analyses, and wrote this chapter. Data collection for Japanese participants for this study was in collaboration with K. Takemura. Additional assistance in data collection was provided by C. X. J. Zhang and C.-W. Hsu.

Chapter 4. Cultural Variation in the Endowment Effect. The study presented in this chapter appeared is part of a multi-study published manuscript: Maddux, W.W., Yang, H., Falk, C. F.,

Adam, H., Adair, W., Endo, Y., Carmon, Z., & Heine, S. J. (2010). For whom is parting with possessions most painful? Cultural difference in the endowment effect. *Psychological Science, 21,* 1910-1917. I am the primary person responsible for the design, data collection, statistical analyses, and preparation of the results section for the study reported in this chapter. Design of this study was in consultation with S. Heine, W. Maddux, Y. Endo, and H. Adam. I have re-written some aspects of the introduction and discussion sections of this chapter for the purposes of this dissertation.

Chapter 5. Cultural Variation in the Minimal Group Effect. I designed the study, collected data, performed all statistical analyses, and wrote this chapter with intellectual contributions from S. Heine. Data collection for Japanese participants for this study and some aspects of the study design as it pertained to the Japanese sample was in collaboration with K. Takemura.

Chapter 6. General Discussion. I am the primary author of this chapter, with intellectual contributions from S. Heine.

All studies in this dissertation required ethical approval from UBC's Behavioural Research Ethics Board and have the following certificate numbers: Chapter 2 (H07-01727), Chapter 3 (H09-02666), Chapter 4 (H07-02853), and Chapter 5 (H11-00056).

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CHAPTER 1: INTRODUCTION

The assumption that humans have *self-enhancement motivations* – the need to feel good about themselves, maintain self-esteem, and pursue a positive self-image – underlies a wide variety of Western social psychological phenomena and theories (e.g., Alicke & Sedikides, 2009; Epstein, 2003; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004; Tice, 1991; Wills, 1981). Indeed, self-esteem is perhaps the largest researched topic across all sub-disciplines of psychology (Scheff & Fearon Jr., 2004), and many Western psychologists have assumed that self-enhancement is a universal motivational process (e.g., Sedikides, 1993; Sedikides & Gregg, 2008; Tesser, 1988).

Recently, cultural psychology research has cast doubt upon the assumption that self-enhancement motivations are universal. The majority of this research has focused on those from East Asian cultural backgrounds as exemplifying a class of individuals who may lack the motivation to self-enhance (Heine, Lehman, Markus, & Kitayama, 1999). Substantial previous research supports the position that East Asians hold less positive self-views than those from Western cultural backgrounds. To name a few examples, East Asians (versus Westerners) rate their self-esteem as being lower on a number of popular self-report Likert-type scales (e.g., Endo, Heine, & Lehman, 2000; Kobayashi & Brown, 2003; Kwan, Bond, & Singelis, 1997), claim to be in a lower percentile relative to their peers on a number of positive traits (Heine & Lehman, 1997b), display lower levels of unrealistic optimism (Heine & Lehman 1995), display interest in activities that reflect their deficiencies (Heine et al., 2001), and report lower satisfaction with life (Diener & Diener, 1995). In a recent meta-analysis, Heine and Hamamura (2007) found that across multiple methods, the weighted average effect size indicated that the difference in self-enhancement between East Asians and Westerners was large (d = .84).

Cultural Psychology Explanations for Variability in Self-Enhancement

It should be evident at this point that we follow others (e.g., Heine, 2008) in defining "culture" as referring to both the information that individuals acquire through social learning – beliefs, values, ideas, norms, customs, technology, etc. – and to groups of individuals who share similar socially acquired information. That is, the study of cultural variability in self-enhancement typically compares individuals from different cultural groups, and explains this variation in terms of different psychological processes that are fundamentally shaped by the acquisition of culture (e.g., Heine et al., 1999; Shweder, 1990). Therefore, not all human motivations – such as the motive to self-enhance – are necessarily innate and hardwired into the brain. Instead, the variability across cultural groups in self-enhancement motivations reflects true underlying differences in the psyche of individuals that is caused by the culture that individuals acquire. At some stage of development, cultural learning declines and individuals may have a more difficult time adapting to anything but very superficial aspects of a different cultural context (Cheung, Chudek, & Heine, 2011; Heine & Lehman, 2004). The fact that much of psychology embraces self-enhancement as a fundamental human motive is due in part to the development of psychological theories within Western societies and testing them almost exclusively with highly educated Western participants who are not representative of all humanity (Henrich, Heine, & Norenzayan, 2010). Indeed, other non-Western cultures have also been found to have lower levels of self-enhancement, including but not limited to Native Americans (Fryberg & Markus, 2003), Chileans (Heine & Raineri, 2009), and Fijians (Rennie & Dunne, 1994).

Importantly, evidence from acculturation studies suggest that the cultural variability in self-enhancement is likely not due to genetic differences across different racial groups. For example, Heine and Lehman (2004) observed that a greater degree of exposure to Western culture predicts greater self-enhancement among East Asians. After three generations of living in

Canada, Asian-Canadians' self-enhancement tendencies become indistinguishable from that of Euro-Canadians. Furthermore, Heine and Lehman (2004) found that the self-esteem of Japanese exchange students tends to increase after spending more time in Canada.

Therefore, the best cultural psychology explanation for the cultural variability in self-enhancement lies in six different mechanisms or psychological dimensions that tend to differ across cultures (for a review see Heine & Buchtel, 2009). At the broadest level, social patterns such as individualism and collectivism (Triandis, 1989) are often thought to underlie many cultural differences and become manifest at the psychological level as independent and interdependent self-construals, respectively (Markus & Kitayama, 1991). Stated succinctly, viewing the self as relatively independent and autonomous may free the self to pursue high self-esteem for its intrapsychic benefits (Paulhus, 1998) whereas pursuit of high self-esteem may be harmful for those who are more likely to define themselves in terms of social relationships and who highly value social harmony (Heine et al., 1999; Heine & Renshaw, 2002; Oyserman, Coon, & Kemmelmeir, 2002; Suh, Diener, Oishi, & Triandis, 1998). A focus on avoiding failure (versus approaching positive events) has been argued to be more adaptive for those from collectivistic cultures where face maintenance is arguably more important than self-esteem (Hamamura, Meijer, Heine, Kamaya, & Hori, 2009). Adopting an incremental view of one's abilities – where the self is viewed as malleable rather than possessing a set of fixed attributes – is also associated more with East Asians than Westerners. These lay theories of self moderate responses to success and failure feedback (Heine et al., 2001) – outcomes often thought to be closely related to self-esteem. In addition, cultural differences in self-enhancement have been mediated by relational mobility such that those who perceive their environment as offering more opportunities to form new relationships (as in Western societies) tend to have higher self-esteem (Falk, Heine, Yuki, & Takemura, 2009; Sato, Yuki, Takemura, Shug, & Oishi, 2008; Sato, Yuki, & Oishi, 2007), and by dialectical thinking such that individuals who are more willing to tolerate

contradictory self-views (common among East Asians) tend to have lower self-esteem (Spencer-Rodgers, Peng, Wang, & Hou, 2004). East Asians are also more likely to be able to adopt an external frame of reference and be more adept at taking the perspective of others (Cohen, Hoshino-Browne, & Leung, 2007; Wu & Keysar, 2007), which may lead such individuals to have more objective and therefore less positive self-views.

To date, the relationship among these mechanisms is not well understood. For instance, it could be that some naturally occurring socio-ecological variable, such as relational mobility, puts constraints on the types and number of relationships individuals can form. This in turn could foster variability in the tendency to view the self as independent versus interdependent, take the perspective of others, find truth in opposing positions, and so on. Regardless of the directionality of causation among these mechanisms, it has been suggested that these mechanisms mutually reinforce each other within each culture and maintain a stable equilibrium point (Heine & Buchtel, 2009; Cohen, 2001). That is, cultural beliefs and norms relevant to self-enhancement behaviour can be maintained even if small variations or deviations occur for one or more of these psychological dimensions.

The Response to Cultural Psychology

This challenge to the universality of self-enhancement motivations and the assertion that fundamental human motivations can be shaped by culture has not come without controversy (e.g., Heine, Kitayama, & Hamamura, 2007a,b; Sedikides, Gaertner, & Vevea, 2005, 2007a,b). Many researchers assert that self-enhancement motives are present among East Asian populations, but are simply manifested in different ways. For example, it has been suggested that East Asians are more likely to enhance the traits of their in-group members (Brown & Kobayashi, 2002), or that East Asians are more likely to self-enhance on personality traits that are more important in collectivistic cultures (Sedikides, Gartner, & Toguchi, 2003; cf. Heine, 2005). Both of these assertions have met refutations from cultural psychologists – namely that

consideration of the entire range of literature on group enhancement actually suggests that East Asians do not self-enhance their group-selves as much as Westerners (Heine, 2003) and that Westerners self-enhance more than East Asians on both individualistic and collectivistic traits when more objective peer ratings of personality traits are considered (Su & Oishi, 2011).

A number of researchers have also highlighted cultural variability in self-presentational norms or response biases as responsible for cultural variability on self-report instruments of self-esteem. In particular, it has been argued that East Asians have strong modesty norms that prevent them from reporting highly positive self images (Cai, Brown, Deng, & Oakes, 2007; Kurman, 2003). Essentially this claim suggests that a methodological deficiency is responsible for the cultural variability observed in self-enhancement measures – that self-presentational norms are not intertwined with individuals' psyche and should be peeled away to reveal underlying motivations and self-feelings. While we agree that East Asian cultures likely foster modesty norms, these claims are somewhat dampened by the fact indirect and behavioural measures are still indicative of cultural variability in self-enhancement (Heine et al., 2001; Heine, Takata, & Lehman, 2000) and that Japanese are self-critical on questionnaires even when extreme lengths are taken to ensure their anonymity (Kitayama, 1999, as cited in Heine et al., 1999). Furthermore, it is questionable whether certain response biases can or should even be separated from related constructs such as self-esteem (Hamamura, Heine, & Paulhus, 2008; Smith, 2004). Still, the majority of evidence supporting the cultural variability of self-enhancement is in one way shape or form self-report, and whether cultural variability exists in how individuals genuinely think about themselves remains a burning question.

The emerging research on implicit social cognition has introduced accompanying methodology and theory that offers a potential answer. Heine and Hamamura (2007) found that the above pattern of cultural variation in self-enhancement held across all methods except for studies examining *implicit self-esteem* (ISE), which may be briefly defined as an automatic,

uncontrollable affective reaction or attitude towards the self. It has been argued that implicit self-esteem measures can assess self-evaluations without the response biases or self-presentational concerns that plague *explicit self-esteem* (ESE) measures – or self-report measures of self-esteem (Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007). Under this position, methodological artefacts are largely responsible for evidence in support of cultural variation in self-enhancement, and it is only ISE measures that reflect individuals' "true" attitudes towards themselves (cf. Gawronski, Peters, & LeBel, 2008). If this position were correct, it could mean that there is no cultural variability in self-enhancement or how individuals truly feel about themselves.

What Is Implicit Self-Esteem?

There are two very different general ways of defining implicit self-esteem, both of which are described below. Within each way of defining implicit self-esteem, there is much room for interpretation, nuance, and so on such that the possible number of actual working definitions is more than what is presented at the moment.

A Network of Associations

The most popular definition of implicit self-esteem is succinctly described as "… the association of the concept of self with a valence attribute" (Greenwald et al., 2002; p. 5). This definition has its roots in implicit social cognition research and the assertion that the brain contains at least two different information processing systems (e.g., Epstein, 2003; Fazio & Olson, 2003; Fazio & Towles-Schwen, 1999; Gawronski & Bodenhausen, 2006, 2007; Koole & DeHart, 2007; Petty, Briñol, & DeMarree, 2007). Individuals possess one processing system based on conscious, rational thought and deliberation. A second system processes information automatically, quickly, efficiently, in a relatively holistic manner, and is associative and preconscious – it operates without conscious awareness but can interact with conscious processes and sometimes individuals may become aware of its influence (Epstein, 2003).

Most implicit social cognition researchers agree that the latter system is associative (Bosson, 2006 ; Epstein, 2003; Fazio & Olson, 2003; Gawronski & Bodenhausen, 2006, 2007; Greenwald et al., 2002; Petty et al., 2007; cf. Koole & DeHart, 2007). In terms of implicit self-esteem, many theories hypothesize that the self is associated with multiple other concepts, some of these concepts being evaluative or having some kind of valance, and possibly existing as a network of associations, a set of beliefs about the self, or a schema that exists somewhere in memory (e.g., Epstein, 2003; Gawronski & Bodenhausen, 2007, 2007; Petty et al., 2007). Typically there is an assumption that implicit attitude measures are able to directly assess associations between the self and other positive/negative concepts as they exist in an individual's brain. Thus, self-presentational biases do not come into play and have no influence on the resulting scores. Studies 1 through 3 of this dissertation are primarily based on this definition of implicit self-esteem and its accompanying correlates.

Evaluation of Self-Associated and Self-Dissociated Objects

Another definition for implicit self-esteem is often quoted by implicit social cognition researchers: "*Implicit self-esteem* is the introspectively unidentified (or inaccurately identified) effect of the self-attitude on evaluation of self-associated and self-dissociated objects" (Greenwald & Banaji, 1995; p. 11). As pointed out by Hetts and Pelham (2001), this definition does not require that the self-attitude is implicit rather than explicit. Individuals may have highly esteemed attitudes towards a self-associated object, but be unaware that these attitudes are due to projection of their own positive self-feelings. Measuring individuals' attitudes towards self-associated objects can be considered an indirect way of measuring self-enhancement and should largely circumvent self-presentational biases. There is not necessarily the need to invoke the existence of an unconscious associative network in the brain or to claim that we can measure such associations via implicit attitude measures. Studies 4 and 5 of this dissertation investigate cultural variability in implicit self-esteem under this definition of implicit self-esteem.

What Does Implicit Self-Esteem Predict?

The two definitions offered in the previous section give rise to slightly different predictions about the correlates of implicit self-esteem. The associative network account posits that implicit self-esteem must develop slowly over time via evaluative conditioning (see De Houwer, Thomas, & Baeyens, 2001, and Gawronski & Bodenhausen, 2006, for reviews). For instance, pairing activation of the "self" with positive and negative concepts or evaluations should increase the association between the self and those concepts or evaluations. Early life experiences, such as how one is treated by their parents, may have profound influence on the trajectory of implicit self-esteem over time (DeHart, Pelham, & Tennen, 2006; Hetts & Pelham, 2001).

Implicit attitude theories state that affect is what is experienced as a result of activation of associations with attitude objects (Gawronski & Bodenhausen, 2006), associations are formed through “emotionally significant” experiences, and an understanding of emotions is the key to understanding implicit processing (Epstein, 2003, 2006). In the case of implicit self-esteem, one might experience an automatic affective reaction in response to a self prime (Bosson, 2006). According to Tracy and Robins' (2004) model of the cognitive components that precede the experience of pride and shame, attention towards the self or some activation of a self representation is necessary in order to experience these emotions. Implicit self-esteem may then be correlated with one’s affective experiences – in particular self-conscious emotions such as pride and shame (Tracy, Cheng, Robins, & Trzesniewski, 2009) or anxiety or positive and negative affect in general (Conner & Barrett, 2005; Koole & Coenen, 2007; Koole & DeHart, 2007; Robinson & Meier, 2005; Spalding & Hardin, 1999).

Implicit self-esteem may also have a special role in proper psychological functioning or efficient processing that occurs out of conscious awareness. For example, implicit self-esteem may help us to process ambiguous information about the self (Hetts & Pelham, 2001) and protect

the self from threatening information (Jones, Pelham, Mirenberg, & Hetts, 2002). Hetts and Pelham (2001) suggest that implicit self-esteem may have a function similar to that proposed by the sociometer theory of self-esteem (Leary, 2005; Leary, Tambor, Terdal, & Downs, 1995). Since implicit self-esteem is less prone to distortion by rational processing, it may be more accurate and serve as a better indicator of relational value.

Much disagreement exists in the literature about whether implicit self-esteem ought to be related to explicit self-esteem. Some researchers readily accept a dissociation between the two types of self-esteem (Hetts & Pelham, 2001; Koestner & Mageau, 2006). Others do not assume that the two constructs are necessarily related, but think that a small relationship between implicit and explicit self-esteem ought to exist (Kernis, 2003; Gregg, 2003). On the other hand, Epstein (2006) argues that: "most people's experientially and rationally determined beliefs are mainly congruent, or else they would be in a continuous state of conflict and stress" (p. 71), but also maintains that the distinction between the two is important. Gawronski and Bodenhausen's (2006) model assumes that default conscious reactions are typically in congruence with automatic affective responses. Several researchers argue that a disjunction between explicit and implicit self-esteem may predict psychological dysfunction (Bosson, 2006; Epstein, 2006; Jordan, Logel, Spencer, & Zanna, 2006; Jordan, Logel, Spencer, Zanna, & Whitfield, 2009; Kernis, 2003).

Greenwald and Banaji (1995) present a list of psychological phenomena that they argue should be explained by the second general definition of implicit self-esteem presented above. These phenomena typically constitute research findings in which it is likely that individuals project a positive self-image onto a self-associated object, idea, or person(s). Importantly, individuals are likely unaware of the connection between these attitudes and their own self-feelings. These phenomena include: Attributing validity to arguments or a particular position after merely being randomly assigned to present such arguments (Greenwald, 1969), a tendency

to increase the value one places on an object after being given ownership of the object (i.e., the endowment effect; Kahneman, Knetsch, & Thaler, 1990), a display of in-group favouritism after merely being arbitrarily assigned to a group (i.e., the minimal group effect; Tajfel, 1970), being more attracted to another person who maintains similar opinions (i.e., the similarity-attraction effect; Byrne, 1969), viewing arguments as valid just because they agree with one's pre-existing opinions (Lord, Ross, & Lepper, 1979), a cognitive dissonance effect whereby individuals' ratings of items (e.g., music recordings) change after they are given the opportunity to choose to receive one of the items (Festinger & Walster, 1964), revising memory to maintain a positive self-image (Greenwald, 1980), self-positive illusions (Taylor & Brown, 1988), basking in reflected glory and downward comparisons (Cialdini et al., 1976; Suls, 1991), and some reciprocity effects (Aronson & Linder, 1965).

Dissertation Organization and Research Strategy

The present dissertation seeks to critically evaluate the claim that cultural variability does not exist in implicit self-esteem – through both empirical studies and a review of the extant literature. The dissertation is organized primarily into four manuscript-style chapters in which five research studies are presented. The question of whether cultural variation exists in implicit self-esteem has important implications for the debate over the universality of self-enhancement motivations (e.g., Heine, 2005; Heine et al., 2007a,b; Sedikides et al., 2003, 2005, 2007a,b). Implicit self-esteem measures are perhaps the only remaining self-enhancement measures where cultural variability has not been definitively demonstrated. Given the centrality of self-enhancement motives in much of Western psychological research, the present dissertation's results have potential broad implications for psychological theory.

The main observation motivating the research strategy employed is that different methodologies yield different conclusions regarding cultural variability in self-enhancement or the positivity of self-evaluations. We have alluded to several examples already in which

researchers claimed to have found East Asian self-enhancement using a different methodological approach (e.g., Brown & Kobayashi, 2002; Sedikides et al., 2003). Counterexamples are also present in the literature. For example, Heine and Hamamura's (2007) meta-analysis also found that studies vulnerable to the "everyone is better than average" effect (EBTA)– evident when individuals rate their characteristics relative to an average other – often show higher self-enhancement rates for all cultural groups. Recent work on EBTA reveal that these results are likely due to a cognitive bias that occurs when any individual person is compared to an abstract "average," and is not an ideal method for studying self-enhancement (Hamamura, Heine, & Takemoto, 2007; Klar & Giladi, 1997). Furthermore, Rose and colleagues (Rose, Endo, Windschitl, & Suls, 2008) have found that cultural differences in unrealistic optimism are actually amplified when using less direct methods of assessment. The point of this digression is to warn that it is possible to make erroneous conclusions regarding cultural variability in implicit self-esteem if focusing on the results of only one or two methodological approaches. Therefore, the problem of this dissertation is approached through the use of two distinct strategies.

"Direct" Measurement

The first approach relies exclusively on comparing cultures on measures specifically designed to assess implicit self-esteem. This is congruous with the first previously presented definition of implicit self-esteem as an associative network. This is the strategy that has primarily been utilized in previous research to make claims about the lack of cultural variation in implicit self-esteem; the majority of these studies have used the implicit association test (IAT; Greenwald & Farnham, 2000; e.g., Yamaguchi et al., 2007). Study 1 offers an initial test of whether the results from the IAT might constitute a mono-method bias. Implicit self-esteem was assessed for Euro-Canadians, Asian-Canadians, and Japanese. The results from the IAT self-esteem measure were compared to an alternative measure that relied on the idea that an increase in automatic cognitive processing occurs when individuals are under cognitive load (Bargh & Tota, 1988;

Gilbert & Hixon, 1991; Gilbert & Osborne, 1989). Results indicated that cultural variability was not present in the IAT, but the alternative measure yielded a pattern of results consistent with Heine & Hamamura's (2007) meta-analysis. Furthermore, the two measures were slightly negatively related to each other.

If some implicit self-esteem measures yield cultural variability whereas others do not, it would be logical to give more weight to cross-cultural investigations that use the more valid measure. Recently, the validity of the two most popular implicit self-esteem measures has been seriously called into question (Buhrmester, Blanton, & Swann, 2011a). To complicate matters, research examining the predictive validity of implicit self-esteem measures among East Asians is virtually nonexistent. Study 2 remedied this problem by assessing the convergent and predictive validity of both new and popular implicit self-esteem measures among Euro-Canadians, Asian-Canadians, and Japanese. Findings indicated that explicit self-esteem measures far outperformed implicit measures on both types of validity and for all cultural groups. No implicit self-esteem measure was found to have comparable validity across all cultural groups. Cultural differences were also apparent in explicit self-esteem measures, but not in implicit self-esteem measures.

Study 3 continued the search for a valid measure of implicit self-esteem while focusing most data collection efforts on a single cultural group (Euro-Americans). Drawing on theory that the self-concept is highly complex and multifaceted (Markus & Wurf, 1987; Shavelson, Hubner, & Stanton, 1976), two experimental manipulations were implemented in an attempt to boost the validity of the best performing implicit self-esteem measures from Study 2. This investigation also relied on the argument that implicit self-esteem is often operationalized in a way that is too coarsely defined to offer any predictive power. Thus, this study considered more nuanced ways of conceptualizing the network of associations thought to be implicit self-esteem. Once again, explicit self-esteem measures far outperformed implicit self-esteem measures in predictive validity across all experimental conditions. The validity of implicit self-esteem measures was

apparently not budged by the experimental manipulations and no implicit measure was found to have adequate validity.

"Indirect" Measurement

Although it seems an impasse has been reached where questions regarding the cultural variability of implicit self-esteem cannot be immediately answered, we suggest a second general strategy that considers empirical evidence from a variety of alternative sources and methodological approaches. The theoretical groundwork for this strategy is based in part on the second definition of implicit self-esteem presented above (Greenwald & Banaji, 1995). The strong form of this argument asserts that we can infer whether cultures differ in implicit self-esteem by examining other phenomena, and that this inference is just as good as the inferences we could make if a valid measure of implicit self-esteem were available. Recall that part of the motivation for considering implicit self-esteem measures is that they avoid the self-presentational biases that tend to vary across cultures. Therefore, the weaker form of this argument asserts that at the very least, the consideration of cultural variability in other phenomena allows us to circumvent the problem of response biases and self-presentational norms.

Some insights into this approach are drawn from latent variable measurement theory (e.g., Bollen, 1984; Borsboom, 2005; Borsboom, Mellenbergh, & Van Heerden, 2004). Underlying the use of commonly used statistical techniques in psychology, such as exploratory and confirmatory factor analysis, is a realist assumption that the underlying trait(s) researchers attempt to measure actually exists in reality (Borsboom, 2005). That is, regardless of whether our attempts at measuring implicit self-esteem are successful, people actually have a trait corresponding to implicit self-esteem. These underlying traits, or latent variables, cannot be directly observed. Instead, indirect measurement must be attempted by measuring *indicators* that are somehow related to the latent variable.

We would expect implicit self-esteem to be an underlying construct that causes individuals to respond in a certain way on implicit self-esteem measures. Similarly, we might expect that implicit self-esteem is a driving force that causes variation in many criteria or correlates of implicit self-esteem. For example, if the output of implicit self-esteem is affective reactions following a self-prime, implicit self-esteem should be causally related to pride and positive and negative affect. For some criterion, it may be difficult to tell the causal direction. For instance, early life experiences with one's parents should causes changes in implicit self-esteem. Participant responses to retrospective reports of parental interactions could be indicators that have caused implicit self-esteem changes, or to the extent that implicit self-esteem influences the positivity of recalled memories, may caused by implicit self-esteem.

Regardless of the causal direction, the default approach to measurement in psychology is to create a composite score based on the indicators (e.g., sum or average items, or use a scoring algorithm). Differences among two or more groups (e.g., experimental conditions) are then often compared using such composite scores, and inferences are made regarding variability on the underlying construct. This is the approach that has been taken for investigations into the cultural variability of implicit self-esteem, though only through the use of measures specifically designed to assess implicit attitudes. The same strategy could be used for other indicators of implicit self-esteem. That is, we should be able to make inferences about whether cultures vary on implicit self-esteem by examining whether cultural variability exists in the phenomena that implicit self-esteem is thought to explain.

Following this approach, Study 2 also reports analyses on the convergent validity and cultural variability in criterion measures thought to be predicted by implicit self-esteem. Results from Study 2 (rather than Study 3) were chosen for analyses primarily because of substantial samples from three cultural groups, facilitating cultural comparisons. This preliminary evidence suggests that cultures likely differ in the majority of these outcomes – in a direction consistent

with Japanese having lower self-esteem than Euro-Canadians. Note that the criterion measures examined here were drawn from the associative network explanation of implicit self-esteem.

Studies 4 and 5 then present cross-cultural research examining phenomena theoretically linked to the second general definition of implicit self esteem. Given empirical work showing evidence for cultural variability in the endowment effect – a tendency to value an object after one owns the object - Study 4 explored the underlying reason for this cultural difference using a traditional endowment effect paradigm. Recent theory and evidence suggests that the endowment effect may be due in part to owners establishing a personal connection to the object, and then unknowingly projecting their own self-feelings onto the object. The endowment effect may be often observed because it is usually studied with participants who have positive self-views. Among both Euro-Canadians and Japanese, we used an experimental manipulation designed to either enhance or deemphasize the relationship between the participant and the target object. Results were indicative of a stronger endowment effect for Euro-Canadians when this relationship was enhanced – a pattern consistent with the position that Euro-Canadians project a positive self view onto the object. In contrast, a near reversal of the endowment effect was observed for Japanese when the relationship with the target object was enhanced – a pattern consistent with the position that Japanese may not necessarily project positive self-views onto the object.

Study 5 presents research examining cultural variability in the tendency to favour a novel in-group over a novel out-group (i.e., the *minimal group effect*; Tajfel, Billig, Bundy, & Flament, 1971). Recent evidence suggests that the minimal group effect is due in part to a similar process that occurs for the endowment effect – that in the absence of information about the in-group, individuals are likely to project their own characteristics onto the in-group. Thus, individuals with positive self-views are more likely to display an in-group bias. In Study 5, American and Japanese participated in a minimal group study using a traditional paradigm. American

participants were more likely to show an in-group bias in group identification, perceived group intelligence, the groups' personality traits, and resource allocation. Furthermore, these cultural differences were all partially mediated by an explicit measure of self-esteem.

The final chapter of this dissertation provides a discussion of research findings, including limitations, implications, and directions for future research.

CHAPTER 2: DIFFERENT IMPLICIT SELF-ESTEEM MEASURES YIELD DIFFERENT CONCLUSIONS[1]

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 et al., 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 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).

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 Association Test 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, 2009). The

[1] A version of this chapter has been published as: Falk, C. F., Heine, S. J., Yuki, M., & Takemura, K. (2009). Why do Westerners self-enhance more than East Asians? *European Journal of Personality, 23,* 183- 203.

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 block 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 block, 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 blocks 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? On the one hand, different variants 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 et al., 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), narcissism (Gregg & Sedikides, 2010), gender identity (Aidman & Carroll, 2003), negative affect (Robinson & Meier, 2005), self-deception, and responses to failure (Greenwald & Farnham, 2000; Meagher & Aidman, 2004).

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, some studies have found that 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 overpresentation (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 (e.g., Fiedler, Messner, & Bluemke, 2006; cf. Nosek, Greenwald & Banaji, 2007). Although much of the above review of validity evidence for the IATSE derives from studies assessing a mismatch between the IATSE and explicit self-esteem scores (e.g., Jordan et al., 2003), Bosson et al's (2008) meta-analysis of this interactive effect on narcissism revealed a null effect for the IATSE. In addition, Buhrmester and colleagues (2011a) conducted a meta-analysis of IATSE research and found that it lacked construct validity; many of the

aforementioned findings often were not replicated or correlations with external criteria were weak (e.g., Bosson et al., 2000). For example, with the exception of gender identity (Aidman & Carroll, 2003), the above studies did not demonstrate that the IATSE was a superior predictor of the criteria than explicit measures of self-esteem. 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 often has near zero or negative correlations with other implicit self-esteem measures (Bosson et al., 2000).

The IATSE is also vulnerable to a number of methodological problems. High IATSE can occur by having a negative attitude towards the "other" reference category without having positive attitudes about oneself (Karpinski, 2004; cf. Pinter & Greenwald, 2005). "Positive associations" 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). Pinter and Greenwald's response (2005) revealed a positive correlation between different IATSE variants, but with a sample size too small to make any meaningful inference. 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; Czellar, 2006; Fiedler, & Bluemke, 2005; Kim, 2003; Steffens, 2004; cf. Banse, Seise, & Zerbes, 2001; Egloff & Schmukle, 2002) though such faking may be detectable (Cvencek, Greenwald, Brown, Gray, & Snowden, 2010). 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; cf. Glen & Banse, 2004). 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., 2000, 2001; 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 attentional 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.

Study 1

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. 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 attentional load, and 3) test the relationship between the IATSE and the novel measure of self-enhancement.

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 number tests; Koole et al., 2001). Furthermore, because it is possible that the traits used in this paradigm might be viewed differently across cultures (see Sedikides et al., 2003), we obtained idiographic measures of trait importance.

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 worked together to ensure that the meanings were equivalent.

After completing a measure of relational mobility (Yuki et al., 2007)[2] participants completed the self-evaluation task on a computer. Its administration constituted a 3 (Culture: Japanese vs. Asian-Canadian vs. Euro-Canadian) X 2 (Attentional Load: Low Load versus 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 thirty 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 & 4). The thirty 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.

[2] As it is not central to the dissertation, the current version of this chapter omits discussion and analyses of the construct relational mobility that appeared in the original article (Falk et al., 2009).

Following this, participants completed another paper questionnaire containing ratings for each of the thirty 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 blocks (and counterbalancing) identical to that described by Greenwald & 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 (see also Appendix A for results without covariates).

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) X 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 (centered) 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 179.33ms longer to respond for each trait than those in the low-load condition (*adjusted M* = 1094.30). Furthermore, there was no load X 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 modeling (HLM; or multilevel modeling; Raudenbush & Bryk, 2002). Two HLM models were constructed. The first, described below, constituted the basic model which examined self-enhancement across cultures and attentional load conditions. The other model, described later, added terms to test the relationship of the IATSE 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 thirty traits (once under low attentional load and once under high attentional load), sixty data points existed for each participant. Thus, the Level 1 equation predicted trait endorsement from trait desirability ratings (grand mean centered), 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 modeled with a logit link function and a binomial error distribution (the HLM equivalent of a logistic regression), and estimations were obtained using penalised quasilikelihood.

For the basic HLM model, culture, gender (-.5 = Female, .5 = Male), age (centered), 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 X 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:

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

Table 1. HLM fixed and random effects for the basic model in Study 1

Fixed Effect	*Coefficient*	*se*	*df*	*t Ratio*	*Odds Ratio*
Endorsement Mean					
Intercept, β_{00}	.49	0.11	184	4.39***	1.64
Culture1, β_{01}	.09	0.11	184	0.89	1.10
Culture2, β_{02}	-.42	0.21	184	-2.05*	0.66
Age, β_{03}	.02	0.01	184	1.57	1.02
Gender, β_{04}	-.11	0.08	184	-1.34	0.90
Compensation, β_{05}	.08	0.18	184	0.41	1.08
Rating Slope					
Intercept, β_{10}	1.06	0.08	184	12.63***	2.88
Culture1, β_{11}	-0.27	0.07	184	-3.65***	0.76
Culture2, β_{12}	-1.00	0.16	184	-6.46***	0.37
Age, β_{13}	-0.01	0.01	184	-1.44	0.99
Gender, β_{14}	0.01	0.07	184	0.21	1.01
Compensation, β_{15}	0.10	0.13	184	0.79	1.11
Load Slope					
Intercept, β_{20}	-0.005	0.08	11374	-0.06	1.00
Culture1, β_{21}	-0.09	0.08	11374	-1.16	0.92
Culture2, β_{22}	0.02	0.15	11374	0.17	1.03
Age, β_{23}	0.01	0.01	11374	1.28	1.01
Gender, β_{24}	0.11	0.06	11374	1.87†	1.11
Compensation, β_{25}	0.004	0.13	11374	0.03	1.00

Fixed Effect	*Coefficient*	*se*	*df*	*t Ratio*	*Odds Ratio*
Rating X Load Slope					
Intercept, β_{30}	-0.06	0.04	11374	-1.44	0.94
Culture1, β_{31}	0.02	0.04	11374	0.35	1.02
Culture2, β_{32}	0.05	0.07	11374	0.74	1.05
Age, β_{33}	0.01	0.005	11374	1.59	1.01
Gender, β_{34}	0.03	0.03	11374	0.93	1.03
Compensation, β_{35}	0.02	0.06	11374	0.44	1.02

Random Effects	*Variance Component*	*sd*	*df*	χ^2
Intercept, r_0	0.20	0.45	184	531.82***
Rating Slope, r_1	0.12	0.35	184	964.12***

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

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, β_{11} = -.27, $t(184)$ = -3.65, p = .001, and β_{12} = -1.00, $t(184)$ = -6.46, p < .001 for Culture1 and Culture2, respectively.[3] This indicated that the Euro-Canadian group self-enhanced the most, β_{10} = 1.06, $t(184)$ = 12.63, p < .001, whereas the Asian-Canadians showed significantly less self-enhancement, β_{10} = .79, $t(184)$ = 10.62, p < .001, and the Japanese even less self-enhancement, β_{10} = .05, $t(184)$ = .63, p = .53.[4] The Japanese coefficient, albeit nominally positive, was not significantly different from zero.

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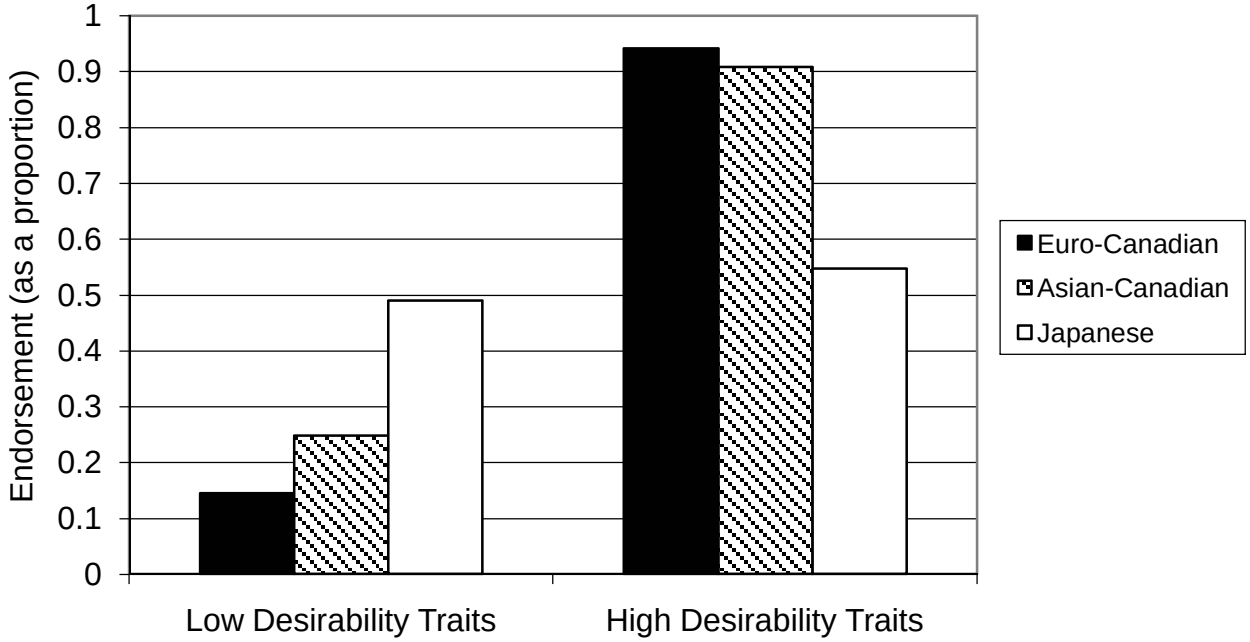
[3] All coefficients from these analyses are unstandardized and are assumed to follow a *t*-distribution rather than a *z*-distribution (Bryk & Raudenbush, 1992). Approximate degrees of freedom for all coefficients not only depend on the number of data points and predictors for each model, but also whether the specific Level 1 parameter is appropriately modeled as fixed (*df*'s 183-184) or random (*df*'s 11370-11374). As an update to the original article, also note that these cross-level interactions are still significant even when omitting the covariates, and hold when alternative level 1 centering strategies (i.e., group-mean centering) currently recommended for investigating cross-level interactions are used (Enders & Tofighi, 2007; see Appendix A for these alternative results).

[4] From the HLM equation, β_{10} is the coefficient that represents the rating-endorsement relationship when all covariates are equal to zero. Since we are technically decomposing an interaction here, we repeat the use of this coefficient (and its subscript) to indicate this rating-

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, 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 a 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.

Figure 1. Proportion of low (-1 SD) and high (+1 SD) desirable traits endorsed by each cultural group.



Note: Proportions represent predicted values from the basic HLM model equation.

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endorsement relationship for each cultural group. We use a similar convention of repeating coefficients when breaking down other interactions elsewhere in this chapter.

Culture and Load X Rating – Endorsement

If cultural differences in self-enhancement were merely due to self-presentational biases, we would expect 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 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 X rating-endorsement coefficient indicated whether the rating-endorsement relationship was different between the low-attentional and high-attentional load conditions. The results of this interaction term with culture were non-significant, β_{31} = .02, t(11374) = .35, p = .72, and β_{32} = .05, t(11374) = .74, p = .46, for Culture1 and Culture 2, respectively. In addition, the load X rating-endorsement relationship was nominally negative, but not significantly different from zero, for all three cultural groups, β_{30} = -.06, t(11374) = -1.44, p = .15, β_{30} = -.05, t(11374) = -1.61, p = .11, and β_{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; to the extent that the attentional load manipulation reduced the resources available for self-presentation, 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; cf. Szeto et al., 2009). No other variables in the regression model were significant predictors of the IATSE (all p's > .2).

To test whether the IATSE could predict self-enhancement on the self-evaluation task in an expected way, the IATSE (centered) 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 X IATSE cross-level interaction was significant, $\beta_{16} = -.17$, $t(183) = -2.01$, $p < .05$, and the rating X load X 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).

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., 2003; 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, 2007b; Sedikides, Gaertner, & Vevea, 2007), and the relationship observed with the "better-than-average effect" appears to be due to a cognitive artefact (Hamamura et al., 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; cf. Szeto et al., 2009), the present study did not find cultural differences in the IATSE. There is growing evidence that scores the IATSE do 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. These findings represent validity problems for the IATSE.

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 and challenges

alternative explanations for these differences (e.g., Sedikides et al., 2003; Yamaguchi et al., 2007).

CHAPTER 3: THE VALIDITY OF IMPLICIT SELF-ESTEEM MEASURES

The previous chapter illustrated how alternative ways of measuring implicit self-esteem often yield different conclusions about its cultural variability. Indeed, the IAT has usually not yielded cultural differences in self-esteem (Falk et al., 2009; Kobayashi & Greenwald, 2003; Kitayama & Uchida, 2003; Yamaguchi et al., 2007; cf. Szeto et al., 2009). However, other implicit attitude methodologies examining cultural variability in ISE have either yielded mixed results (Boucher, Peng, Shi, & Wang, 2009) or found evidence that East Asians are lower in ISE than Westerners (Cai et al., 2011; Falk et al., 2009; Hetts, Sakuma, & Pelham, 1999).[5] This divergence in research findings makes it difficult to definitively state whether cultural variability exists in implicit self-esteem.

While we were also highly critical of the IAT in the previous chapter, the validity of all ISE measures has been especially controversial. Bosson, Swann, and Pennebaker (2000) examined seven different measures of implicit self-esteem and found little evidence of convergent validity among ISE measures and a general lack of criterion validity. Despite this poor showing of ISE measures, the IAT self-esteem measure and the name letter test (NLT; Bosson et al., 2000; Jones et al., 2002) emerged as widely used indexes of implicit self-esteem. Bosson et al's (2008) meta-analysis of explicit by implicit self-esteem interactions in predicting narcissism included both the IAT and NLT. The interactive effect with the IAT was nil whereas the effect with the NLT was significant, but near zero. More recently, Buhrmester and

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[5] Although not explicitly highlighted, Cai et al (2011) report means and standard deviations for an implicit self-esteem measure for Americans (n = 102) and Chinese (n = 58) in Table 1 for Study 2. The astute reader will notice that the Americans (M = 7.50, SD = 1.67) had significantly higher implicit self-esteem scores than the Chinese (M = 6.60, SD = 1.92), $t(158) = 3.10$, $p < .01$, $d = .5$.

colleagues' (2011a) review and meta-analysis found that the IAT and NLT had poor convergent and predictive validity across a wide range of phenomena and empirical studies. Many research findings in favour of IAT and NLT validity were isolated or not replicated (e.g., 1-2 studies), and some relationships between implicit self-esteem measures and certain types of criterion were inconsistent (e.g., Robinson & Meier, 2005; Verplanken, Friborg, Wang, Trafimow, & Woolf, 2007) or were not readily interpretable in light of other findings in the meta-analysis. For instance, it is unclear whether findings in which the IAT or NLT were moderators should count towards the unique criterion validity of these measures (e.g., Bosson et al., 2008; Dijksterhuis, 2004; Jordan et al., 2003; Zeigler- Hill, 2006). Explicit self-esteem measures in general have been found to have much better convergent and criterion validity (Bosson et al., 2000; Buhrmester et al., 2011a).

It is also important to notice that the vast majority of research conducted on the validity of implicit self-esteem measures has used participants from Western cultural backgrounds. Our review of the literature reveals only a single study testing the criterion validity of an implicit self-esteem measure among an East Asian sample (Zhang & Chan, 2009). As research on self-report measures has taught us, measures valid for one population do not necessarily even make sense for those from other cultural backgrounds (Greenholtz, 2005).

Given the questionable validity of the most popular ISE measures and the lack of validity studies conducted among East Asian populations, it is difficult to discern which previously conducted studies are most reflective of cultural variability (or lack thereof) in implicit self-esteem. Therefore, this chapter serves to 1) search for a valid measure of implicit self-esteem, and 2) test the validity of implicit self-esteem measures among both East Asian and Western cultural groups. If a valid measure of implicit self-esteem were found, it would be important to the field of implicit self-esteem research and would allow us to examine whether cultural variability exists in implicit self-esteem. In Study 2 we tested the validity and cultural variability

of the most new and popular implicit self-esteem measures among three cultural groups: Euro-Canadian, Asian-Canadian, and Japanese. In Study 3, we sought to improve the validity of implicit self-esteem measures via two experimental manipulations. Before presenting these studies, we briefly present possible reasons why implicit self-esteem measures fail to have validity, as well as well as theory regarding possible criteria for implicit self-esteem prediction.

Why Might Implicit Self-Esteem Measures Lack Validity?

If we knew the answer to the above question, we could solve the implicit self-esteem measurement problem. Our search for the validity of implicit self-esteem measures is theoretically driven by three possible answers: 1) faulty methodology or measurement procedure, 2) incorrect theory about implicit self-esteem correlates, 3) incorrect conceptualization of implicit self-esteem. The first of these two issues we address below; the third we return to in Study 3.

What Could Be Wrong with a Measurement Procedure?

A single measurement procedure does not work equally well for all psychological constructs. For example, although self-report measures are by far the most widely used method for assessing personality (Paulhus & Vazire, 2007), individuals lack knowledge of or are unwilling to report about some aspects of their personality (Paulhus, 1991; Wilson & Dunn, 2004). In these cases, we cannot directly ask participants about the construct of interest, but must use an alternative approach (for a review see Paulhus & Vazire, 2007). This is partly the motivation for the development of implicit attitude measures in the first place.

Similarly, implicit attitude measures may also not work well for all types implicit attitude constructs. Examples of this are most evident for the IAT because it is the most popular, but also likely apply to other implicit measures in general. For instance, Greenwald and colleagues' meta-analysis (Greenwald, Poehlman, Uhlmann, & Banaji, 2009) found that implicit inter-group preference and racial prejudice IATs typically had better criterion validity than explicit measures

(e.g., Amodio & Devine, 2006; McConnell & Leibold, 2001). It would be inappropriate, however, to conclude from this that the validity of implicit measures can be assumed to be equally solid for other constructs without testing. The lack of validity of the self-esteem IAT is a case in point (Buhrmester et al., 2011a), and even the criterion validity of the racial prejudice IAT has come under criticism (Blanton et al., 2009).

Problems with implicit self-esteem measures may be due to either unique features of the construct of interest that make the measurement procedure ill-suited, or problems inherent in the measurement procedure itself (e.g., a high degree of measurement error or method variance). To again use the IAT as a specific example, Karpinski (2004) identified the existence of a reference category with which to compare oneself (e.g., "self" versus "other") as a problematic feature. Conceptually, an individual may attain a high IAT self-esteem score by virtue of having *either* strong self-positive associations *or* strong other-negative associations. Although a judgment of one's own self-esteem could be a process by which one must make social comparisons, the choice of an optimal "other" category is not as clear as it is in the measurement of inter-group preference and many different choices are present in the literature (e.g., Conner & Barrett, 2005; Gregg & Sedikides, 2009; Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007; Zhang & Chan, 2009). Pinter and Greenwald (2005) agree that interpretation of the IAT depends on the choice of the reference category and have claimed that this choice will primarily affect the magnitude of resulting scores, but fail to provide evidence that use of different reference categories result in valid IAT self-esteem measures.

Additional specific critiques apply to other implicit self-esteem measures. For instance, use of the single-block IAT would also require a reference category (e.g., Teige-Mocigemba, Klauer, & Rothermund, 2008). It has been argued that the NLT is more properly defined as a measure of implicit egotism (Buhrmester et al., 2011a). In particular, the NLT focuses on a feature of the self that is too narrow to have any predictive power – liking of one's own name or

initials. Finally, tasks that require fast reaction times – a feature of nearly all implicit attitude measures (e.g., affective priming; Hetts et al., 1999; single-category IAT; Karpinski & Steinman, 2006; go/no-go association test; Nosek & Banaji, 2001) – may be inappropriate for studying ISE because self-esteem is thought to result from a self-reflection process that has no time to occur during such tasks (Buhrmester et al., 2011a).

Methodological problems also exist for certain measurement procedures in general, and most criticisms have been aimed at the IAT – perhaps due to its popularity (Blanton & Jaccard, 2006a, 2006b, 2006c, 2006d; Blanton, Jaccard, Christie, & Gonzales, 2007; Blanton et al., 2006; Fiedler et al., 2006; cf. Greenwald, Nosek, & Sriram, 2006; Greenwald, Rudman, Nosek, & Zayas, 2006; Nosek & Sriram, 2007). A number of sources of method variance have also been identified for the IAT (e.g., Klauer, Voss, Schmitz, & Teige-Mocigemba, 2007; Mitchell, 2004; Rothermund & Wentra, 2004; cf. Nosek & Sriram, 2007). Research also suggests that other implicit measures have low internal consistency or test-retest reliabilities (Bosson et al., 2000; Buhrmester et al., 2011a). Numerous other unknown methodological problems likely exist for other measurement procedures, but have simply not been identified. Such methodological problems may result in measurement error or method variance that is unrelated to the construct and dampens its correlations with criterion measures.

What Should Implicit Self-Esteem Predict?

Another reason implicit self-esteem measures may apparently lack validity could have to do with the criteria used in previous investigations. Our view of the implicit self-esteem literature is that there is no consensus on what implicit self-esteem ought to predict and research has spread out over a wide range of options. For example, an often used strategy is to assume that implicit self-esteem ought to predict the same things as explicit self-esteem (e.g., depression, well-being, etc.), and to conduct research investigating this possibility (see Buhrmester et al.,

2011a for a review). Given the extent of research on self-esteem in general, this line of thinking may lead to a misdirected search for implicit self-esteem measure validity.

In addition, implicit self-esteem has been theoretically and empirically linked to a wide range of other criteria (see Chapter 1 for a more thorough review), including early life experiences such as how one is treated by their parents (Hetts & Pelham, 2001), self-conscious emotions such as pride and shame (Tracy et al., 2009) or anxiety or positive and negative affect in general (Conner & Barrett, 2005; Koole & Coenen, 2007; Koole & DeHart, 2007; Spalding & Hardin, 1999), interpretation of ambiguous information about the self (Hetts & Pelham, 2001), automatic negative self-thoughts (Verplanken et al., 2007), and independent ratings of self-esteem (Bosson et al., 2000). Finally, mismatches between implicit and explicit self-esteem may be indicative of improper psychological functioning (Bosson, 2006; Epstein, 2006; Jordan et al., 2006, 2009; Kernis, 2003).

In summary, there is no one criterion that serves as the gold standard for which to assess the predictive validity of implicit self-esteem measures. In any investigation of the validity of implicit self-esteem measures, a parallel search for the proper criteria or correlates of implicit self-esteem must simultaneously take place.

Study 2

A plethora of additional implicit attitude measures have emerged in the last decade, each with potential methodological improvements. The go/no-go association test (Nosek & Banaji, 2001) and the single-category IAT (Karpinski & Steinman, 2006) can assess associations between the self and other concepts, without the need for a reference category. The affect misattribution procedure does not necessarily require fast reaction times (Payne, Cheng, Govorun, & Stewart, 2005) and the single-block IAT reduces method variance associated with the IAT (Teige-Mocigemba et al., 2008). It is possible that some of these methodological procedures may be better suited for studying implicit self-esteem than others. However, given

the sheer number of implicit attitude measures, it may be unfeasible to thoroughly identify all relevant methodological features that could make ISE measurement problematic.

Since Bosson et al's study (2000) over a decade ago, there has not been a systematic comparison of the convergent and criterion validity of new implicit self-esteem measures. Rudolph and colleagues (Rudolph, Schröder-Abé, Schütz, Gregg, & Sedikides, 2008) assessed several new ISE measures across three studies and found poor convergent validity, except for a relationship between the IAT and the go/no-go association test, but did not assess criterion validity.

In Study 2 we conducted an updated comparison of ISE and ESE measures using the same strategy as Bosson et al (2000) among Euro-Canadians, Asian-Canadians, and Japanese. We measured a wide range of implicit self-esteem measures, explicit self-esteem measures, and criterion variables. Both implicit and explicit self-esteem measures were chosen based on their previous popularity and use in cross-cultural comparisons of self-esteem (e.g., Falk et al., 2009; Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007) and portability across cultures. We sampled criterion measures from a diverse range of possible options in an attempt to replicate previous research findings. The ultimate hope was to find an implicit self-esteem measure that performed consistently well across all cultural groups or for certain types of criteria. Finally, the argument has been made in Chapter 1 that we may learn something about cultural variability in implicit self-esteem by examining the criterion measures. As a secondary goal, we examined convergent validity and cultural variability in the criterion measures.

Method

Participants

107 Euro-Canadian (77.57% female; *M* age = 21.66; *SD* = 4.67) and 187 Asian-Canadian students (74.33% female; *M* age = 19.98; *SD* = 1.89) from the University of British Columbia (UBC) participated for extra course credit or monetary compensation ($20). All Euro-Canadians

reported having parents with a Western ethnic background and were born in a Western country (i.e., USA, Canada, and Europe). All Asian-Canadians reported having parents with an Asian ethnic background and included those born in a Western country (37.97%), or an Asian country (62.03%). An additional 112 Japanese students (32.14% female; *M* age = 20.96; *SD* = 2.30) from Kyoto University were paid 2,000 Yen for their participation. Data collection for the Japanese sample was interrupted by the March 11, 2011 earthquake and tsunami. 30 participants had completed the study by this date and data collection was temporarily halted. Data collection officially resumed on April 28, 2011 after one of the authors (a Japanese researcher in Japan) deemed daily life to have returned to normal for most students at Kyoto University (see Appendix B for a comparison of pre- and post-tsunami data).

Design and Procedure

Participants completed this study via the Internet using Inquisit software (2009). On average participants spent approximately 63 minutes completing the study (*SD* = 22.89); 95% of participants took 94 minutes or less.[6] Whereas UBC students participated in English, Japanese completed the study in Japanese. All study materials were translated into by a Japanese researcher involved in the study and were independently checked for accuracy by two bilingual research assistants.

At the beginning of the study, participants completed a demographics questionnaire. Participants then entered their first and last names, a city or street they identify with (e.g., hometown), and birthdate (month and day) and the same information for their best friend. This idiographic information was later used as stimuli for some implicit self-esteem measures listed below. Participants also provided the name and email address for a friend who could provide an

[6] These estimates include time spent actually completing study tasks and do not include two scheduled breaks of 5 minutes each.

independent rating of the participant's personality. Next, participants completed a battery of three kinds of measures: 1) implicit self-esteem, 2) explicit self-esteem, and 3) criteria. To reduce the possibility that fatigue could explain the relative performance of implicit versus explicit self-esteem measures, the order of these two types of measures was counterbalanced and the set of criteria measures always appeared last (see Table 2).

Table 2. Order of tasks for Study 2

Explicit Measures First	*Implicit Measures First*
Demographics & Idiographic Items	Demographics & Idiographic Items
Rosenberg Self-esteem (RSES)	Birthday Number Task (BNT)
Self Liking (SL) & Competence (SC)	Affect Misattribution Procedure (AMP)
Semantic/Feeling Differentials (FD)	Implicit Association Test (IAT)
Feeling Thermometer (FT)	Single-block IAT (SB-IAT)
Self-attributes Questionnaire (SAQ)	Single-category IAT (SC-IAT)
False Uniqueness (FU)	Go/no-go Association Test (GNAT)
Birthday Number Task (BNT)	Self-Evaluation Under Load (SEL)
Affect Misattribution Procedure (AMP)	Affective Priming Task (APT)
Implicit Association Test (IAT)	Rosenberg Self-esteem (RSES)
Single-block IAT (SB-IAT)	Self Liking (SL) & Competence (SC)
Single-category IAT (SC-IAT)	Semantic/Feeling Differentials (FD)
Go/no-go Association Test (GNAT)	Feeling Thermometer (FT)
Self-Evaluation Under Load (SEL)	Self-attributes Questionnaire (SAQ)
Affective Priming Task (APT)	False Uniqueness (FU)
Ambiguous Statements Task (AST)	Ambiguous Statements Task (AST)
Parental Bonding Instrument (PBI)	Parental Bonding Instrument (PBI)
PANAS and Pride (PA, NA, and PRIDE)	PANAS and Pride (PA, NA, and PRIDE)

Explicit Measures First	*Implicit Measures First*
Narcissism (NAR)	Narcissism (NAR)
Trait Evaluation for the SEL	Trait Evaluation for the SEL

Explicit Self-Esteem Measures

Rosenberg Self-Esteem Scale (RSES). Participants rated the 10-item Rosenberg (1965) self-esteem scale on a 4-point Likert scale from 0 (*Strongly Disagree*) to 3 (*Strongly Agree*; α_E = .89, α_A = .89, and α_J = .81).[7] The RSES assesses global self-worth, is perhaps the most widely used measure of explicit self-esteem, and cultural differences on the RSES are consistently found (Heine & Hamamura, 2007).

Self-Liking and Competence. Tafarodi & Swann's (2001) revised scale measures both global self-liking (SL; α_E = .91, α_A = .90, and α_J = .78) and self-competence (SC; α_E = .82, α_A = .83, and α_J = .75) using eight items (four reverse scored) for each subscale. SL and SC was assessed on a 5-point Likert scale from 0 (*Strongly Agree*) to 4 (*Strongly Disagree*).

Semantic/Feeling Differentials. The semantic/feeling differential (FD) measure asked participants to rate themselves on a 7-point scale (1 to 7) for a number of attributes that were either polar opposites or had opposite positive/negative connotations (e.g., Warm – Cold, Happy – Sad, Proud – Shameful; Kobayashi & Greenwald, 2003; α_E = .86, α_A = .89, and α_J = .80).

Feeling Thermometer (FT). Participants reported a number from 0-100 indicating how *cold* (0) or *warm* (100) they feel about themselves (e.g., Kobayashi & Greenwald, 2003).

[7] To save space, we use the subscripts E, A, and J for Cronbach's alpha to refer to internal consistency estimates for Euro-Canadian, Asian-Canadian, and Japanese, respectively.

Self Attributes Questionnaire (SAQ). Pelham and Swann's (1989) self-attributes questionnaire asks participants to rank themselves, relative to other university students of the same age, on ten dimensions: intellectual/academic ability, social skills/social competence, artistic and/or musical ability, athletic ability, physical attractiveness, leadership ability, common sense, emotional stability, sense of humour, and discipline (α_E = .68, α_A = .76, and α_J = .73). Participants rated themselves on a 10-point scale from 1 (*Bottom 5%*) to 10 (*Top 5%*).

False Uniqueness (FU). Items measuring self-enhancement via a false uniqueness effect asked participants to estimate "the percentage of students from your university, the same sex as you, who you think you are better than" on ten positive dimensions: Cooperative, creative, independent, athletic, attractive, good sense of humour, gets along well with others, considerate, hard working, dependable (e.g., Heine & Lehman, 1997b; α_E = .90, α_A = .86, and α_J = .79).

Implicit Self-Esteem Measures

Birthday Number Task (BNT). In the birthday number preference task (e.g., Bosson et al., 2000; Jones et al., 2002), participants rated their liking on a 1 (*Dislike very much*) to 9 (*Like very much*) scale of the numbers 1 through 40, appearing in a random order. Their liking of these numbers was compared to their actual birth day and month using an adapted version of LeBel and Gawronski's (2009) I-algorithm. Conceptually, more liking of one’s own birth month and day is thought to be indicative of higher implicit self-esteem. This task was chosen in lieu of the popular name letter task as we expected the use of a Romanized alphabet to be less common among Japanese and that liking of birthday numbers would be more comparable across cultures.

Affect Misattribution Procedure (AMP). In each of the 48 trials of the affect misattribution procedure (Payne et al., 2005), participants saw a self or best-friend idiographic stimulus (i.e., self and best friend name, hometown, and birthdate) or a neutral (blank) prime (75ms), followed by a blank screen (125ms), a target (100ms), and a mask. The participant then

rated whether the target was "unpleasant" or "pleasant" (scored 0 or 1, respectively). The target stimuli for the AMP were deliberately intended to be ambiguous (neither positive nor negative) and were randomly paired with each stimuli. Since we anticipated many of our participants would be familiar with the Chinese ideographs used by Payne et al. (2005), we used a set of 48 Tibetan characters as the targets. Conceptually, if the participant has high implicit self-esteem, a self-relevant prime should increase their liking of the target stimuli. An implicit self-esteem score was computed by taking the average of the 16 trials that included self-relevant primes.

Implicit Association Test (IAT). The implicit association test is a categorization task that requires words from two pairs of categories (Greenwald & Farnham, 2000). To test the validity of IAT variants previously used in cross-cultural research, we used "Self" versus "Best Friend" and "Unpleasant" and "Pleasant" as the categories (Yamaguchi et al., 2007). The idiographic self and best friend stimuli served as words for the first pair of categories, and the pleasant and unpleasant words were the same as those used by Kobayashi and Greenwald (2003; see also Table 3). Conceptually, IAT scores compare response latencies from a "compatible" block in which "pleasant" and "self" (and "unpleasant" and "best friend") share the same response keys to an "incompatible" block in which "unpleasant" and "self" (and "pleasant" and "best friend") share the same response keys. The order of appearance of these two blocks was counterbalanced across participants. Practice blocks consisted of 20 trials and test blocks consisted of 40 trials. The IAT score was computed using the latest scoring algorithm (Greenwald et al., 2003) and is typically interpreted as an implicit preference for the self (versus the best friend).

Single-Block IAT (SB-IAT). The single-block IAT (Teige-Mocigemba et al., 2008) is a variant of the IAT designed to reduce method variance. For the SB-IAT, we used the same categories and stimuli as the traditional IAT. However, unlike the IAT in which responses across incompatible and compatible blocks are compared, compatible and incompatible trials can occur

in the same block and are determined by the position of the target word position on the screen. Participants completed 5 blocks of 72 critical trials for the SB-IAT.

Single-Category IAT (SC-IAT). The single-category IAT (Karpinski & Steinman, 2006) is a variant of the IAT designed to assess the strength of the relationship between "self" and valence attributes without requiring a reference category such as “other” or "best friend". We again utilized the same relevant stimuli as used for IAT. Whether “self” was paired with “unpleasant” or “pleasant” first was counterbalanced across participants. Critical trial blocks consisted of 72 trials.

Go/No-Go Association Test (GNAT). The go/no-go association test (Nosek & Banaji, 2001) is a word identification task designed to assess pairs of associations (e.g., rather than relative preferences). The GNAT was comprised of four blocks, each of which featured two target categories (Self-pleasant, self-unpleasant, best friend-pleasant, and best friend-unpleasant). In this experiment, two sets of four blocks were used (77 trials per block), with each set corresponding to a response deadline of 1000ms and 833ms. The order of the blocks was randomized across participants. For each trial, participants are to press the space bar when a word presented matched the target categories and not to press it when presented with a distracter. A score for the implicit self-pleasant (GNAT-SP) and self-unpleasant (GNAT-SU) relationships was computed using signal detection theory following Nosek & Banaji’s (2001) original paper.

Table 3. Stimuli commonly used for implicit self-esteem tasks

Stimuli	*Implicit Measures*
“Self” stimuli: <First Name>, <Last Name>, <Birthday>, <Hometown or Street>	AMP, IAT, SB-IAT, SC-IAT, GNAT, APT
“Best friend” stimuli: <First Name>, <Last Name>, <Birthday>, <Hometown or Street>	AMP, IAT, SB-IAT, GNAT, APT
“Pleasant” stimuli: warm, happy, joy, pleasure, comfortable	IAT, SB-IAT, SC-IAT, GNAT

Stimuli	*Implicit Measures*
“Unpleasant” stimuli: ugly, filthy, painful, shameful, distress	IAT, SB-IAT, SC-IAT, GNAT
“Good” and “Bad”	APT
Neutral stimuli: at, it, how, when, with, it, that, them	APT
Blank screen as neutral Stimuli	AMP

Note. AMP = Affect Misattribution Procedure; IAT = Implicit Association Test; SB-IAT = Single-Block IAT; SC-IAT = Single Category IAT; GNAT = Go/No-go Association Test; APT = Affective Priming Task.

Self-Evaluation under Load (SEL). Participants evaluated themselves under attentional load by rating thirty personality traits as characteristic of “me” or “not me” while remembering an 8 digit number (e.g., Falk et al., 2009). At the very end of the study, participants rated the social desirability of each trait on a 7-point Likert scale from 1 (*Not desirable at all*) to 7 (*Very desirable*). Conceptually, a strong relationship between the participant’s trait desirability ratings and claiming to have each trait is thought to be indicative of high implicit self-esteem. To simplify analyses with this measure, a single desirability-trait endorsement coefficient was computed for each person by performing the same multilevel modeling technique as in Falk et al. (2009) and estimating the empirical Bayes estimate for this slope for each person.

Affective Priming Task (APT). In the affective priming task (Hetts et al., 1999), participants were subliminally primed with a self-related, friend-related, or neutral stimulus (200ms), and were asked to correctly identify the words "good" or "bad" 100ms later. Conceptually, fast identification of "good" (versus “bad”) after a self-prime is indicative of high implicit self-esteem. Scores for the APT were computed in the same manner as the original paper (Hetts et al., 1999).

Criteria

Peer Ratings. In a separate online questionnaire, the participants were rated by their friends on rephrased versions of the Rosenberg self-esteem scale (FR-RSES; α_E = .91, α_A = .86, and α_J = .74), self competence scale (FR-SC; α_E = .79, α_A = .81, and α_J = .62), and self-liking scale (FR-SL; α_E = .89, α_A = .88, and α_J = .72). For example, "My friend feels that s/he is a person of worth, at least on an equal basis with others." Independent raters may be able to pick up on non-verbal behaviour indicative of implicit self-esteem (Robinson & Meier, 2005; Spalding & Hardin, 1999). To the extent that this is true of one's friends, we expected this measure to positively correlate with implicit self-esteem. Perhaps due in part to the interruption in data collection, response rates were slightly higher for the Euro-Canadian (71.96%) and Asian-Canadian (62.57%) samples than for the Japanese sample (34.82%).

Ambiguous Statements Test (AST). In the ambiguous statement test (Tafarodi, 1998), participants imagined that they were presented with 13 ambiguous everyday phrases spoken by one of their friends. Participants then indicated whether each phrase reflected a positive or negative feeling toward them and the intensity of the feeling on a 7-point Likert scale from 1 (*Very slightly intense*) to 7 (*Extremely intense*). Scores were computed by taking the mean of the intensity ratings with the sign (+/-) of each rating determined by whether phrase was interpreted positively (+) or negatively (-; α_E = .71, α_A = .64, and α_J = .61). To the extent that implicit self-esteem acts as a filter for ambiguous information, we would expect implicit self-esteem to positively correlate with this measure. Out of all measures reported, this was the only measure flagged for difficulty in translation to Japanese.

Parental Bonding Instrument. DeHart and colleagues (2006) found that retrospective reports of parental "nurturance" were positively related to university students' implicit self-esteem, whereas parental over protectiveness was negatively related. We measured these

constructs using the parental bonding instrument (PBI; Parker, Tupling, & Brown, 1979) and a 4-point Likert scale from 0 (*Very unlike*) to 3 (*Very like*). The PBI has four subscales assessing mother's caring (PBI-MC; α_E = .90, α_A = .91, and α_J = .89), mother's over protectiveness (PBI-MO; α_E = .90, α_A = .84, and α_J = .84), father's caring (PBI-FC; α_E = .93, α_A = .89, and α_J = .92), and father's over protectiveness (PBI-FO; α_E = .87, α_A = .86, and α_J = .81).

Positive and Negative Affect Scale (PANAS). We used the PANAS to assess how much positive affect (PA; α_E = .81, α_A = .86, and α_J = .72) and negative affect (NA; α_E = .88, α_A = .88, and α_J = .86) participants tended to feel on average (Watson, Clark & Tellegen, 1988). If implicit self-esteem reflects an affective reaction towards the self, participants with high implicit self-esteem should typically feel more positive than negative affect.

Pride. Tracy and colleagues (2009) have argued that implicit self-esteem is positively related to authentic pride (PRIDE-A; α_E = .75, α_A = .81, and α_J = .71) and negatively related to hubristic pride (PRIDE-H; α_E = .77, α_A = .81, and α_J = .70). These two pride subscales were embedded with the PANAS items.

Narcissistic Personality Inventory. Previous research and theory suggests that narcissism is either negatively related to implicit self-esteem (Gregg & Sedikides, 2010), or is characterized by the combination of high explicit self-esteem and low implicit self-esteem (e.g., Jordan et al., 2006). To test for these possibilities, participants completed the forty item narcissistic personality inventory (Raskin & Terry, 1988) on a 5-point Likert scale from 0 (*Strongly disagree*) to 4 (*Strongly agree*). A single composite score was computed by taking the mean of all items (NAR; α_E = .91, α_A = .91, and α_J = .91).

Results

Overview and Handling of Missing Data

Recall that the purpose of this study was to assess the convergent and predictive validity of explicit and implicit self-esteem measures. A secondary purpose was to test for cultural differences on all measures. Thus, the results are divided into two main sections concerning 1) the validity of each type of measure, and 2) mean differences across cultures on all measures. Due the large number of possible statistical tests we adopted a α = .01 level in interpreting statistical significance and focus on overall patterns in the data, though we report exact estimates of *p*-values where possible so that the reader may come to their own conclusions. This level was chosen as a compromise between no Type I error control and conducting Bonferroni corrections adjusting for all possible tests – the latter of which may be overly conservative.

As noted already, incomplete data was present on peer ratings of participants' self-esteem. Some participants were also missing partial data on at least one other measure for the study (9.34% of Euro-Canadians, 8.56% of Asian-Canadians, and 7.14% of Japanese) – most likely due to interruption during the study by computer problems or otherwise. Due to ethical guidelines, we also chose not to require all participants answer all questions. Since retaining only cases with complete data on all measures would mean discarding a substantial proportion of our sample, we used modern techniques for analyzing data with missing values to utilize all available information (see Appendix C).

Convergent Validity

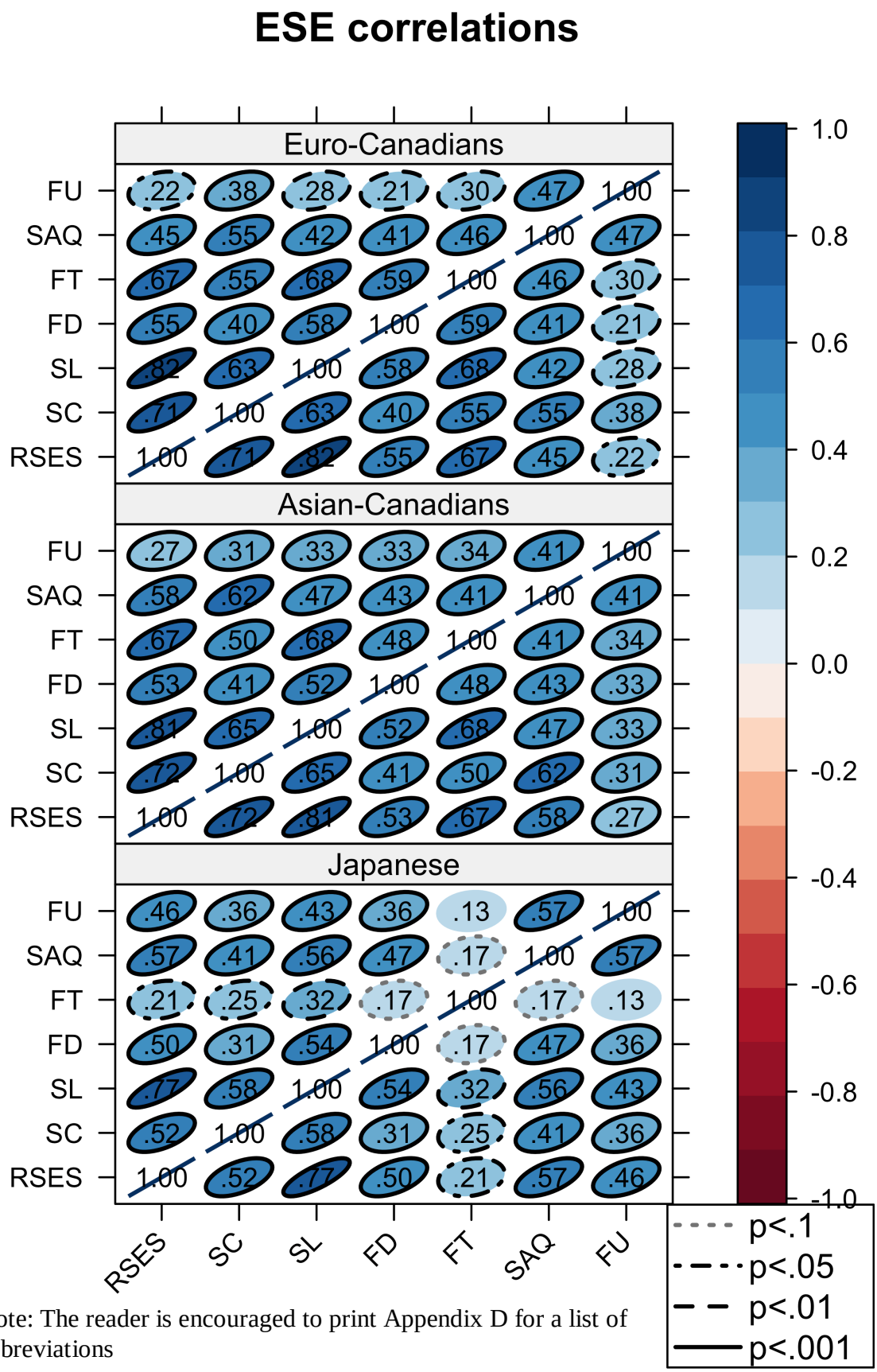
All explicit self-esteem measures for all cultural groups positively correlated with each other, with the majority of these correlations reaching statistical significance. To enhance interpretability, we computed the average correlation among these items as an index of

convergent validity.[8] The mean correlations were .49 for Euro-Canadians (range: .21 to .82), .50 for Asian-Canadians (range: .27 to .72), and .41 for Japanese (range: .13 to .77). Alternatively, one may obtain a quick visual interpretation of the data by noticing the color associated with each correlation in Figure 2: positive correlations are stronger shades of blue whereas negative correlations are stronger shades of red.

In contrast, we observed a lack of strong positive relationships among implicit self-esteem measures (see Figure 3). To ease interpretability, the sign for the GNAT-SU was reversed such that high scores would be indicative of a low self-unpleasant relationship. Thus, for good convergent validity, we would expect all of the correlations in Figure 3 to be strongly blue. The GNAT-SP and GNAT-SU (reversed) had a very high relationship (-.79 to -.85 across cultural groups), but in the opposite direction than would be expected for convergent validity. This means that raw scores for these measures would be highly positively related. Relationships among measures other than the GNAT-SU were close to 0 and tended to be positive, but also contained many negative correlations. Mean correlations for each group were .005 for Euro-Canadians (range: -.85 to .29), .002 for Asian-Canadians (range: -.85 to .23) and -.02 for Japanese (-.79 to .29). Note that the highest positive intercorrelation among ISE measures did not even exceed the average intercorrelation among ESE measures for each cultural group.

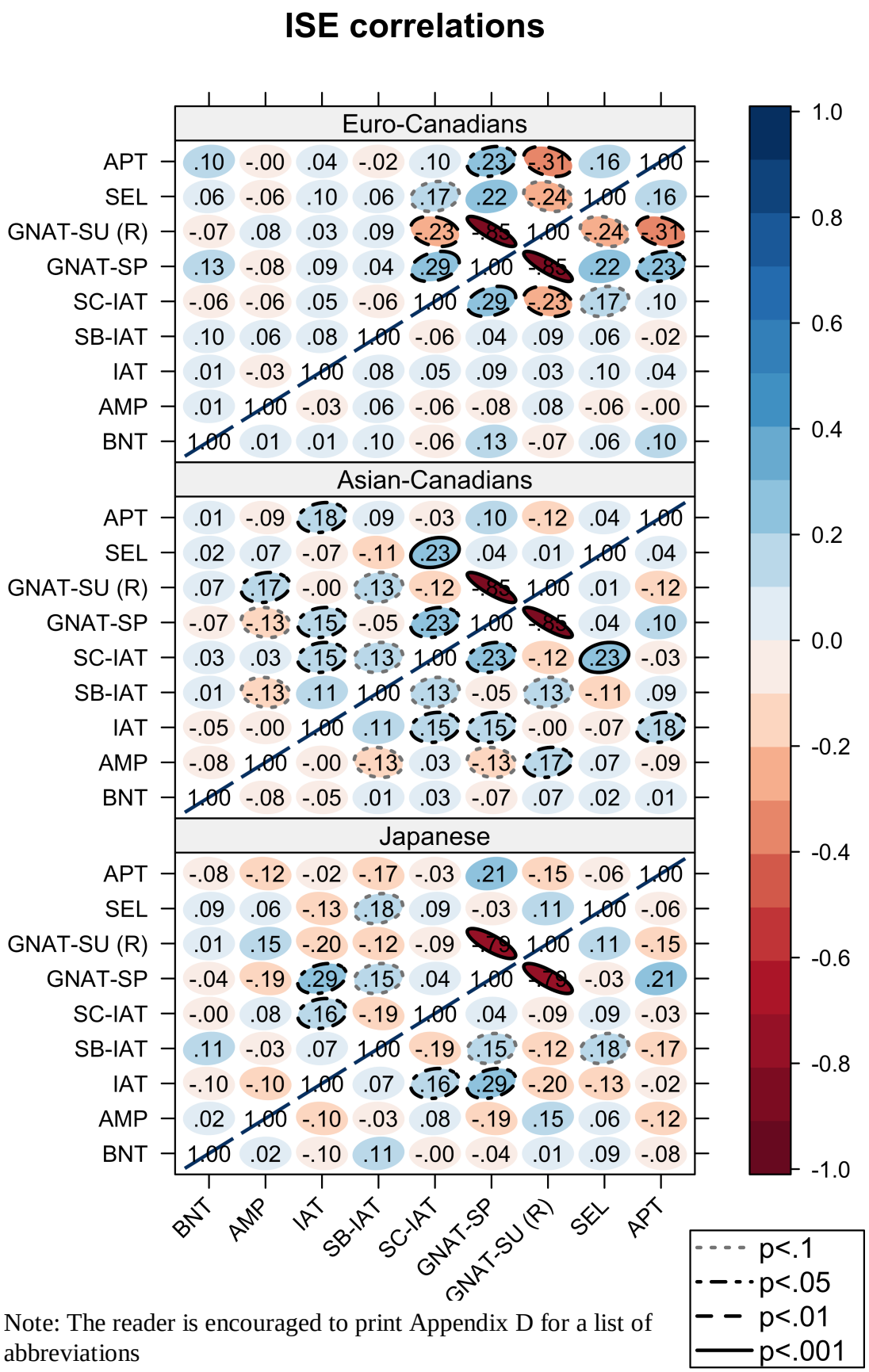
[8] Internal consistency coefficients such as Cronbach's alpha are influenced by the number of items included in the computation and are only meaningful if all positive correlations are observed among items. Both the number of measures and presence of positive/negative correlations differ across implicit and explicit self-esteem measures.

Figure 2. Explicit self-esteem convergent validity for Study 2.



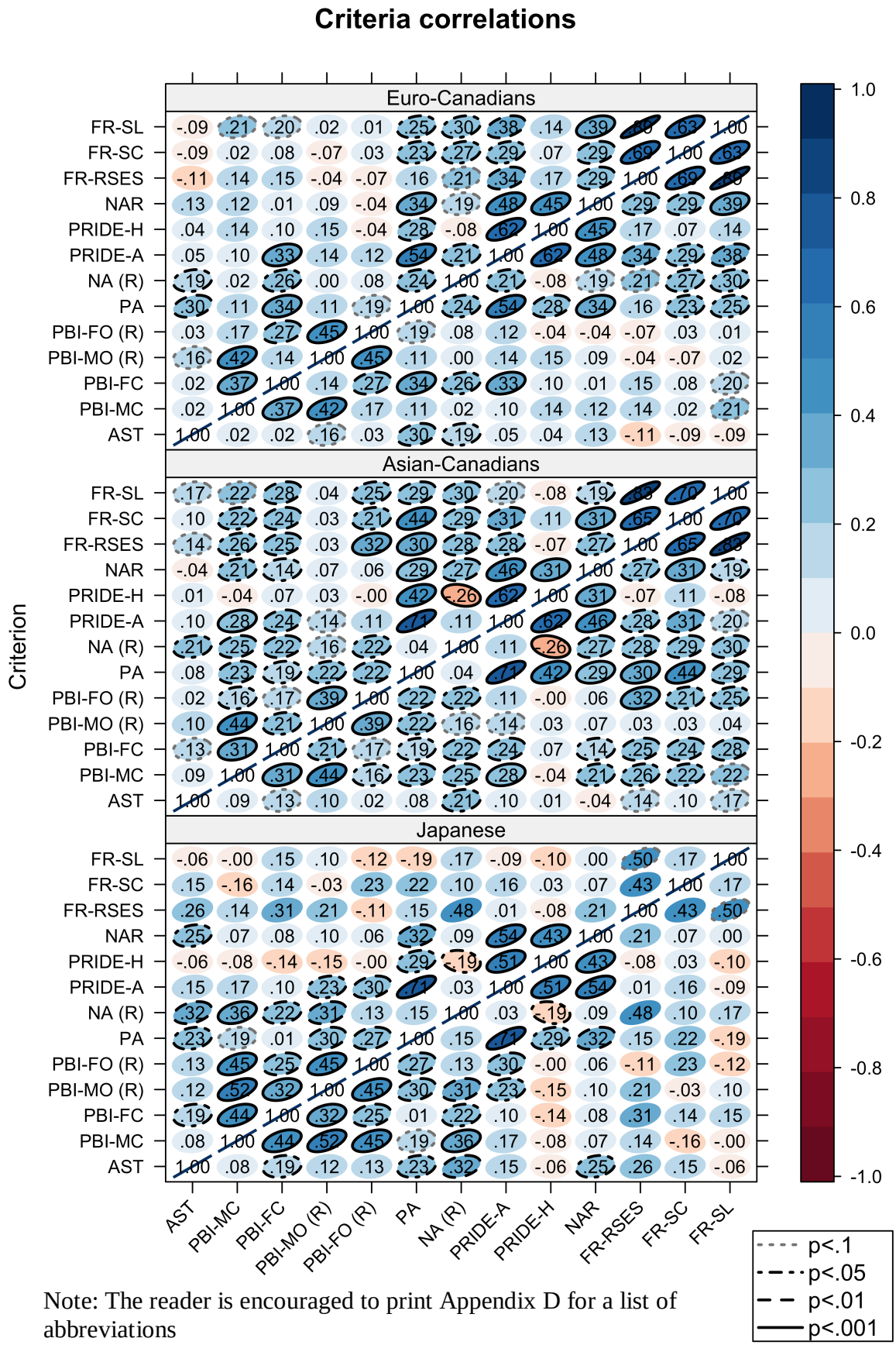
Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 3. Implicit self-esteem convergent validity for Study 2.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 4. Correlations among criteria in Study 2.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

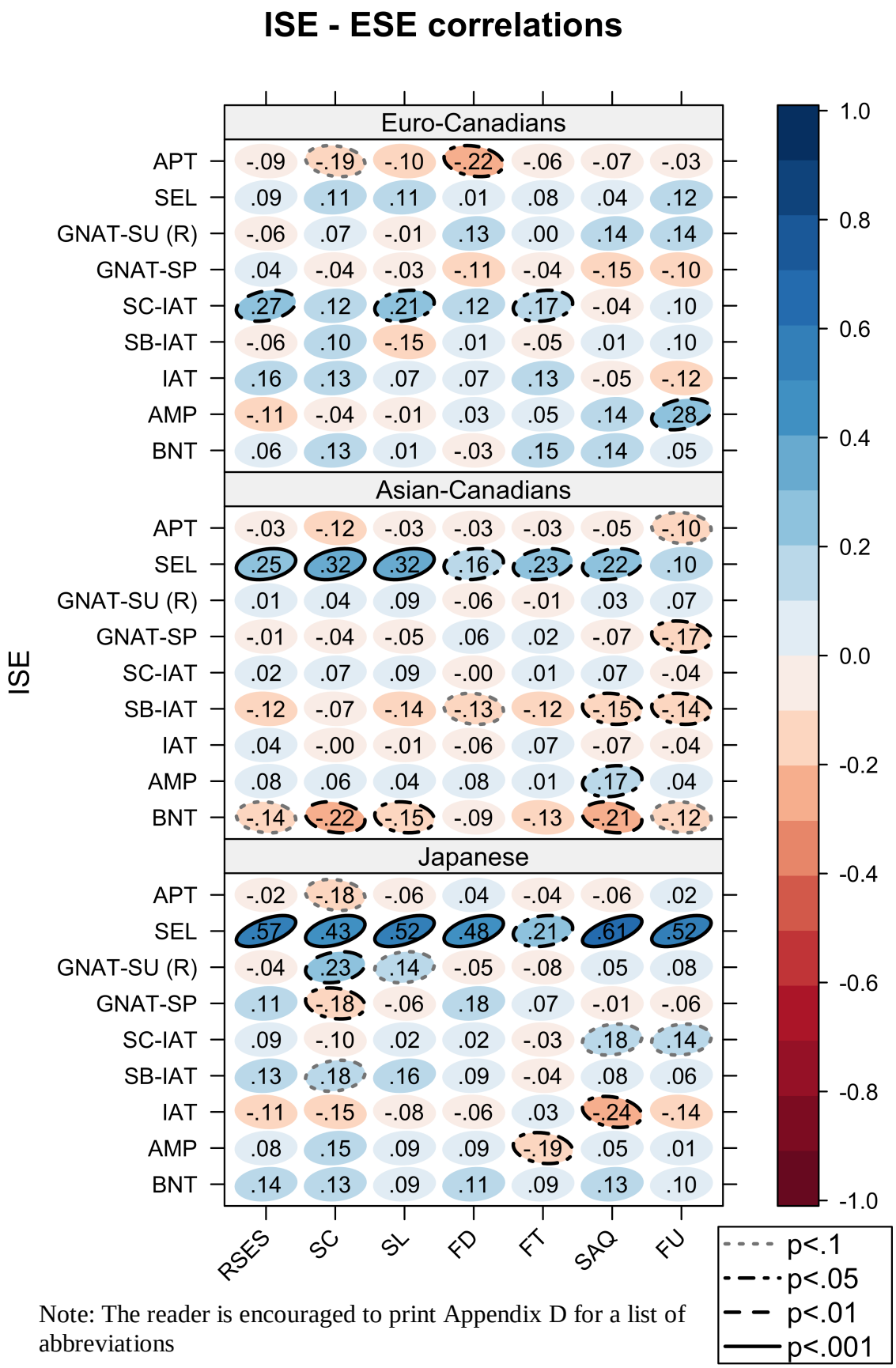
Correlations among criteria are shown in Figure 4. In contrast to previous figures of correlations, the proper directionality of narcissism and hubristic pride is not clear as these constructs have opposite theoretical relationships with implicit and explicit self-esteem. The sign of these measures has not been changed for this section of analysis. Average correlations among criteria were .19 for Euro-Canadians (range: -.11 to .89), .21 for Asian Canadians (range: -.26 to .83), and .16 for Japanese (range: -.19 to .71). Thus, the criteria displayed more convergent validity than did the implicit self-esteem measures. Most correlations among measures tended to be positive and many reached statistical significance. To some extent his trend appeared to hold across measures of different types of content. For example, positive affect, negative affect (reversed) and authentic pride tend to have positive correlations across all other measures.

More formal tests of the convergent validity among each type of measure can be accomplished through factor analysis. Since these analyses were somewhat exploratory and yielded conclusions largely redundant with examination of average correlations, we report these analyses in Appendix E.

Discriminant Validity

Implicit self-esteem measures tended to be uncorrelated with explicit self-esteem measures with a few notable exceptions (See Figure 5). The SEL task tended to have small to moderate correlations with explicit self-esteem measures among Japanese (.21 to .61) and Asian-Canadians (.1 to .32), but not with Euro-Canadians (.01 to .12). Among Euro-Canadians, the SC-IAT tended to have modest correlations with RSES, SL, and SC (.17 to .27).

Figure 5. Correlations between implicit and explicit self-esteem measures in Study 2.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Criterion Validity

Explicit self-esteem measures in general displayed good criterion validity among all three cultural groups. Since it was expected that explicit self-esteem would be negatively related to negative affect (NA) and mother and father over-protection (PBI-MO and PBI-FO), the direction of these scales has been reversed in Figure 6. Thus, we would expect all positive (blue) correlations. Correlations tended to be positive and ranged from -.1 to .62 for Euro-Canadians, .05 to .58 for Asian-Canadians, and -.14 to .54 for Japanese. Some potential weakness among the Japanese included the FT not predicting well (-.06 to .14) and peer ratings of SL and SC were not predicted well (-.16 to .24) – perhaps due in part due to less than optimal estimation from a low response rate. Among Euro-Canadians, the ambiguous statements task and scales from the parental bonding instrument were also not predicted well by all explicit self-esteem measures.

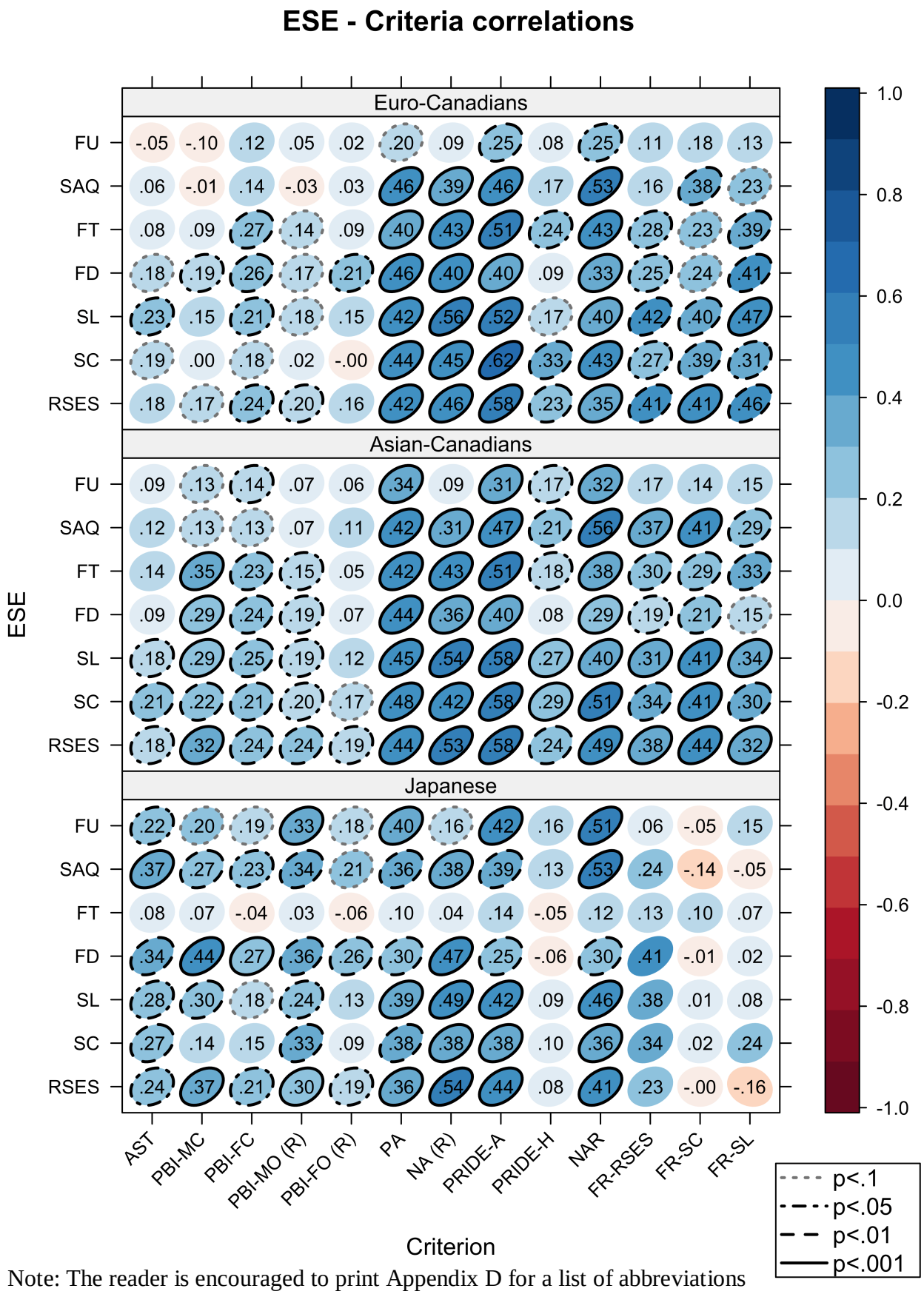
Since implicit self-esteem should be negatively related to narcissism (NAR), hubristic pride (PRIDE-H), negative affect (NA), and mother and father over-protection (PBI-MO and PBI-FO), these scales have been reversed in Figure 7. Again, we would expect all positive (blue) correlations in Figure 7. Clearly the criterion validity of implicit self-esteem measures was much poorer than that for explicit self-esteem measures as exhibited by many more correlations that were either negative or near zero. Among Euro-Canadians, the SC-IAT had only two negative correlations that were small in absolute value (< .1). The SEL and IAT also showed some positive correlations above .2, but also some substantial negative correlations (-.15 or greater in absolute value). Among Asian-Canadians and Japanese, the SEL appeared to perform well, with the exception of its relationship with narcissism (reversed).

To more formally compare the predictive power of all explicit and implicit self-esteem measures, we computed average correlations between each self-esteem measure and the set of criterion measures. That is, a single index reflected the criterion validity of each implicit and explicit self-esteem measure. Approximate p-values were obtained via resampling methods (see

Appendix C).[9] The results of these analyses (Tables 4 and 5) are largely consistent with our qualitative interpretation of the data. With few exceptions (FU for Euro-Canadians and FT for Japanese), explicit self-esteem measures were significant predictors of the set of criteria with average correlations ranging from .04 to .35 across all measures and all cultural groups. In contrast, implicit self-esteem measures were rarely significant predictors of the criteria. Only the SC-IAT reached significance among Euro-Canadians (mean $r = .14$, $p < .001$). The IAT would have reached significance if a more liberal significance level were used (mean $r = .10$, $p = .05$). Only the SEL was significant for Asian-Canadians (mean $r = .15$, $p < .001$) and Japanese (mean $r = .25$, $p < .001$).

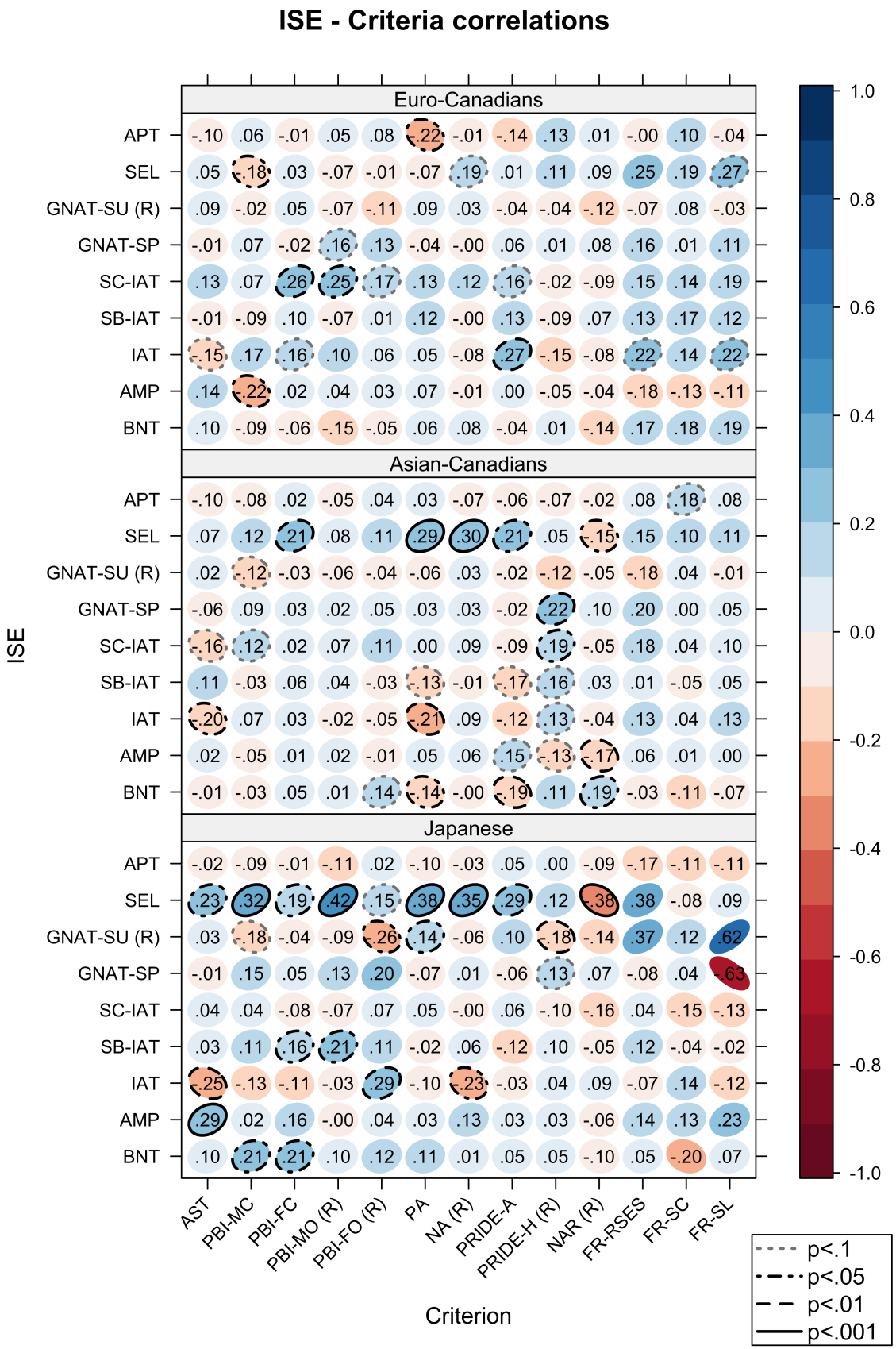
[9] Multivariate multiple regression (i.e., set correlation; Cohen, 1982) could have been employed here to simultaneously predict the set of criteria from each implicit or explicit self-esteem measure. This would have yielded a multivariate R^2 for each measure, however, this effect size would be inflated and no proper adjustments under missing data have been proposed in the literature. Furthermore, this approach would not make theoretical sense as correlations in the opposite than expected direction would have counted towards this effect size and criterion validity.

Figure 6. Criterion validity of explicit self-esteem measures in Study 2.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 7. Criterion validity of implicit self-esteem measures in Study 2.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Table 4. Explicit self-esteem – criteria relationships for each cultural group in Study 2.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
ESE Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
RSES	.33	<.001	.35	<.001	.25	<.001
SL	.33	<.001	.33	<.001	.23	<.001
SC	.28	<.001	.35	<.001	.21	.001
FD	.27	<.001	.24	<.001	.27	<.001
FT	.28	<.001	.29	<.001	.04	.52
SAQ	.23	<.001	.28	<.001	.22	<.001
FU	.10	.10	.16	<.001	.21	<.001

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Table 5. Implicit self-esteem – criteria relationships for each cultural group in Study 2.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
ISE Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
BNT	.04	.36	-.04	.31	.09	.15
AMP	-.03	.56	.03	.44	.13	.06
IAT	.09	.05	.00	.97	-.04	.58
SB-IAT	.04	.38	-.01	.86	.08	.18
SC-IAT	.14	<.001	.06	.21	.00	.99
GNAT-SP	.02	.65	.04	.40	.00	.92
GNAT-SU (R)	.02	.57	-.04	.29	.07	.34
SEL	.05	.29	.15	<.001	.25	<.001
APT	-.02	.69	.00	.89	-.05	.30

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

The final test we conducted for the possible validity of implicit self-esteem measures involved the disjunction between explicit and implicit self-esteem in predicting narcissism (e.g., Jordan et al., 2006). For each implicit self-esteem measure and within each cultural group, we regressed narcissism on explicit self-esteem, implicit self-esteem, and their interaction. Due to its popularity, the RSES was chosen as the explicit measure in all of these analyses. As shown in Table 6, not a single interaction term even approached conventional levels of significance.

Table 6. Implicit self-esteem by explicit self-esteem interactions in predicting narcissism.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
Measure	β	*p*	β	*p*	β	*p*
BNT X RSES	.01	.95	-.03	.49	-.03	.49
AMP X RSES	.14	.13	-.01	.90	-.01	.90
IAT X RSES	.10	.30	.03	.54	.03	.54
SB-IAT X RSES	.06	.65	.05	.33	.05	.33
SC-IAT X RSES	.00	.98	-.01	.87	-.01	.87
GNAT-SP X RSES	-.01	.90	.01	.74	.01	.74
GNAT-SU X RSES	.00	.99	.02	.62	.02	.62
SEL X RSES	.07	.55	-.06	.17	-.06	.17
APT X RSES	-.07	.48	-.04	.38	-.04	.38

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Cultural Variability on All Measures[10]

Cultural variability in explicit self-esteem was largely consistent with previous research such that Euro-Canadians tended to have higher self-esteem than both Asian-Canadians and

[10] For analyses in this section with and without demographic variables that differed across cultures, see Appendix F.

Japanese, and that Asian-Canadians tended to have higher explicit self-esteem than Japanese (see Tables 7 and 8). The only exception to this pattern was the FD, in which Asian-Canadians had approximately equal scores to Euro-Canadians. The majority of cultural differences also constituted non-trivial effect sizes and reached significance. For example, the effect size for Euro-Canadians versus Japanese ranged from d = .55 to 1.48, all with p < .001.

Table 7. Means and standard deviations on all explicit self-esteem measures in Study 2.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
ESE Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
RSES	2.05	.49	1.93	.46	1.55	.45
SL	2.39	.82	2.42	.72	1.61	.62
SC	2.32	.62	1.99	.58	1.56	.51
FD	5.17	.80	5.04	.84	4.75	.73
FT	76.40	14.10	74.19	16.80	44.04	29.59
SAQ	7.02	.85	6.66	.98	5.99	1.03
FU	64.08	16.11	60.38	13.94	47.71	13.77

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Table 8. Cultural differences on all explicit self-esteem measures in Study 2.

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
ESE Measure	*d*	*p*	*d*	*p*	*d*	*p*
RSES	1.07	<.001	.24	.06	.85	<.001
SL	1.08	<.001	-.04	.74	1.20	<.001
SC	1.34	<.001	.56	<.001	.78	<.001
FD	.55	<.001	.15	.21	.37	<.01

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
ESE Measure	*d*	*p*	*d*	*p*	*d*	*p*
FT	1.48	<.001	.14	.46	1.30	<.001
SAQ	1.10	<.001	.40	<.01	.67	<.001
FU	1.10	<.001	.25	.06	.91	<.001

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

In contrast, the pattern of cultural variability in implicit self-esteem measures was not consistent (see Tables 9 and 10). The IAT, AMP, and SEL were in the direction of Euro-Canadians having higher implicit self-esteem than Asian-Canadians, and Asian-Canadians having higher implicit self-esteem than Japanese. However, only differences on the SEL approached significance and had anything greater than a small effect size (d = 1.79, p < .001). These results are consistent with some previous research on the IAT and SEL (e.g., Falk et al., 2009). In addition, Euro-Canadians and Asian-Canadians were lower than Japanese on both the GNAT-SU and GNAT-SP (p's <.01) - also consistent with East-West differences found on these measures (Boucher et al., 2009). It is possible that the contradictory findings with the GNAT are indicative of cultural variability in categorization strategy (i.e., East Asians tend to adopt an error avoidance strategy; Hamamura et al., 2009) rather than any cultural variability in self-pleasant and self-unpleasant associations. Previous cultural differences in the APT were not replicated (Hetts et al., 1999), such that Asian-Canadians had higher scores on this measure than Japanese, and Euro-Canadians had lower scores than Japanese. Other measures tended to either display no cultural variability (BNT) or no consistent pattern across cultures (SB-IAT, SC-IAT).

Table 9. Means and standard deviations on all implicit self-esteem measures in Study 2.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
ISE Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
BNT	.89	2.25	.89	2.12	.89	2.08
AMP	.64	.20	.61	.25	.59	.19
IAT	.39	.33	.38	.32	.33	.35
SB-IAT	2.52	6.74	1.49	6.45	2.76	6.75
SC-IAT	.26	.25	.31	.29	.28	.31
GNAT-SP	-.03	1.44	-.27	1.77	.47	1.17
GNAT-SU	-.15	1.50	-.31	1.58	.63	1.21
SEL	.85	.26	.79	.27	.32	.36
APT	-3.10	9.95	-1.52	8.69	-2.68	8.04

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Table 10. Cultural differences on all implicit self-esteem measures in Study 2.

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
ISE Measure	*d*	*p*	*d*	*p*	*d*	*p*
BNT	.00	.99	.00	.99	.00	.99
AMP	.28	.07	.15	.23	.10	.83
IAT	.20	.11	.05	.66	.15	.60
SB-IAT	-.04	.77	.16	.20	-.19	<.001
SC-IAT	-.08	.55	-.18	.16	.09	.78
GNAT-SP	-.38	.01	.15	.20	-.50	<.001
GNAT-SU	.58	<.001	-.10	.40	.68	<.001

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
ISE Measure	*d*	*p*	*d*	*p*	*d*	*p*
SEL	1.70	<.001	.22	.19	1.47	<.001
APT	-.05	.71	-.17	.14	.14	<.001

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

We also examined cultural variability in the criterion measures (Tables 11 and 12). Cultural variability in the direction of Euro-Canadians being higher than Asian-Canadians, who were in turn higher than Japanese was apparent on mother and father care, authentic pride, narcissism, positive affect, and all peer ratings of self-esteem (RBFR, SLFR, and SCFR). The opposite pattern (Japanese > Asian-Canadian > Euro-Canadian) was present for negative affect and hubristic pride. With the exception of father care, the above mentioned Euro-Canadian versus Japanese comparisons reached significance (*p*'s <.01). The direction of the majority of these significant effects (7 out of 9) is consistent with Japanese having lower self-esteem than Asian-Canadians and Euro-Canadians. The interpretation of variability in hubristic pride and narcissism is unclear as the hypothesized relationship between these measures and ISE and ESE are in opposite directions. If these measures are indeed negatively related to implicit self-esteem, then narcissism stands out as the only measure indicative of Japanese actually being higher on implicit self-esteem. If previous theory is wrong (see also Appendix E), then the opposite holds and the results with hubristic pride are anomalous. The few remaining measures that did not show a clear cross-cultural pattern were the ambiguous statements task and mother and father over-protection. Recall, however, that the translation of the ambiguous statements into Japanese was difficult and may not have been equivalent.

Table 11. Means and standard deviations for all criteria for Study 2.

	Euro-Canadians		*Asian-Canadians*		*Japanese*	
Criterion Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
AST	-.25	1.87	-.30	1.73	.12	1.62
PBI-MC	2.27	.60	2.14	.58	2.08	.54
PBI-FC	1.83	.75	1.83	.59	1.75	.62
PBI-MO	1.18	.62	1.34	.51	1.15	.52
PBI-FO	.93	.56	1.11	.53	.89	.43
PA	3.42	.58	2.99	.64	2.82	.58
NA	2.07	.68	2.10	.68	2.46	.76
PRIDE-A	2.76	.55	2.57	.64	2.53	.64
PRIDE-H	2.03	.53	2.13	.62	2.33	.63
NAR	2.12	.46	2.03	.43	1.83	.48
FR-RSES	3.96	.76	3.73	.63	3.47	.72
FR-RC	3.73	.84	3.63	.71	2.84	1.04
FR-SL	3.67	.66	3.21	.61	2.96	.54

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Table 12. Cultural differences on all criteria for Study 2.

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
Criterion Measure	*d*	*p*	*d*	*p*	*d*	*p*
AST	-.21	.10	.02	.84	-.25	<.001
PBI-MC	.33	.01	.22	.06	.11	.53
PBI-FC	.12	.31	.00	.99	.14	.40

	Euro-Canadians vs. Japanese		*Euro- vs. Asian-Canadians*		*Asian-Canadians vs. Japanese*	
Criterion Measure	*d*	*p*	*d*	*p*	*d*	*p*
PBI-MO	.06	.60	-.27	.02	.37	.06
PBI-FO	.08	.57	-.33	<.01	.46	.03
PA	1.04	<.001	.71	<.001	.28	.09
NA	-.53	<.001	-.04	.76	-.49	<.001
PRIDE-A	.39	<.01	.32	.01	.06	.69
PRIDE-H	-.52	<.001	-.19	.15	-.31	.05
NAR	.61	<.001	.19	.12	.44	.04
FR-RSES	.66	<.001	.33	.03	.39	<.01
FR-SC	.95	<.001	.14	.38	.90	<.001
FR-SL	1.19	<.001	.73	<.001	.43	.01

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Discussion

Overall in Study 2 we found that explicit self-esteem measures had superior convergent and predictive validity. In contrast, the convergent and predictive validity of implicit self-esteem measures was nearly non-existent. Unfortunately, this result is consistent with previous research (Bosson et al., 2000; Buhrmester et al., 2011a; Rudolph et al., 2008). The SEL showed a glimmer of predictive validity, but only among Asian-Canadians and Japanese. Out of all implicit self-esteem measures, the SEL may be considered the least “implicit” as participants consciously rate themselves, though under attentional load when automatic processes should be more active (Koole et al., 2001; Paulhus et al., 1989). Indeed the SEL also showed moderate correlations with explicit measures among Asian-Canadians and Japanese. The SC-IAT and IAT showed some promise among Euro-Canadians, but did not replicate among Asian-Canadians and

Japanese. Furthermore, the overall predictive validity for the IAT would be rendered nonsignificant with any Type I error control.

Had a valid measure of implicit self-esteem been found, we had hoped to use it to assess the cultural variability of implicit self-esteem. Since the criterion measures exhibited better convergent validity than did implicit self-esteem measures, it is possible that the criteria served as better indexes of implicit self-esteem. If so, the cultural differences in criterion measures largely pointed in the direction of Euro-Canadians having higher self-esteem than Japanese. Finally, cultural variability in explicit self-esteem was apparent and consistent with previous research (Heine & Hamamura, 2007).

We now continue the search for reasons why implicit self-esteem measures displayed poor validity evidence. One possible reason is that none of the measurement procedures examined were good candidates for measuring ISE. However, this seems implausible given that measures such as the IAT have good predictive validity in other domains (Greenwald et al., 2009), and some of the new measurement procedures examined should have provided methodological improvements. Other explanations suggest deeper theoretical problems with ISE or its measurement. For instance, it could mean that how implicit self-esteem is often conceptualized and operationalized is in need of improvement.

How Should Implicit Self-Esteem Be Defined (and Measured)?

Many implicit social cognition researchers agree that the implicit processing system is associative (Bosson, 2006 ; Epstein, 2003; Fazio & Olson, 2003; Gawronski & Bodenhausen, 2006, 2007; Greenwald et al., 2002; Petty et al., 2007; cf. Koole & DeHart, 2007). In terms of ISE, the self is associated with multiple other concepts that are evaluative or have a valance and exist as a network of associations, a set of beliefs about the self, or a schema that resides in memory (e.g., Epstein, 2003; Gawronski & Bodenhausen, 2006, 2007; Petty et al., 2007). Consistent with these ideas, Greenwald and colleagues (2002) have presented what appears to be

the most widely accepted definition of implicit self-esteem: "… the association of the concept of self with a valence attribute" (p. 5). Similar definitions have been presented in critiques of ISE measure validity: "a global self-evaluation that people are unable or unwilling to report" (Buhrmester et al., 2011a). It is clear from both of these definitions, and from how many ISE measurement instruments are implemented, that implicit self-esteem is viewed as a high-level global construct, rather than something multifaceted.

For instance, consider the categories and stimuli used in cross-cultural comparisons using the IAT (Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007; see Table 3). There is a clear assumption that an individuals' conception of self exists as a single unitary construct that has associations with other concepts that are generally positive or negative. Global aspects of the self-concept are primed using self-related pronouns or idiographically generated items (e.g., first name, last name, birthday, etc.). Furthermore, the positive and negative stimuli often do not form well-refined, cohesive positive or negative concepts (e.g., warm, ugly, happy, painful, etc.). Although we have again used the IAT as an example here, similar conclusions can be made about other ISE measures as many of them require similar self and positive-negative stimuli (e.g., Boucher et al., 2009; Rudolph et al., 2008).

It is possible that the above conceptualization of the self is too simplistic. What constitutes an individual's self-concept can be complex and multidimensional, and individuals may have multiple different self representations (Markus & Wurf, 1987; Shavelson, et al., 1976). In a similar vein, some researchers have critiqued ESE measures by arguing that although individuals may form very general attitudes towards themselves, these general attitudes are too readily influenced in the short-term and are limited in their ability to predict behaviours in specific domains (Marsh, Craven, & Martin, 2006). Implicit self-esteem may befall a similar problem.

Alternative theoretical perspectives conceptualize ISE as multidimensional, containing at least a few dimensions, or suggest that we have implicit attitudes towards ourselves for different social contexts (Bosson, 2006; Epstein, 2003; Gregg, 2003). Koole and DeHart (2007) argue that implicit representations of the self are likely much more complex than explicit representations. Global self-esteem may be hierarchically structured and encompass self-worth, self-liking, self-competence, and feelings that the self is moral, strong, valued, and accepted by others (Epstein, 2003; Kernis, 2003). Bosson (2006) argues that the different facets of implicit self-esteem may correspond to different domains such as the "social self" or "academic or intellectual self" (p. 55). This multidimensional approach parallels work done with explicit measures of self-esteem. For example, Marsh and colleagues' Self Description Questionnaire (Marsh & O'Neill, 1984) measures explicit self-esteem in specific content domains such as academics, mathematical and verbal ability, physical appearance, relationships with peers and parents, etc.

There are therefore alternative, more specific ways that implicit self-esteem could be defined and operationalized. Buhrmester et al (2011a) offers a similar critique of the IAT, arguing that it does not allow enough depth of processing or specific self-reflection. At the same time, they warn against implicit self-esteem measures that are too specific or narrow – noting that the birthday number and name letter tasks measure liking towards an individuals' birth month, birth day, and initials – aspects that are likely not central to one's self-concept.

Study 3

The above review suggests that there are two prominent alternative ways of conceptualizing implicit self-esteem that are currently not reflected in typical ISE measurement instruments: 1) ISE as a multifaceted construct (e.g., self-competence, self-liking, etc.), and 2) ISE as a domain specific construct (e.g., implicit feelings towards one's academic self, social self, self-appearance, etc.). Thus, if ISE does not exist as a global self-evaluation, this could be why ISE measures have been found to lack validity. In Study 3, we used two manipulations

meant to tap these alternative conceptualizations by 1) using self-competence based stimuli instead of general positive-negative stimuli in ISE tasks, and 2) explicitly priming a self-relevant domain before ISE measures were completed. It was expected that one of these procedures would increase the validity of ISE measures.

In addition, to simultaneously allow for some continuity with Study 2 and diversity in criterion measures, we used some new and some of the same criteria as in Study 2. Since one critique of explicit self-esteem measures is their contamination with self-presentational biases (e.g., Cai et al., 2007), we measured self-deception, impression management, and modesty. Finally, to reduce the possibility that fatigue could be responsible for the poor performance of implicit self-esteem measures, the number of measures to complete was greatly reduced and the implicit self-esteem measures appeared early in the study procedure.

Method

Participants

202 students from the University of British Columbia (UBC) participated for either course extra credit or monetary compensation ($10) and 623 individuals recruited via Amazon's Mechanical Turk (Mturk) participated in this study for $.50. Previous studies conducted using Mturk suggest that users are intrinsically motivated to perform tasks, and thus yield decent quality data without requiring high pay (Buhrmester, Kwang, & Gosling, 2011b). A single question was used to screen participants and was asked in the middle of criterion measures for the study: "Answer six for this question so that we know you are paying attention." The final sample of participants who correctly answered this question consisted of 180 UBC participants (74.44% female; *M* age = 20.37; *SD* = 2.62) and 582 Mturk participants (65.12% female; *M* age = 32.25; *SD* = 11.93).

The vast majority of Mturk participants reported being born in the USA or Canada (93.10%), followed by East Asia/Pacific Islands (2.24%), Europe (1.72%), Latin America

(1.03%), South Asia (0.69%), Africa (0.34%), and other (0.86%). The Mturk sample was also largely of White/European ethnic descent (79.93%), followed by mixed ethnicities (7.96%), Black (4.84%), East Asian / Pacific Islander (4.15%), Hispanic (1.45%), Middle-Eastern (0.35%), South Asian (0.17%), and other (1.04%). The UBC sample had approximately equal numbers of participants born in the USA or Canada (47.22%) and East Asia / Pacific Islands (37.22%), followed by the Middle East (5.00%), Europe (3.89%), South Asia (2.22%), Latin America (2.22%), and other (2.22%). The ethnic background of UBC participants was mostly East Asian / Pacific Islander (56.11%), followed by White/European (21.11%), South Asian (10.00%), Middle Eastern (6.11%), mixed ethnicity (4.44%), Hispanic (1.11%), and Black (1.11%). Although the makeup of the UBC and Mturk samples were slightly different, cultural comparisons were not the main purpose of this study. Regardless, as noted below UBC and Mturk participants completed slightly different versions of the study materials. Thus, results were analyzed separately for each group, but are presented side-by-side.

Design and Procedure

As in Study 2, all participants completed a demographics form. Whereas UBC participants also completed idiographic information (e.g., first and last name for themselves and a friend) and contact information for a peer as in Study 2, due to Amazon's privacy policy Mturk participants only reported their first and last initials. Next, all participants were randomly assigned to one of three conditions: 1) Control (n_M =198 and n_U =67), 2) Explicit prime (n_M =193 and n_U =50), or 3) Task prime (n_M =191 and n_U =63).[11] Participants in all conditions completed implicit self-esteem, explicit self-esteem, and criterion measures, in the exact order as presented below. In order to conceptually replicate Study 2, participants in the control condition did not receive any prime before or during completion of these measures.

[11] We use the subscripts "M" and "U" to refer to the Mturk and UBC samples, respectively.

Before completing any measures, participants in the explicit prime condition were instructed to write for five minutes about the following prompt: “Please think for a moment about how you feel about yourself when at work or school. Do you feel good about yourself or bad about yourself? Do you often do a good job at work/school? Or do you perform poorly compared to others? Do you get along with others? Or do you have a hard time making friends at work/school?” The purpose of this task was to focus participants’ attention to a context that typically takes up a large proportion of their lives (i.e., work/school) and to focus on one of two domains (i.e., competence in work performance or relationships).

Participants in the task prime condition completed implicit self-esteem measures with stimuli intended to tap self-competence. Specifically, pleasant and unpleasant category and stimuli words for the IAT and SC-IAT were replaced with words corresponding to competence (competent, capable, skilled, qualified, smart, and intelligent) and incompetence (incompetent, incapable, clumsy, unqualified, stupid, dumb). We expected participants would think about their own competence while completing the task. Similar changes to IAT stimuli have been shown to increase correlations between implicit and explicit self-esteem measures, but effects on the validity of implicit self-esteem measures remain untested (Oakes, Brown, & Cai, 2008). Participants in the other conditions saw the same pleasant/unpleasant stimuli as in Study 2.

Implicit Self-esteem Measures

Since we anticipated the majority of our participants for this study to be of a Western cultural background, we chose to include implicit self-esteem measures that were the closest to performing well in the Euro-Canadian sample from Study 2, namely the IAT and SC-IAT. Differences in pleasant (competent) and unpleasant (incompetent) stimuli have already been noted. In addition, UBC participants saw the same idiographic self and best friend stimuli as in Study 2. Mturk participants instead saw pronouns pertaining to the self (I, me, my, mine, and self) and best friend (friend, bud, companion, buddy, pal; e.g., Kobayashi & Greenwald, 2003).

In addition, the highly popular name letter test (NLT; Bosson et al., 2000; Jones et al., 2002) was included to make up for its absence from Study 2. The NLT results in scores analogous to the birthday number task. That is, participants who tend to like the initials of their own name are thought to have high implicit self-esteem. The I-algorithm was used for scoring the NLT (LeBel and Gawronski, 2009).

Explicit Self-esteem Measures

Since many explicit self-esteem measures performed similarly in Study 2, the Rosenberg self-esteem scale (RSES; Rosenberg, 1965) was included in Study 3 due to its high popularity (α_M = .91 and α_U = .89).

Criteria

As in Study 2, participants completed the authentic pride (α_M = .81 and α_U = .77), hubristic pride (α_M = .71 and α_U = .78) and positive and negative affect scales (PA, α_M = .88 and α_U = .87; NA, α_M = .91 and α_U = .86; Tracy et al., 2009; Watson et al., 1988). These measures were retained to assess whether any implicit self-esteem measures could predict self-reported affect. In addition, peer ratings on a rephrased versions of the Rosenberg self-esteem scale (FR-RSES; α_U = .89), self competence scale (FR-SC; α_U = .89), and self-liking scale (FR-SL; α_U = .81) were again obtained for UBC participants (55.56% response rate). Several measures new to Study 3 are described below.

The Habit Index of Negative Thinking Scale (HINT). The habit index of negative thinking scale (Verplanken et al., 2007) contains 12 items rated on a Likert scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Although a self-report scale, the HINT is intended to measure the tendency for individuals to automatically have negative thoughts regarding themselves (α_M = .96 and α_U = .95). Implicit self-esteem should be negatively correlated with the HINT.

Self-Deception and Impression Management. Self-deception (SD; α_M = .79 and α_U = .77) and impression management (IM; α_M = .72 and α_U = .67) correspond to tendencies to unintentionally or deliberately responding to self-report questionnaires in such a way as to make oneself appear better than is the case in reality (Paulhus, 1991). These 20-item scales are rated on a 7-point Likert scale and scored according to an algorithm described by Paulhus (1991). Implicit self-esteem measures should be uncorrelated with such response biases whereas explicit self-esteem measures may be contaminated with them (Kobayashi & Greenwald, 2003).

Modesty (MOD). A tendency to be modest may also contaminate self-report measures. It has been argued that modesty should be unrelated to implicit self-esteem for Western participants, but positively related to implicit self-esteem for East Asian participants (Cai et al., 2011). Modesty was measured using 20 items from a self-report scale that has been used in previous research (Whetstone, Okun, & Cialdini, 1992; α_M = .93 and α_U = .91).

Feedback Seeking Questionnaire (FSQ). The feedback seeking questionnaire asks participants to determine from a list of questions, which questions they would like their friend to answer (Swann, Wenzlaff, Krull, & Pelham, 1992). Available questions are designed to elicit either favourable information (coded +1 if chosen) or unfavourable information (coded -1 if chosen) about the participant. Participants with high implicit self-esteem are expected to seek more positive feedback to reinforce their pre-existing schema. This measure was chosen as an alternative to the ambiguous statements task as a measure meant to tap participants' tendencies regarding the seeking and interpretation of information. Unfortunately, this measure exhibited rather low internal consistency reliabilities (α_M = .49 and α_U = .25).

Essay Ratings. Analogous to Bosson et al (2000), two research assistants provided ratings of participant essays from those in the explicit prime condition. Essays were rated on a 7-point Likert scale in terms of the essay writer's self competence (ES-SC; 2 items; α_M = .79 and α_U =

.85; ICC = .55), self liking (ES-SL; 2 items; α_M = .87 and α_U = .70; ICC = .55), and global self-esteem (ES-GL; 2 items; α_M = .88 and α_U = .83; ICC = .58). Items for each type of outcome were averaged across both independent raters to form composite scores. In addition, we used Pennebaker and colleagues' Linguistic Inquiry and Word Count program (LIWC; Pennebaker, Booth, & Francis, 2007) to calculate the percentage of positive emotion (ES-PA) and negative emotion (ES-NA) words that participants used in their essays.

Results

Although we had hoped that our experimental manipulations would boost the validity of implicit self-esteem measures, in general this was not the case. Regardless, results are presented for each sample source (UBC versus Mturk) and each experimental condition separately (Control, Task Prime, and Explicit Prime). Since there were relatively few East Asian participants within the Mturk sample (*n* = 5, 10, and 9 for the Control, Task Prime and Explicit Prime conditions, respectively) and few Euro-Canadians within the UBC sample (*n* = 15, 11, and 12 for the Control, Task Prime and Explicit Prime conditions, respectively), further separation of participants into separate cultural groups would have created additional difficulty in estimation of correlations among measures. Cultural groups within each sample were therefore pooled and analyzed together. Due to the vast amount of information and possible statistical tests, little focus is given to any differences across experimental conditions. Due to the presence of missing data, we again used methods for missing data analysis (Appendix C).

Convergent and Divergent Validity

The RSES did not correlate to a substantial degree with any implicit self-esteem measures, ranging from -.19 to .17 (Figure 8). Average intercorrelations among ISE measures were .08 (UBC explicit prime), .08 (UBC task prime), .07 (UBC control), .04 (Mturk explicit prime), .04 (Mturk task prime), and .10 (Mturk control). Thus although the IAT and SC-IAT

tended to moderately and positively correlate with each other (range: .08 to .33), these measures did not tend to correlate with the NLT (range: -.16 to .11).

The RSES had small to large positive correlations with impression management (range: .12 to .51) and moderate to large negative correlations with modesty (range: -.22 to -.47). These relationships tended to be present across experimental conditions and sample source (Figure 9). Weaker positive relationships were present between the RSES and self-deception (range: -.01 to .28). In contrast, implicit self-esteem measures did not display any consistent pattern of correlations with any measure of response bias. These results lend support to the notion that implicit self-esteem measures are relatively unrelated to response biases, whereas explicit self-esteem measures may be contaminated with them. Although approximately half of the UBC participants had experienced some source of strong East Asian cultural influence, in contrast to previous research (Cai et al., 2011) correlations among implicit self-esteem and modesty were anything but consistently positive (range: -.26 to .06).

Criterion Validity

As was found in Study 2, all implicit self-esteem measures exhibited poor criterion validity. To enhance interpretability for Figure 10, the sign of correlations with several criterion were reversed, including negative affect (NA), hubristic pride (PRIDE-H), the habit index of negative thinking (HINT), and negative emotions in participants' essays (ES-NA). There were tendencies for the SC-IAT to correlate positively with independent ratings of participants' essays among Mturk participants (.12 to .14), the NLT to correlate with various affective measures in the task prime condition (.05 to .18), and the IAT to correlate with negative affect (reversed; .14) and the HINT (reversed; .15) in the control condition. However, these correlations were small and inconsistent across experimental condition and sample source. Many correlations in the opposite direction than expected were also observed, especially among UBC participants.

We again computed average correlations between criteria and each implicit self-esteem measure (Tables 13 and 14). Results indicated that only the SC-IAT among Mturk control participants (*Mean r* = .10, $p < .01$) significantly predicted the criterion measures at the $\alpha = .01$ level, thought the IAT in the Mturk control condition (*Mean r* = .07, $p = .04$) and the NLT in the task prime condition (*Mean r* = .11, $p = .03$) came close. Note also that across all correlations in Figure 10, several met the conventional $p < .05$ threshold, but none even met the $p < .01$ threshold, even for relatively large sample sizes in each cell for the Mturk sample (*n*'s > 190). Thus, any Type I error correction would render all correlations in Figure 10 nonsignificant.

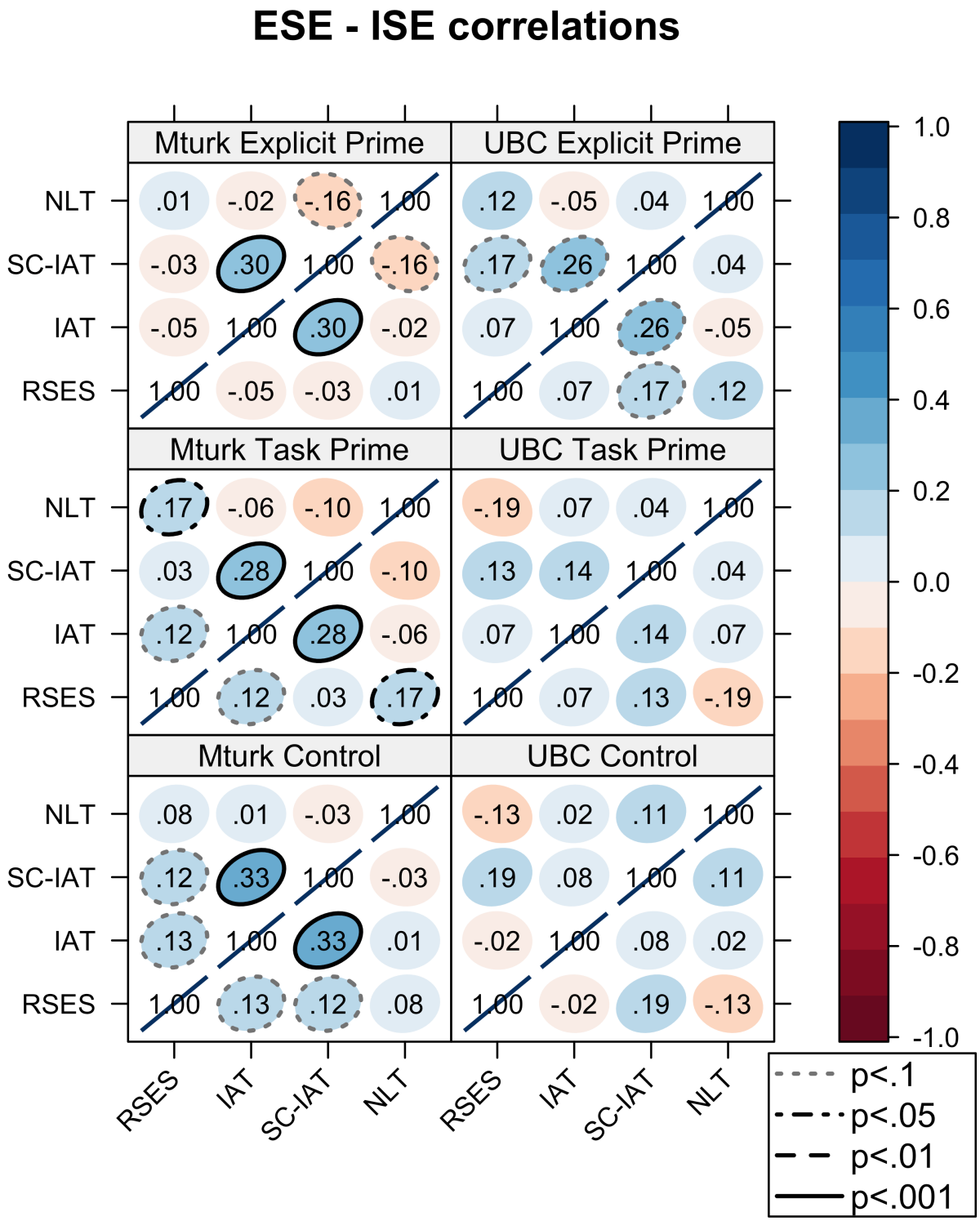
As shown in Figure 11, the RSES displayed good predictive validity for nearly all criterion measures and in nearly all experimental conditions and samples. One exception was correlations between the RSES and the FSQ among UBC students (range: -.03 to .22), perhaps due in part to the low internal consistency reliability of the FSQ for that particular sample. Otherwise, correlations ranged from .12 to .73 for all other measures across all conditions. Average correlations between the RSES and criteria ranged from .34 to .53 (all $p < .001$) across all conditions and samples (Tables 13 and 14).

Table 13. Self-esteem – criteria relationships for each condition for Mturk participants.

	Control		*Task Prime*		*Explicit Prime*	
Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
RSES	.49	<.001	.53	<.001	.51	<.001
IAT	-.03	.48	.05	.28	.07	.04
SC-IAT	.05	.23	.05	.22	.10	<.01
NLT	-.03	.55	.11	.03	.01	.85

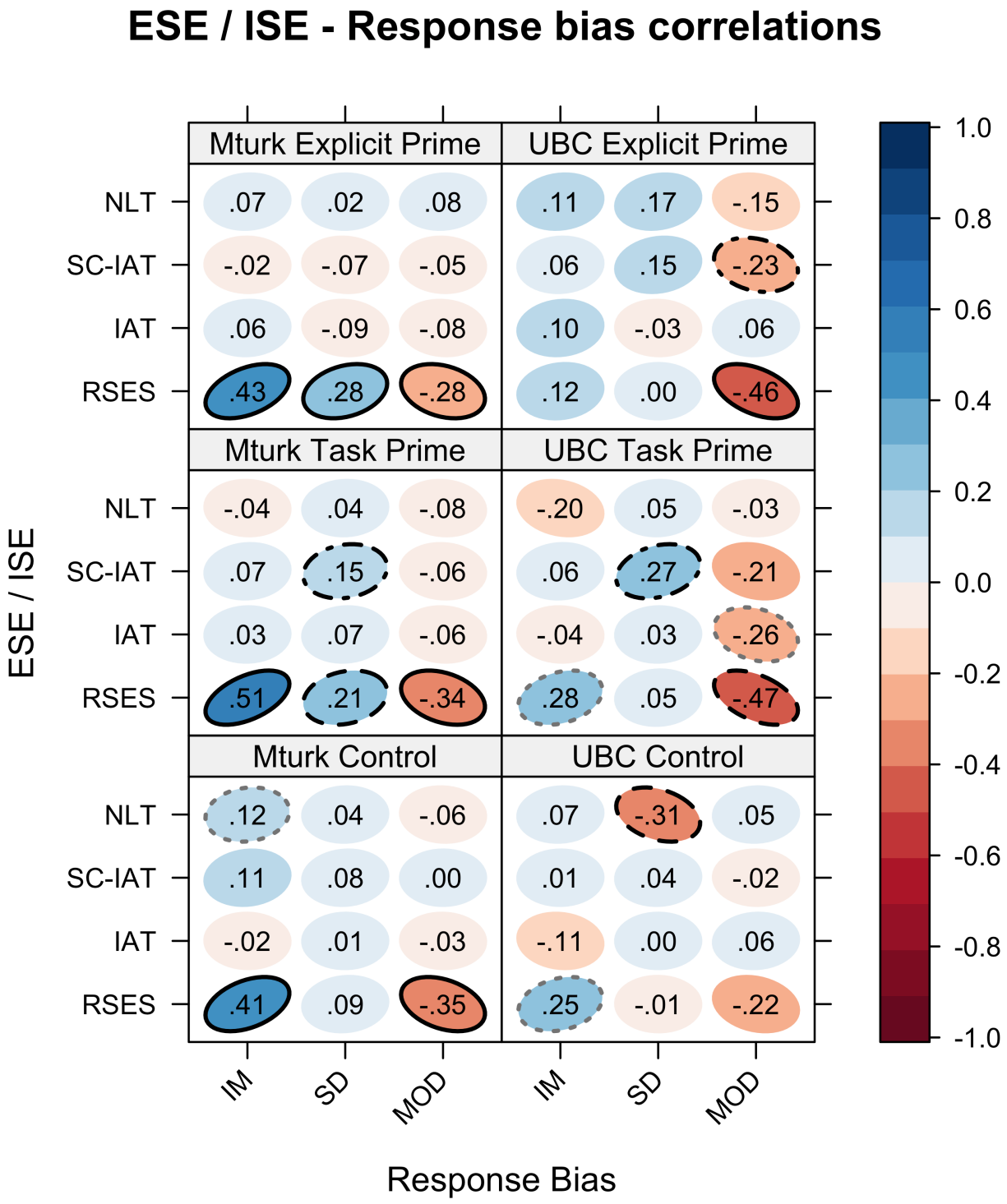
Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Figure 8. Correlations between explicit and implicit self-esteem measures in Study 3.



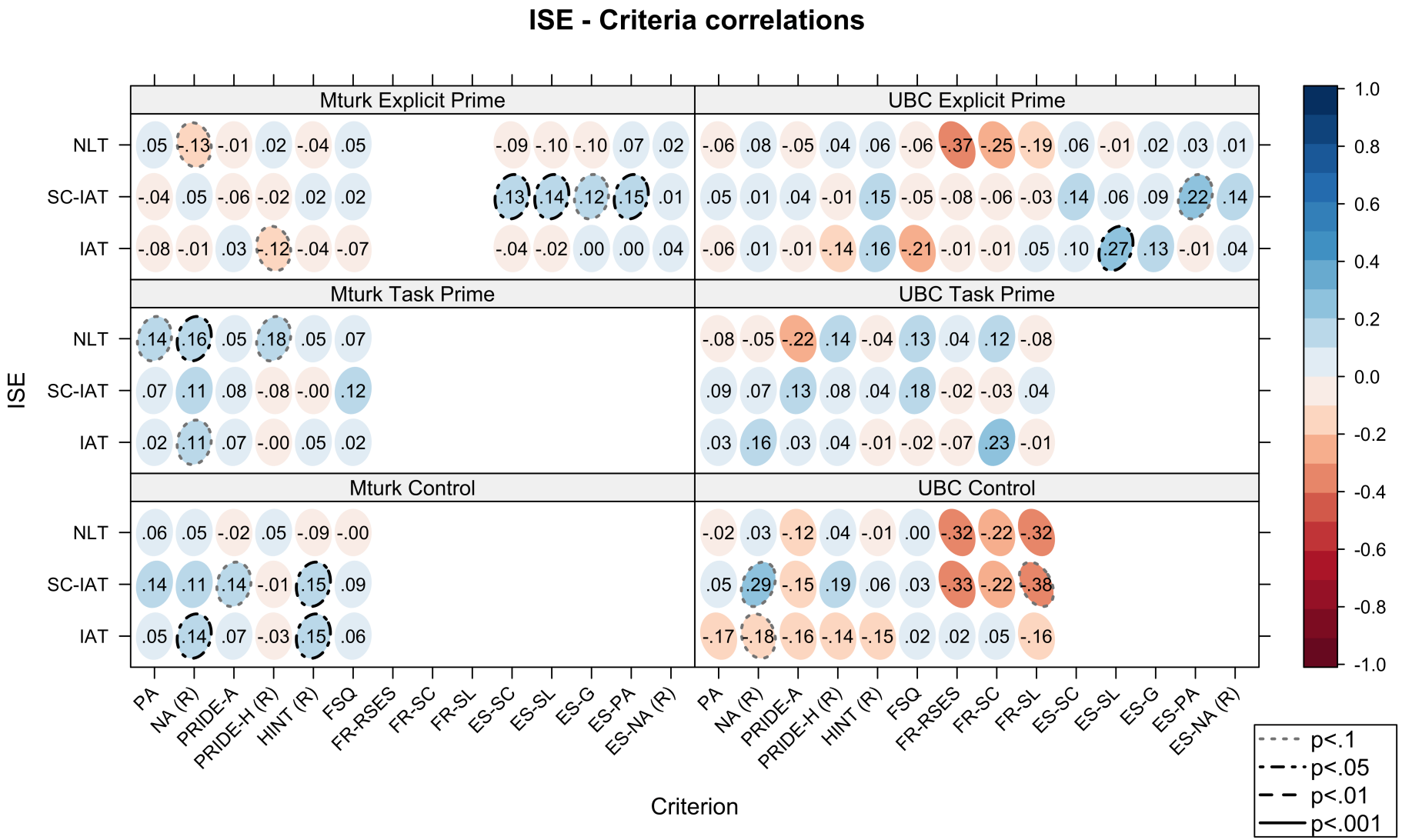
Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 9. Relationships among self-esteem measures and response bias measures in Study 3.



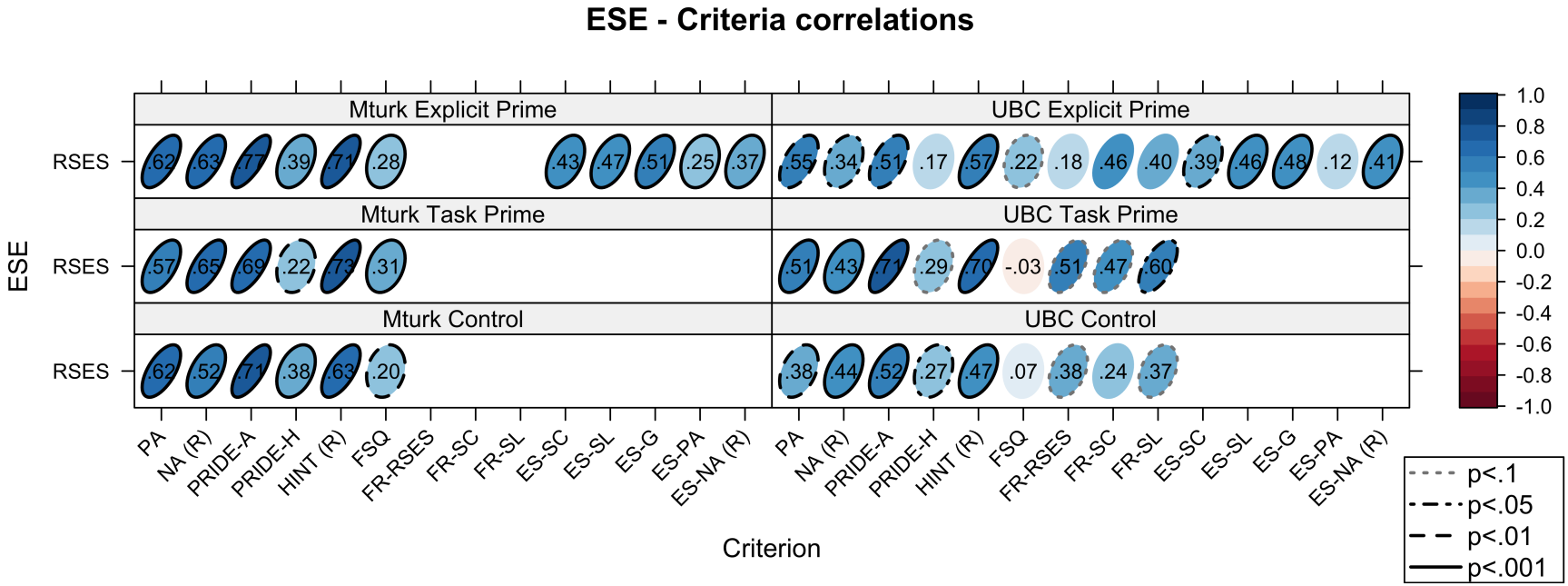
Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 10. Implicit self-esteem – criteria relationships for Study 3.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 11. Explicit self-esteem – criteria relationships for Study 3.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Table 14. Self-esteem – criteria relationships for each condition for UBC participants.

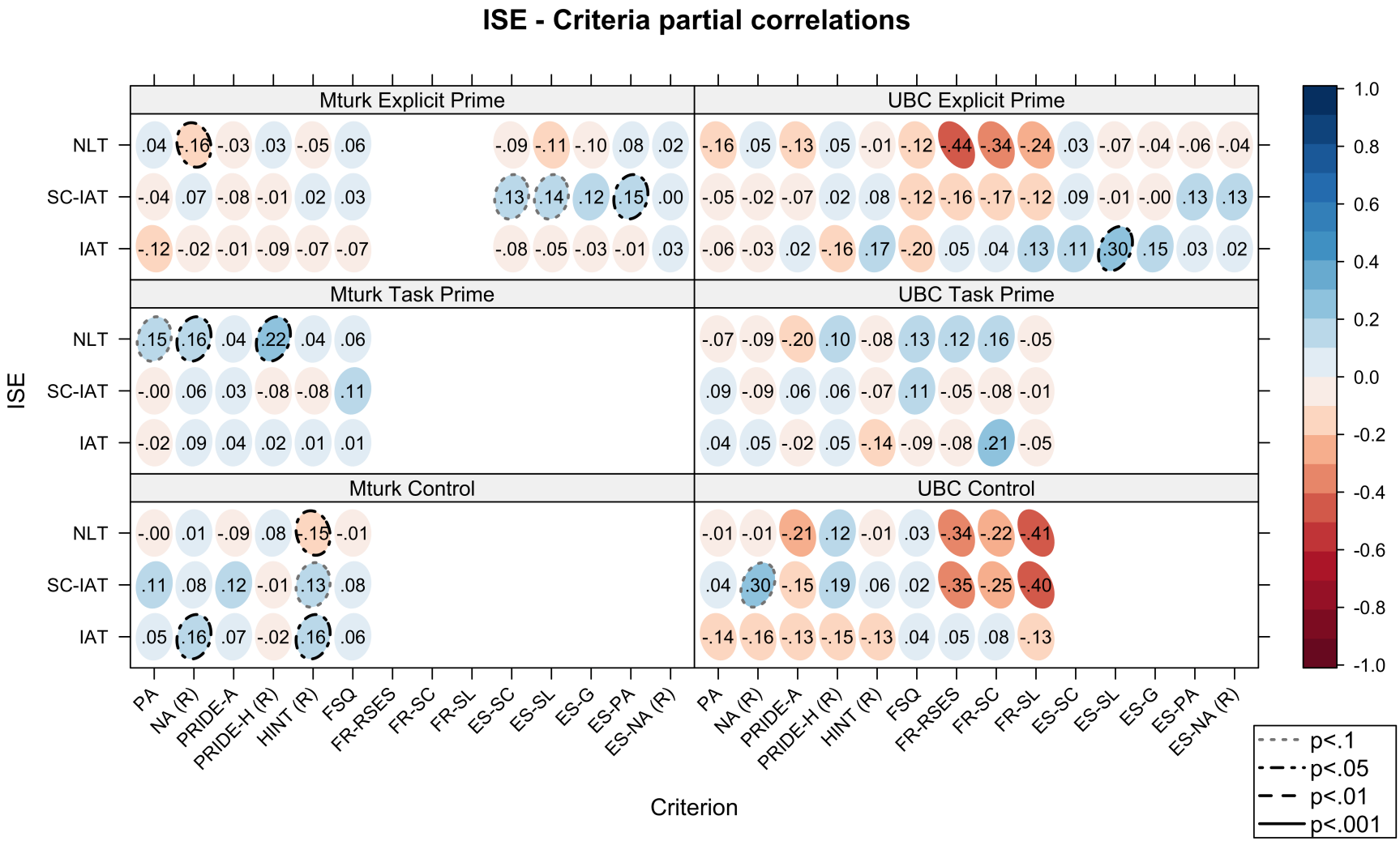
	Control		*Task Prime*		*Explicit Prime*	
Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
RSES	.34	<.001	.47	<.001	.37	<.001
IAT	.02	.75	.06	.44	-.09	.26
SC-IAT	.05	.35	.06	.37	-.03	.61
NLT	-.06	.45	.00	.97	-.06	.59

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Criterion Validity Controlling for Response Biases

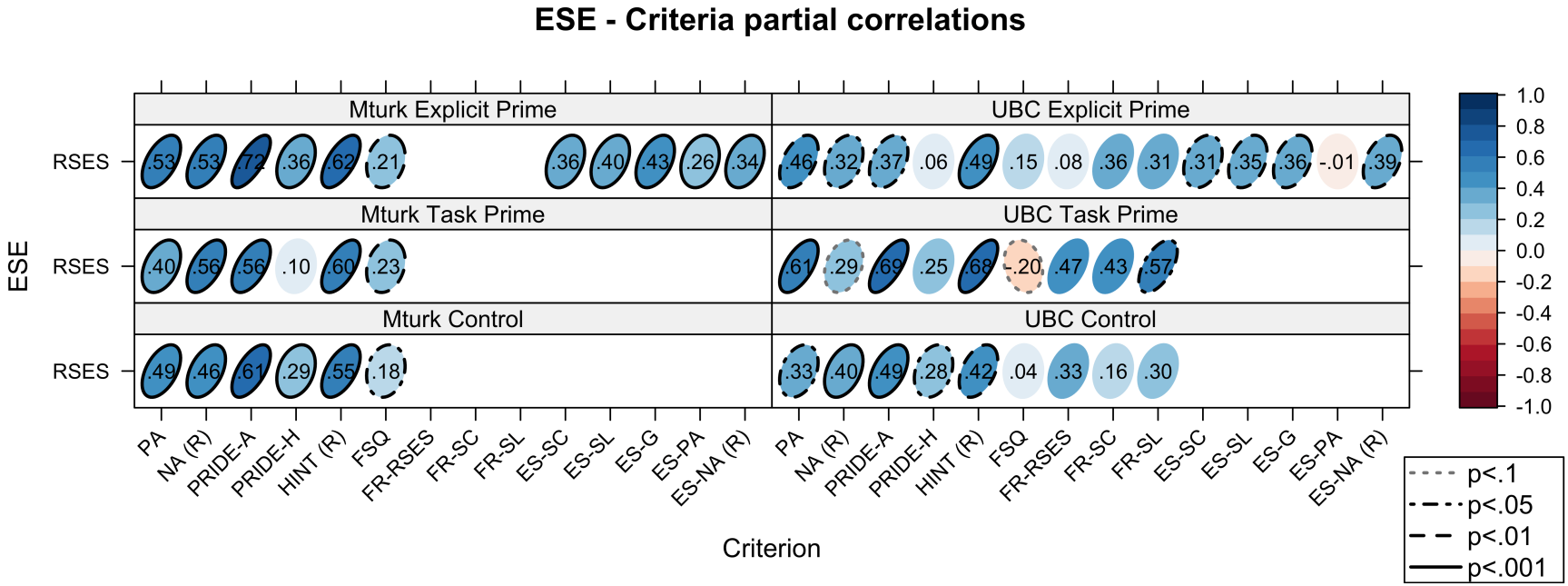
Since substantial correlations were found between the RSES and response bias measures (i.e., impression management and modesty), an important question is whether the RSES could predict criteria above and beyond these measures. To investigate this, we computed partial correlations between all self-esteem measures and criteria, controlling for impression management, modesty, and self-deception. A similar pattern to the above results was obtained for both implicit and explicit self-esteem measures. The predictive validity of implicit self-esteem measures was largely unaffected when controlling for response biases (Figure 12). Again, only the SC-IAT among Mturk control participants had a significant level of average correlations with the criteria (*Mean r* = .08, *p* = .01). Correlations between the RSES and criteria were reduced, but still yielded good predictive validity and in the expected direction (Figure 13). Two exceptions to this pattern were the FSQ in the UBC task prime condition (-.20) and LIWC coded positive affect words used in participant essays (ES-PA; -.01). Otherwise, average partial correlations for the RSES ranged from .28 to .43 (all $p < .001$) across all conditions and samples (Tables 15 and 16).

Figure 12. Implicit self-esteem criterion validity controlling for response biases.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Figure 13. Explicit self-esteem predictive validity controlling for response biases.



Note: The reader is encouraged to print Appendix D for a list of abbreviations

Table 15. Self-esteem – criteria relationships for each condition for Mturk participants, controlling for response biases.

	Control		*Task Prime*		*Explicit Prime*	
Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
RSES	.43	<.001	.41	<.001	.43	<.001
IAT	-.05	.23	.03	.49	.08	.02
SC-IAT	.05	.26	.01	.89	-.03	.44
NLT	-.03	.48	.11	.02	.08	.01

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Table 16. Self-esteem – criteria relationships for each condition for UBC participants, controlling for response biases.

	Control		*Task Prime*		*Explicit Prime*	
Measure	*Mean r*	*p*	*Mean r*	*p*	*Mean r*	*p*
RSES	.28	<.001	.43	<.001	.33	<.001
IAT	.05	.52	.00	.90	-.07	.41
SC-IAT	.00	.98	.01	.92	-.06	.46
NLT	-.11	.16	.01	.91	-.09	.32

Note: The reader is encouraged to print Appendix D for a list of abbreviations.

Discussion

Study 3 provided an initial test of whether operationalizing ISE as a unidimensional, global construct or a more refined conceptualization would result in better measurement and validity. Overall the experimental manipulations we implemented in Study 3 were not successful at boosting the criterion validity of implicit self-esteem measures. In particular, using self-

competence based stimuli (instead of general positive-negative stimuli) for the IAT and SC-IAT was ineffective as was asking participant to explicitly write an essay reflecting on their competence/relationships in a school or work context before completing ISE measures. The only case where any validity evidence was found for an implicit measure was the SC-IAT in the control condition of the Mturk sample and this effect just met the α = .01 threshold we used. Regardless of experimental condition or sample, the RSES again outperformed implicit self-esteem measures in terms of criterion validity – even after controlling for the effects of self-deception, impression management, and modesty.

One possible explanation for this pattern of results is that the manipulations we implemented were ineffective. However, even a weak manipulation should have yielded at least a trend at the sample sizes obtained for each cell in the Mturk sample (*n*'s >190). And although independent raters of participant essays sometimes noted that participants went off track from the prompt, these cases tended to be the exception rather than the rule. Therefore, the data we have presented suggest that an increase in self-reflection and depth of processing about the self in a particular context or domain does not lead to an increase in the validity of implicit self-esteem measures.

General Discussion

Taken together, Studies 2 and 3 constitute and extensive search for ISE measure validity by covering a vast array of measurement procedures, criterion measures, and several ways of conceptualizing/operationalizing implicit self-esteem. These two studies consisted of 1,170 participants across multiple cultural groups. Unfortunately, our results paint a bleak outlook for implicit self-esteem measurement. As in Bosson et al's (2000) exploration into the validity of implicit self-esteem measures over a decade ago, we found that new measurement procedures and ways of operationalizing implicit self-esteem did not yield the discovery of a valid implicit

self-esteem measure. Once again, explicit self-esteem measures outperformed implicit self-esteem measures in all cases.

Recall that the overarching purpose of Studies 2 and 3 was to find a measure of implicit self-esteem valid enough for making cultural comparisons. While such a measure was not found, our results suggest that previous research claims made regarding cultural variability in implicit self-esteem (or lack thereof) may be baseless (e.g., Yamaguchi et al., 2007). Recall that implicit self-esteem measures are the only known methodology not to exhibit cultural variability (Heine & Hamamura, 2007). Implicit self-esteem measures stand out as exhibiting a methodological bias – not because cultural variability does not exist – but because such measures do not appear to be valid. If the point of using an implicit measure is to avoid self-presentational biases, one may be inadvertently using one of the worst possible methodologies for examining self-enhancement across cultures. Thus, the only logical conclusion from our results and Heine and Hamamura's (2007) meta-analysis is that cultural variability in self-enhancement motivations exists.

Use of the criteria or outcomes of implicit self-esteem as a proxy for ISE should be considered an alternative methodological approach to studying implicit self-esteem. Some preliminary evidence using this approach in Study 2 also suggests that cultural variability exists in the criteria for implicit self-esteem and in a direction consistent with Japanese having lower self-esteem than Euro-Canadians. To the extent that implicit self-esteem criteria are more valid than the implicit self-esteem measures themselves, cultural variability in implicit self-esteem seems likely. A brief review of previous research is also consistent with Study 2's findings in that cultures differ in parent-child attachment styles (Chen et al., 1998), the experience of pride and shame (Furukawa, 2005; Scollon, Diener, Oishi, & Biswas-Diener, 2004), and peer ratings of positive personality traits (Su & Oishi, 2011). These results parallel those found in Study 2, and are compatible with the position that East Asians have lower implicit self-esteem than

Westerners. Therefore, there is much converging evidence that cultures differ in implicit self-esteem, and that use of implicit attitude measures is problematic and unlikely to reveal such differences.

Although this alternative approach may be criticized for the examination of phenomena that are determined by multiple causes – not just implicit self-esteem – the same criticism can be applied to implicit self-esteem measures. In order for a claim that implicit self-esteem is "heterogeneous" (e.g., Rudolph et al., 2008) or multifaceted to hold while maintaining that ISE causes individuals to respond in a certain way on ISE measures, then such measures must be positively correlated, even if weakly so (Bollen, 1984). It is possible that such relationships could be masked by some kind of systematic method variance. Much of previous research on method variance has focused on the IAT (for a review see De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009), including the extent to which different stimuli and categories are most salient (Rothermund & Wentura, 2004), the rule-based categorization strategy that individuals pursue on the task (Mitchell, 2004), differences in the ability to switch between tasks (Klauer et al., 2007), and individual differences in the goal to avoid errors (Popa-Roch, 2008, as cited in De Houwer et al., 2009). The extremely high correlation between GNAT scores in Study 2 – and in the opposite direction than would make theoretical sense – may be an indication that this measure also contains a substantial amount of method variance – as do the nonsensical cultural differences in this measure. Conversely, the mild positive relationships we observed between the IAT and SC-IAT may also be indicative of similar methodology rather than the measurement of the same underlying construct. Although several studies purporting to employ a multi-trait multi-method design have surfaced (Cunningham, Preacher, & Banaji, 2001; Gawronski, 2002; Nosek & Smyth, 2007), a true MTMM study has apparently not yet been conducted. Such a study would require measurement of multiple implicit attitudes by different implicit measures and would aid in teasing apart method variance from variance due to implicit attitudes. In essence,

we echo calls for in-depth research on the measurement process in psychology (e.g., Borsboom, 2005), especially how it applies to the cognitive processes that occur when individuals complete implicit attitude measures (e.g., Chang & Mitchell, 2009, 2011).

As mentioned in the introduction for this chapter, another possible reason for the lack of validity of implicit self-esteem measures may have to do with faulty criteria. This shortcoming has the potential to threaten both conclusions reached about implicit measure validity and cultural variability in implicit self-esteem. However, provided at least some theory regarding implicit self-esteem is correct, we should have found some criterion that consistently correlated with implicit self-esteem measures since our strategy for choosing criteria covered a wide range of phenomena. One could claim correctly that many of the criteria we included were themselves self-report measures. On the other hand, implicit self-esteem measures did poorly at predicting peer ratings of self-esteem and independently coded ratings of participants' essays whereas explicit self-esteem measures predicted these criteria. Cultural variability was apparent even in peer ratings of self-esteem. Furthermore, explicit self-esteem measures also outperformed implicit self-esteem measures even after partialling out the effects of self-deception, impression management, and modesty in Study 3. Still, the possibility exists that implicit self-esteem may strongly predict something, such as some kind of non-verbal behavior that was not adequately assessed in our studies (e.g., Robinson & Meier, 2005; Spalding & Hardin, 1999).

In conclusion, we hope that Studies 2 and 3 provide cautionary evidence against the impulse to interpret scores on implicit measures of self-esteem as indicative of some "truth" regarding the nature of implicit self-esteem. Broader implications and future directions will be discussed in the concluding chapter. Since implicit self-esteem measures are not a viable option for examining cultural variability in implicit self-esteem, the final two studies of this dissertation focus on the latter approach – examination of phenomena that should be explained by implicit self-esteem. The theoretical justification for this approach was presented in the introductory

chapter. Briefly, this alternative approach can either involve examination of phenomena connected to the conceptualization of implicit self-esteem as a network of associations (Greenwald et al., 2002) – as we have done in Study 2 in this chapter – or implicit self-esteem resulting in the projection of self-feelings onto self-associated objects, person(s), or ideas without the knowledge that this process occurs (Greenwald & Banaji, 1995). The next two studies take the latter approach and examine cultural variability in the endowment effect (Study 4) and the minimal group effect (Study 5).

CHAPTER 4: CULTURAL VARIATION IN THE ENDOWMENT EFFECT[12]

Many of us have likely had the experience of letting go something we own and value. Sometimes the price we must sell for is far less than we anticipated: "How come no one wants to buy my first generation iPod Touch for more than $30 when I originally bought it for more than $300?" This phenomenon is not limited to objects with sentimental value or quickly outdated technological devices. Experimental research has shown that merely owning a coffee mug, even if just awarded, is often sufficient to lead individuals to value the mug more than potential buyers (Kahneman et al., 1990). This phenomenon is known as the "endowment effect" and has been replicated with a variety of objects (e.g., basketball tickets; Carmon & Ariely, 2000; chocolates; Knetsch, 1989; key chains; Strahilevitz & Loewenstein, 1998) and even among young children and non-human primates (Brosnan et al., 2007; Harbaugh, Krause, & Vesterlund, 2001; Lakshminarayanan, Chen, & Santos, 2008; Kanngiesser, Santos, Hood, Call, 2011).

The most frequently invoked explanation for the endowment effect is that humans have a tendency to be more sensitive to potential losses than they are potential gains (i.e., loss aversion, Kahneman & Tversky, 1979). That is, giving up a mug may seem especially painful relative to the small delight of obtaining a mug. Indeed, negative feelings about losing an object have been found to explain the magnitude of endowment effect (Peters, Slovic, & Gregory, 2003). Other explanations include evolutionary accounts claiming that this bias improves one's bargaining

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[12] A version of this chapter has been published: Maddux, W.W., Yang, H., Falk, C.F., Adam, H., Adair, W., Endo, Y., Carmon, Z., & Heine, S.J. (2010). For whom is parting with possessions most painful? Cultural differences in the endowment effect. *Psychological Science, 21,* 1910-1917. The original publication was a multi-study paper. The currently revised chapter focuses mainly on the final study in the aforementioned publication as this was the only study that was the primary responsibility of the author of this dissertation.

position (Huck, Kirchsteiger, & Oechssler, 2005), different features of the transaction that are salient to buyers or sellers (Carmon & Ariely, 2000), and the fact that potential buyers have a difficult time taking the perspective of owners (and vice versa) even when buyers do not use their own money to purchase the object (Van Boven, Dunning & Loewenstein, 2000).

An alternative account for the endowment effect is that mere ownership of an object establishes an association between the object and the self. Individuals with a tendency towards self-enhancement subsequently enhance the value of the object as they do other self-associated objects (Beggan, 1992; Gawronski, Bodenhausen, & Becker, 2007; Morewedge, Shu, Gilbert, & Wilson, 2009). Individuals who do not own the object or do not have a strong self-object association do not project their self-feelings onto the object. Morewedge et al (2009) conducted a series of experiments to deconfound this explanation with that of loss aversion and found more evidence in favour of the self-object association explanation. Furthermore, Buhrmester and Swann (2009) found that manipulating the strength of self-object associations led owners to value the object more when self-object associations were strong versus when self-object associations were weak.

Despite the pervasiveness of the endowment effect, surprisingly little research on the effect has been conducted across different cultures. Maddux et al (2010) presented apparently the first set of studies systematically examining the endowment effect across East Asian and Western cultures. Two of these studies found that Asian-Americans/Canadians exhibited a smaller endowment effect than Euro-Americans/Canadians when the target object was a mug or a box of chocolates. In a third study, Chinese participants displayed an enhanced endowment effect when primed with an independent self-construal (common among Western individuals), but a reduced endowment effect when primed with an interdependent self-construal (common among East Asian individuals). Importantly, these latter results parallel the cross-cultural differences in the endowment effect using an experimental manipulation. This suggests that the

cultural variation observed in the endowment was likely due to some psychological mechanism that varies across cultures rather than some other confounding variable. Here we elaborate on the final study reported by Maddux et al (2010) in which an additional experimental test of this hypothesis was conducted.

Study 4

The evidence so far suggests that East Asians (versus Westerners) exhibit a diminished endowment effect and this occurs because of cultural variability in self-construals. This explanation requires further nuance in that cultural differences in self-construals often parallel differences in a host of other psychological phenomena (Heine & Buchtel, 2009). We suggest that cultural variability in self-enhancement motivations is a likely proximal mechanism responsible for these results. There is ample evidence that East Asians self-enhance significantly less than Westerners and even may lack self-enhancing motivations (Heine & Hamamura, 2007) – an effect often explained in terms of cultural variability in self-construals. Adoption of an independent self-construal allows one to view themselves as unique and distinct from others, highly value their own needs and goals, and feel free to pursue high self-esteem. In contrast, adoption of an interdependent self-construal leads individuals to define themselves in terms of their social relationships and puts constraints on the pursuit of self-esteem as in-group harmony and the needs and goals of one's in-group members often have a relatively higher priority (Heine et al., 1999; Markus & Kitayama, 1991).

To the extent that the endowment effect is at least partly driven by self-enhancing tendencies to value objects associated with the self more than objects not associated with the self, then cultural differences should be stronger when self-object associations are particularly salient. Westerners (versus East Asians) should be more likely to enhance self-associated objects because their own self-feelings tend to be more positive. In contrast, cultural differences should be weaker when self-object associations are minimized because individuals from both cultural

groups should be less likely to project their own self-feelings onto self-dissociated objects. Thus, in Study 3 we primed Japanese and Euro-Canadian participants to associate or not associate themselves with a coffee mug, expecting cultural differences in the endowment effect to emerge more strongly in the former condition than in the latter condition.

Method

Participants

Seventy-seven undergraduates (57 female) at the University of British Columbia in Canada, and fifty-six undergraduates (40 female) at Kansai University in Japan participated in this study in exchange for course credit or monetary payment. All participants in Canada described their ethnicity as White or European. Eight were American citizens; sixty-nine were Canadian citizens. All participants in Japan were Japanese citizens.

Procedure and Experimental Manipulations

Upon arrival, participants were presented with a white ceramic Starbucks mug and were informed that they would first perform a 5-minute persuasive writing task about the mug (the $5.45 CAD and ¥850 prices of the mugs in each country were not indicated). Participants then read instructions for the writing task adapted from Buhrmester and Swann (2009). In the object-association condition, participants wrote about how the mug was important to them and had a specific, personal meaning. In the no-object-association condition, participants wrote about how the mug was unimportant to them and had little or no personal meaning. Experimenters then randomly assigned participants to the role of buyer or seller.

Instructions to sellers indicated that they now owned the mug and could take it home after the study, or they could choose to sell the mug during the study. They were then presented with a list of prices ranging from $0.00 to $10.00 in 50 cent increments. Sellers were asked to indicate whether, for each price, they would choose to: (1) sell the mug to the experimenter and receive that amount of money, or (2) not sell the mug at that price and keep the mug. Instructions

for buyers indicated that they would be given an opportunity to purchase the mug from the experimenter. They were presented with the same list of prices ranging from $0.00 to $10.00 in 50 cent increments and were asked to indicate whether, for each price, they would choose to: (1) buy the mug from the experimenter at that price, or (2) not buy the mug at that price. Buyers and sellers were told that the experimenter would then randomly select one of the prices, and their choice for that price (i.e., sell/not sell, or buy/not buy) would be honoured. We considered the valuation of the mug to be the lowest price at which sellers agreed to sell the mug, and the highest price at which buyers agreed to buy the mug (Kahneman et al., 1990).

All study materials were translated into Japanese and equivalence was verified through back-translation. The procedure was the same for Japanese participants, except they were presented with a list of prices ranging from ¥0 to ¥1000 in ¥50 increments. Subsequent analyses were conducted in CAD after Japanese prices were converted using the average exchange rate during the time period that the Japanese data was collected (C$1 = ¥85.66).

Results[13]

Endowment Effect across Conditions and Cultures

Data were modeling by regressing price on Writing Task (object-association = 0; no object-association = 1), Role (seller = 0; buyer = 1), Culture (European-Canadian = 0; Japanese = 1) and all possible interactions between these variables. As expected, the predicted Writing Task x Culture x Role interaction was significant, $b = -4.76$, $\beta = -1.79$, $t(125) = -2.87$, $p < .01$.

We then decomposed this interaction to test our specific prediction that the cultural difference would emerge in the object-association condition, but not in the no-object-association condition. As predicted, the Culture x Role interaction was significant in the object-association

[13] See Appendix G for this section written in the ANOVA framework, and for analyses with and without demographic variables.

condition, b = 4.31, β = 1.62, t(125) = 3.68, p <.001 (see Figure 14). When the self-object associations were made salient, Euro-Canadians showed a significant endowment effect {M_{buyer} = C$2.57, SD = 2.08; M_{seller} = C$5.73, SD = 2.88; b = -3.17, β = -1.19, t(125) = -4.04, p <.001} whereas Japanese showed a non-significant but distinct tendency toward a reverse endowment effect {M_{buyer} = C$6.09, SD = 3.06; M_{seller} = C$4.94, SD = 2.44; b = 1.15, β = .43, t(125) = 1.31, p = .19}. In the no-object-association condition, the Culture x Role interaction was non-significant, b = -.45, β = -.17, t(125) = -.38, p = .70, with Japanese showing a marginally significant endowment effect {M_{buyer} = C$2.56, SD = 1.27; M_{seller} = C$4.13, SD = 2.68; b = -1.57, β = -.59, t(125) = -1.74, p = .08} and Euro-Canadians showing a non-significant effect{M_{buyer} = C$2.21, SD = 1.85; M_{seller} = C$3.33, SD = 2.20; b = -1.12, β = -.42, t(125) = -1.50, p = .14}.

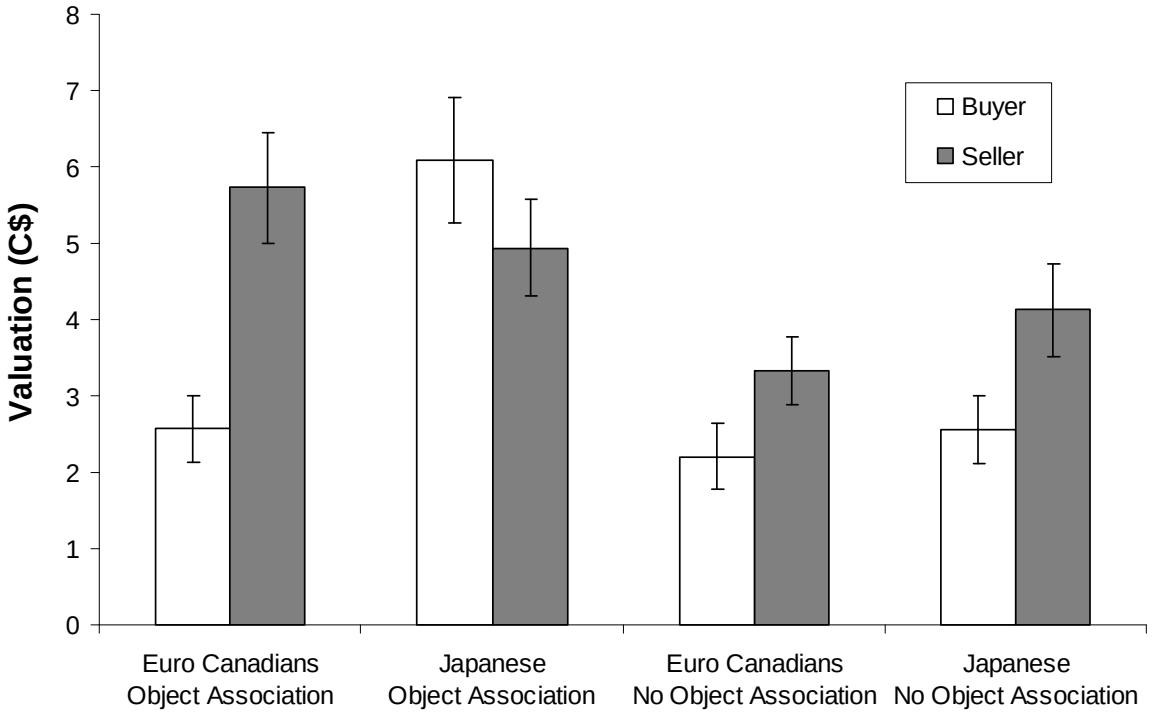
Within-culture comparisons further elucidated this pattern. Euro-Canadians had a marginally larger endowment effect in the object-association condition than in the no-object-association condition, b = 2.05, β = .77, t(125) = 1.89, p = .06. In contrast, the endowment effect for Japanese was significantly larger in the no-object-association condition than in the object-association condition, b = -2.71, β = -1.02, t(125) = -2.17, p = .03.

Discussion

In summary, when object associations were made salient, Euro-Canadians showed a significant endowment effect, while Japanese showed a striking trend toward a reversal of the normally robust endowment effect; however, this surprising pattern of results is actually consistent with the well-documented tendency toward self-criticism for Japanese (Heine et al., 1999; Heine & Hamamura, 2007; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Within-culture comparisons showed that Japanese had a significantly stronger endowment effect when self-object associations were minimized compared to when self-object associations were

salient, while the reverse pattern emerged for European-Canadians, evidence that cultural differences in the endowment effect are a function of cultural differences in self-enhancement.

Figure 14: Valuation of Starbucks coffee mugs as a function of role (buyer/seller), culture, and experimental condition.



These results elucidate Maddux et al's (2010) findings that Asian-Americans/Canadians have a diminished endowment effect relative to Euro-Americans/Canadians. These findings as a whole represent another demonstration of a phenomenon that can be taken to indicate cultural variability in self-enhancement and should avoid self-presentational biases. For instance, it is difficult to make a theoretical case that sellers of the mug or box of chocolates are aware that the selling price they set is a reflection of their own feelings towards themselves which is then projected onto the self-associated object. This position has been taken by Greenwald and Banaji (1995), in which they argue that the endowment effect should be explained by implicit self-

esteem. If the effect is indeed a reflection of implicit self-esteem, then these results also suggest cultural variability in implicit self-esteem.

These results are unlikely to be due to loss aversion as individuals from Eastern cultures tend to be more prevention-focused and biased towards the status quo compared to Westerners (e.g., Lee, Aaker, & Gardner, 2000). Thus, although research with non-human primates and young children suggest possible universal mechanisms common to all humans (Harbaugh et al., 2001; Brosnan et al., 2007; Lakshminarayanan et al., 2008; Kanngiesser et al., 2011), we argue that culture also has a powerful influence. The endowment effect at this stage of research may be considered a functional universal (Norenzayan & Heine, 2005) in that all individuals may possess the capacity to display the endowment effect through some universal cognitive bias that is adaptive for maintaining a good bargaining position (Huck et al., 2005), but is moderated in important ways by cultural variation in self-enhancement tendencies. Recent research indicates that individuals from small scale societies that lack monetary exchange systems do not appear to exhibit the endowment effect (Apicella, Azevedo, Christakis, & Fowler, 2012).

There are a number of additional intriguing avenues for future research across cultures. In addition, since East Asians tend to show relationship-enhancement tendencies (Endo et al., 2000) it is possible that they might show a larger endowment effect than Westerners for objects that have implications for interpersonal relationships, such as a gift from a friend, partner, or colleague. Furthermore, future research should help determine whether cultural values or cultural norms in object valuation and self-enhancement drive the observed effects (e.g., Zou et al., 2009). Finally, it is important to investigate the current effects outside the lab in field contexts, for example, comparing the extent to which game show contestants in different countries are willing to part with endowed objects.

We also believe that cultural variance in the endowment effect can explain a number of real-world phenomena. Research has demonstrated that East Asian consumers are generally

faster to switch to new technologies than Western consumers (Takada & Jain, 1991). For example, as of 2010, considerably more Japanese households (84%) had hi-definition televisions compared to U.S. households (53%), despite the fact that direct incentives (e.g., government subsidies) to adopt this technology are considerably stronger in the U.S. (Japanese Ministry of Internal Affairs and Communications, 2010; The Neilson Company, 2010). In addition, the average age of cars (6.58 years in Japan; 9.2 years in the U.S.; Japanese Automobile Inspection & Registration Information Association, 2004; National Auto Dealers Association, 2007) and houses (26 years in Japan; 44 years in the U.S.; Minami, 2005) is lower in Japan than in the U.S., statistics which are highly consistent with our experimental results. Cultural differences in the endowment effect also suggest that sales tactics such as free trials, low-balling, and "bait-and-switch" may be less effective in cultural contexts where the sting of material loss may be more easily assuaged. More generally, as business and political environments become more globalized and diverse, it is increasingly important to study how decision-making tendencies differ across cultural contexts, so that researchers, practitioners, and policy-makers can have a more complete and accurate understanding of how decisions are made in a truly global world.

CHAPTER 5: CULTURAL VARIATION IN THE MINIMAL GROUP EFFECT

Having lost his immediate family due to the holocaust, Henri Tajfel set out to uncover the underlying psychological reasons that led to prejudice, discrimination, and intergroup conflict. Surprisingly, Tajfel found that intergroup conflict was possible even between groups that had no history of preexisting stereotypes or prejudice (Tajfel, 1970). Even without meeting other in-group and out-group members, participants who are categorized into two separate groups via some random process or based on relatively trivial criteria (e.g., art preference) exhibit in-group identification, enhancement of the in-group's positive qualities, out-group derogation, and greater resource allocation towards in-group members (e.g., Brewer, 1979; Tajfel et al., 1971). This psychological phenomena, known as the *minimal group effect*, and this experimental procedure has become one of the most widely used approaches to studying intergroup conflict.

Underlying many explanations for the minimal group effect is the assumption that humans are motivated to self-enhance. For instance, self-categorization theory (SCT) and social identity theory (SIT) are often used to explain the minimal group effect (Tajfel & Turner, 1986; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Stated succinctly, humans have a natural tendency to form social boundaries that define different social categories or groups as this helps organize the social world. Social identity theory posits that a person's self-concept overlaps with the social groups to which they belong. Qualities from the group are therefore assimilated into the self-concept. Based on the assumption that individuals are motivated to self-enhance (Tajfel & Turner, 1986), individuals are then also motivated to enhance their social identities (i.e., in-groups) and engage in comparisons among social groups. More recent formulations of social identity theory (e.g., Abrams & Hogg, 1988) have claimed that 1) out-group derogation enhances self-esteem, and 2) low/threatened self-esteem individuals are motivated to engage in intergroup discrimination (cf. Turner & Reynolds, 2001).

An emerging body of evidence and theory suggests that in-group biases under the minimal group effect are ultimately due to self-enhancement, but the mechanism for the effect stems from an automatic cognitive bias (Cadinu & Rothbart, 1996; Gawronski et al., 2007; Gramzow & Gaertner, 2005; Gramzow, Gaertner, & Sedikides, 2001; Krueger, 1998; Otten, 2002; Otten & Epstude, 2006; Otten & Wentura, 2001). This position is summarized concisely by Gramzow and Gaertner (2005): "We propose that, once a novel group is linked to the self, the perceiver's self-evaluation is extended automatically to this new in-group. Persons with favourable self-concepts, therefore, should spontaneously generate favourable in-group evaluations" (p. 802). Thus, mere association with a novel group is sufficient to establish a connection between the self and the group. In the absence of additional information about novel groups, the self is often automatically used as an anchor or source of information (Krueger, 1998). That is, individuals may project their own attributes and self-feelings onto novel in-groups. This alternative theoretical position is consistent with evidence establishing that global self-esteem is strongly and positively related to tendencies to display in-group biases (Aberson, Healy, & Romero, 2000; Rubin & Hewstone, 1998). Additional experimental work has established that positive affective associations and trait inferences tend to automatically occur for the in-group (Otten & Moskowitz, 2000; Otten & Wentura, 1999), and that projection of the self onto the in-group (instead of the opposite) is likely responsible for in-group biases (Cadinu & Rothbart, 1996; Otten & Epstude, 2006).

If the minimal group effect is in fact due in part to self-enhancement motivations, we may question its robustness across cultures. Specifically, a tendency to self-enhance may be a uniquely Western phenomenon. A substantial body of evidence suggests that individuals from East Asian cultural backgrounds tend to self-enhance less than those from Western cultural backgrounds (Heine & Hamamura, 2007). Therefore, we might expect East Asians to display a reduced minimal group effect versus Westerners and that this cultural difference would be

because East Asians project less positive self-feelings onto their in-group. Some circumstantial evidence for this position can be drawn from research on group serving biases across cultures. Specifically, East Asians show less evidence for group-enhancement than do Westerners (see Heine, 2003, for a review). Even though many of the core processes now attributed to social identity theory are thought to be culturally universal (Hogg, 2003), this theory itself may be a byproduct of the almost exclusive focus of psychological research on American psychology undergraduates (Henrich et al., 2010).

Research specifically examining the cross-cultural prevalence of the minimal group effect is sparse. Wetherell (1982) found that Polynesian children exhibited a diminished minimal group effect relative to children with a European background. Across multiple studies, Yamagishi and colleagues (Yamagishi & Mifune, 2008; Yamagishi, Jin, & Kiyonari, 1999) explored moderators of the minimal group effect with Japanese participants. Although Japanese showed a reduced or absent minimal group effect under some experimental conditions, this research lacked Western comparison groups. Among Japanese, Chinese, Korean, and American business and economics students, Buchan, Johnson, and Croson (2006) found differences only between Chinese and Americans though in the direction that we would predict – Chinese students did not display a minimal group effect whereas Americans did. This cultural difference was explained by cultural variability in the tendency to maximize in-group versus individual gains and to think that the teams were in cooperation (vs. competition). While this initial research is promising, Buchan et al. (2006) used a minimal group induction procedure that deviates from typical paradigms: participants actually met their in-group members and had a discussion for 10 minutes. This research also did not clearly explain cross-cultural variability in the minimal group effect in terms of a dimension that is known to systematically vary across cultures. Finally, with the exception of a single study by Yamagishi and colleagues (Yamagishi et al., 1999), all of the

above research utilized resource allocation under economic games (e.g., dictator game, prisoner's dilemma, etc.) as dependent measures.

Study 5

The present research was designed to explore cultural variability in the minimal group effect across a wide variety of dependent measures and to explore whether cultural variability in self-enhancement is a plausible explanation for any cultural differences that emerge. To this end, a diverse sample of Japanese and American participants completed an online study that induced minimal groups and measured in-group biases in group identification, perceived intelligence, group personality characteristics, and resource allocation. We expected that Americans (versus Japanese) would exhibit greater in-group biases on all of these measures and that self-esteem would mediate the cultural differences.

Method

Participants

Our sampling strategy was to obtain a large and diverse sample from the general population of the USA and Japan. 346 Japanese participants were recruited by Cross Marketing, Inc., a Japanese marketing research firm, and received between 100 and 150 JPY. 710 individuals from the USA participated via Amazon's Mechanical Turk (e.g., see Buhrmester et al., 2011b) in exchange for $.50. 601 of these participants reported being born in the USA or Canada and were selected for inclusion. To ensure data quality, 22 Japanese participants and 7 American participants failed manipulation checks regarding which group they were assigned to under the minimal group paradigm and were excluded from analyses, yielding a final sample of 324 Japanese and 594 Americans. All participants collected from Japan reported being born in Japan and of Japanese ethnicity. The American sample described their ethnicity as mostly White/European (80.71%), followed by Black (6.77%), Asian/Pacific Islander (4.74%), Hispanic (3.05%), mixed ethnicity (2.71%), Native American (1.35%), and Middle Eastern (0.68%).

Overall, both samples had a wide range of ages, education levels, and socioeconomic status. Both Americans (M = 33.63, SD = 12.38, range: 18 to 88) and Japanese (M = 32.93, SD = 7.82, range: 19 to 45) had approximately the same average age, $t(913) = .92$, $p = .36$. However, the Americans had a greater proportion of females (61.19%) than the Japanese (52.16%), $\chi^2(1) = 6.63$, $p = .01$.[14] Socioeconomic status was measured on a 9-point scale in which participants indicated whether they felt they were closer to the *top* (9) or the *bottom* (1) relative to other people in the society of their country (Cantril, 1965). Both cultural groups spanned the entire range of socioeconomic status allowed by the rating scale and reported being close to the midpoint (5) on average, but Japanese (M = 5.40, SD = 1.62) reported slightly higher perceived SES than the Americans (M = 5.16, SD =1.61), $t(914) = -2.13$, $p = .03$. Cultural groups also differed in the highest level of education they had attained, $\chi^2(4) = 113.74$, $p < .001$: high school or less (Japanese: 23.15%; Americans: 10.34%), some university, technical, or vocational training (Japanese: 8.95%, Americans: 34.41%), 2-4 year university or technical degree (Japanese: 56.48%; Americans: 34.92%), some graduate school (Japanese: 0.93%; Americans: 5.59%), and advanced/graduate degree (Japanese: 10.49%; Americans: 14.75%).

Procedure

All American participants completed the study in English whereas Japanese participants completed the study in Japanese. All materials were translated into Japanese by a Japanese researcher and were independently checked for accuracy by two bilingual research assistants.

Participants completed this study via the Internet in a questionnaire format. At the outset of the study, participants read that "For part of this study, we are going to test whether people

[14] Ten participants had missing values on at least one of the following variables: age, gender, SES, and education. Considering this is an extremely small proportion of the sample, listwise deletion was used in cases where these variables were included in any analyses.

with different artistic preferences have any differences in other domains." Participants then indicated their preference for one of two abstract art pictures both created by Wassily Kandinsky. Participants who chose the picture with green overtones (*Improvisation 7*) were assigned to the "Green team" and those who chose the picture with blue overtones (*Yellow, Red, Blue*) were assigned to the "Blue team." This procedure is similar to the widely used art preference task initially used by Tajfel et al (1971). To establish some semblance of connection between the participant and their in-group, we informed them that there are "likely similarities between you and the other participants on your team" and "it could be that there are real thinking style differences among the teams." Although participants were informed that they would be asked to complete items from popular intelligence tests and personality scales, there was no explicit mention of competition among the two groups.

Next participants completed measures relevant for assessing the minimal group effect as well as personality measures in the following order: 1) in-group versus out-group identification, 2) ratings of whether certain personality traits were characteristic of each group, 3) expected cognitive performance on the intelligence tasks for each group, 4) self-esteem, 5) perceived desirability of the personality traits in 2 above, 6) in-group versus out-group resource allocation, 7) manipulation check, 8) demographic information, 9) two items from Raven's Progressive Matrices intelligence test.[15]

[15] Performance on the items from the Raven's Progressive Matrices was not predictive of any minimal group effect and did not differ across culture. Therefore, these items are not discussed further.

Measures

Group Identification. Participants completed a 6-item measure of identification with the in-group (3 items; α = .93 for Japanese, α = .94 for Americans) and out-group (3 items; α = .96 for Japanese, α = .93 for Americans). These items were adapted from an 18-item measure previously utilized in research on the minimal group effect (e.g., Greive & Hogg, 1999; Yamagishi & Mifune, 2008). Example items include "How much do you identify with the BLUE group?" and "To what extent do you feel strong ties with the BLUE group?" and were rated on a Likert scale from 1 (*Not Very Much*) to 7 (*Very Much*). A relative in-group identification preference measure was obtained by taking the difference (in-group minus out-group) of these measures.

Group Personality Traits. Using a 7-point Likert scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), participants were asked to "indicate your perception of the characteristics of the BLUE and GREEN team members, NOT including yourself" for each of five personality traits (friendly, rude, hard-working, considerate, and lazy). Participants rated both the in-group and out-group for each of these five traits (e.g., "Members of the BLUE team are friendly"). We chose these traits to measure both positive and negative characteristics that might be important for maintaining interdependent relationships; these traits have been used in past research using personality traits to assess self-enhancement across cultures (e.g., Falk et al., 2009; Heine & Renshaw, 2002). Similar measures have been used in previous research on the minimal group paradigm (e.g., Brewer, 1979) and cross-cultural studies of group-enhancement (Heine & Lehman, 1997b). To control for individual and cultural variability in the positivity of each trait, in a separate section of the study participants the social desirability of each trait on a 7-point Likert scale.

Group Intelligence. Participants read a brief description of intelligence test items they expected to complete: "Using a multiple choice format, this task asks participants to identify

which item is missing from a matrix of items. Good performance on this task requires high intelligence and good logical reasoning." Four items then asked participants to estimate each group's performance on the test: "What percentage of members on the BLUE[GREEN] team will complete the items in this task correctly?" and "What percentage of members on the BLUE[GREEN] team will make errors on the items in this task?" (reverse coded). These items were rated on a 10-point scale with each anchor representing a 10% range (0-9%, 10-19%, etc.) and were combined separately for the in-group (α = .50 for Japanese, α = .57 for Americans) and the out-group (α = .50 for Japanese, α = .59 for Americans). A composite of in-group bias was formed by taking the difference of these measures (in-group minus out-group).

Resource Allocation. For the purpose of measuring group preference in allocation of resources, we asked participants to imagine that all participants were eligible for "a monetary bonus – extra payment in addition to that already awarded for participation." Participants were then asked to pick one of seven allocations of payment that could be awarded to other participants, not including themselves. The response options were drawn from the Multiple Alternative Matrices (Bornstein et al., 1983) and included three allocation strategies that favoured the in-group, three that favoured the out-group, and one in which allocation was equal for each group. Americans saw these response options in terms of cents whereas Japanese participants say these options in terms of Japanese Yen (Table 17). This measure has been utilized in previous research with the minimal group paradigm and presenting the allocation in terms of a "bonus" payment is more likely to produce inter-group discrimination (Gaertner & Insko, 2000, 2001).

Self-Esteem. Self-esteem was measured using the single-item self-esteem scale ("I have high self-esteem"; Robins, Hendin, & Trzesniewski, 2001) rated on a 7-point Likert scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

Table 17. Response options for Japanese and Americans on the resource allocation measure.

	A	B	C	D	E	F	G
BLUE Team	38¥	45¥	47¥	34¥	29¥	42¥	22¥
GREEN Team	42¥	35¥	28¥	34¥	47¥	22¥	42¥

	A	B	C	D	E	F	G
BLUE Team	$0.38	$0.45	$0.47	$0.34	$0.29	$0.42	$0.22
GREEN Team	$0.42	$0.35	$0.28	$0.34	$0.47	$0.22	$0.42

Note: To standardize across participants on the blue and green teams, the in-group always appeared on the top row.

Manipulation Check. Two true/false manipulation check questions asked participants regarding group membership: "I am a member of the BLUE[GREEN] team." An additional true/false question asked participants whether the teams were competing with one another.

Results

Preliminary Analyses

Overall there was a preference for the blue picture (63.29%) versus the green picture (36.71%), χ^2 (1) = 64.85, p < .001, and participants had a tendency to think that the teams were engaged in competition (58.28%), χ^2 (1) = 25.03, p < .001. Cultural variability was observed in picture preferences, χ^2 (1) = 15.59, p < .001, such that the blue picture preference was driven by the Americans (68.01% blue picture preference), χ^2 (1) = 77.10, p < .001, but the preference was only marginally significant for Japanese (54.63% blue picture preference), χ^2 (1) = 2.78, p = .10. A marginally significant cultural difference was observed in the tendency to think that the groups were engaged in competition, χ^2 (1) = 3.01, p = .08, such that Americans were more likely to

think that the teams were engaged in competition (60.48%), χ^2 (1) = 25.77, $p < .001$, than the Japanese (54.32%), χ^2 (1) = 2.42, $p = .12$.

In addition to cultural variability in picture preferences and the tendency to view the teams in competition, we previously noted several demographic variables that differed across cultures (i.e., gender, SES, education level). Thus, there are five possible covariates that could be justifiable to include in all analyses. However, all patterns of effects that are of interest are in the same direction, and all cultural differences in minimal group effects remain significant. Therefore, to simplify presentation of results, below we report results without these covariates and explicitly note any cases in which the result is slightly different (see Appendix H for detailed results including these covariates).

Minimal Group Effects

Recall that we were expecting to find cultural differences in in-group bias under the minimal group paradigm such that Japanese participants would display less of an in-group bias than American participants. Note that in all analyses culture was coded as a dummy variable with Japanese as the reference group (i.e., Japanese = 0; American = 1).

Group Identification. We found a significant cultural difference in group identification, $b = .86$, $t(916) = 7.92$, $p < .001$, $d = .56$, such that both Americans and Japanese displayed relative in-group identification versus the out-group, but this preference was more pronounced for Americans ($M = 1.57$, $SD = 1.67$), $t(593) = 22.88$, $p < .001$, $d = .94$, than for Japanese ($M = .70$, $SD = 1.40$), $t(323) = 9.08$, $p < .001$, $d = .50$.

Group Intelligence. A significant cultural difference in in-group bias in intelligence emerged, $b = 1.15$, t(916) = 7.00, $p < .001$, $d = .51$. Whereas Americans thought other in-group members would perform better than out-group members on intelligence test items ($M = 1.14$, SD

= 2.58), $t(593) = 10.82$, $p < .001$, $d = .44$. Japanese displayed an opposite non-significant pattern ($M = -.01$, $SD = 1.97$), $t(323) = -.06$, $p = .96$, $d = -.003$.

Group Personality Traits. To control for idiographic differences in how participants perceived the desirability of each personality trait, a multilevel modeling approach was utilized for analysis of perceived group differences in personality traits. Estimation was performed using R's lme4 package (R Development Core Team, 2011; Bates, Maechler, & Bolker, 2011) and restricted maximum likelihood. Specifically, the following model was fit to the data:

Level 1 Equation:

$$Y_{ij} = \beta_{0i} + \beta_{1i}Desire_{ij} + \beta_{2i}Group_{ij} + \beta_{3i}Desire_{ij}Group_{ij} + r_{ij}$$

Level 2 Equations:

$$\begin{aligned}
\beta_{0i} &= \beta_{00} + \beta_{01}Culture_i + \beta_{02}DesireMean_i + u_{0i} \\
\beta_{1i} &= \beta_{10} + \beta_{11}Culture_i + \beta_{12}DesireMean_i + u_{1i} \\
\beta_{2i} &= \beta_{20} + \beta_{21}Culture_i + \beta_{22}DesireMean_i + u_{2i} \\
\beta_{3i} &= \beta_{30} + \beta_{31}Culture_i + \beta_{32}DesireMean_i + u_{3i}
\end{aligned}$$

Y_{ij} represents person *i*'s endorsement of personality trait *j*. At level 1, this was predicted by idiographic perceptions of trait desirability (Desire; centered within person), a dummy code indicating whether the endorsement was made for the in-group or out-group (Group; Out-group = 0; In-group = 1), and the interaction of trait desirability and group membership. Level 2 equations contained a dummy code for Culture (Japanese = 0; Americans = 1) and each individual's mean trait desirability ratings (DesireMean; grand-mean centered). The Level 1 centering strategy and the addition of person-level means for trait desirability in level 2 equations is consistent with recommendations when a cross-level interaction is the primary effect of interest (e.g., Enders & Tofighi, 2007; Kreft, de Leeuw, & Aiken, 1995). In addition, random effects were estimated for each level 1 effect (u_{0i} through u_{3i}).

Conceptually, a positive trait desirability – endorsement relationship within each person indicates endorsement of traits that were viewed as socially desirable. The coefficient for the

Desire X Group interaction indicates whether this strength of relationship is stronger for the in-group versus the out-group, with a positive coefficient indicating that the in-group was attributed more desirable traits than the out-group. Of primary interest is a cross-level interaction, β_{31}, which indicates whether there are cultural differences in the Desire X Group interaction (i.e., cultural differences in in-group bias).

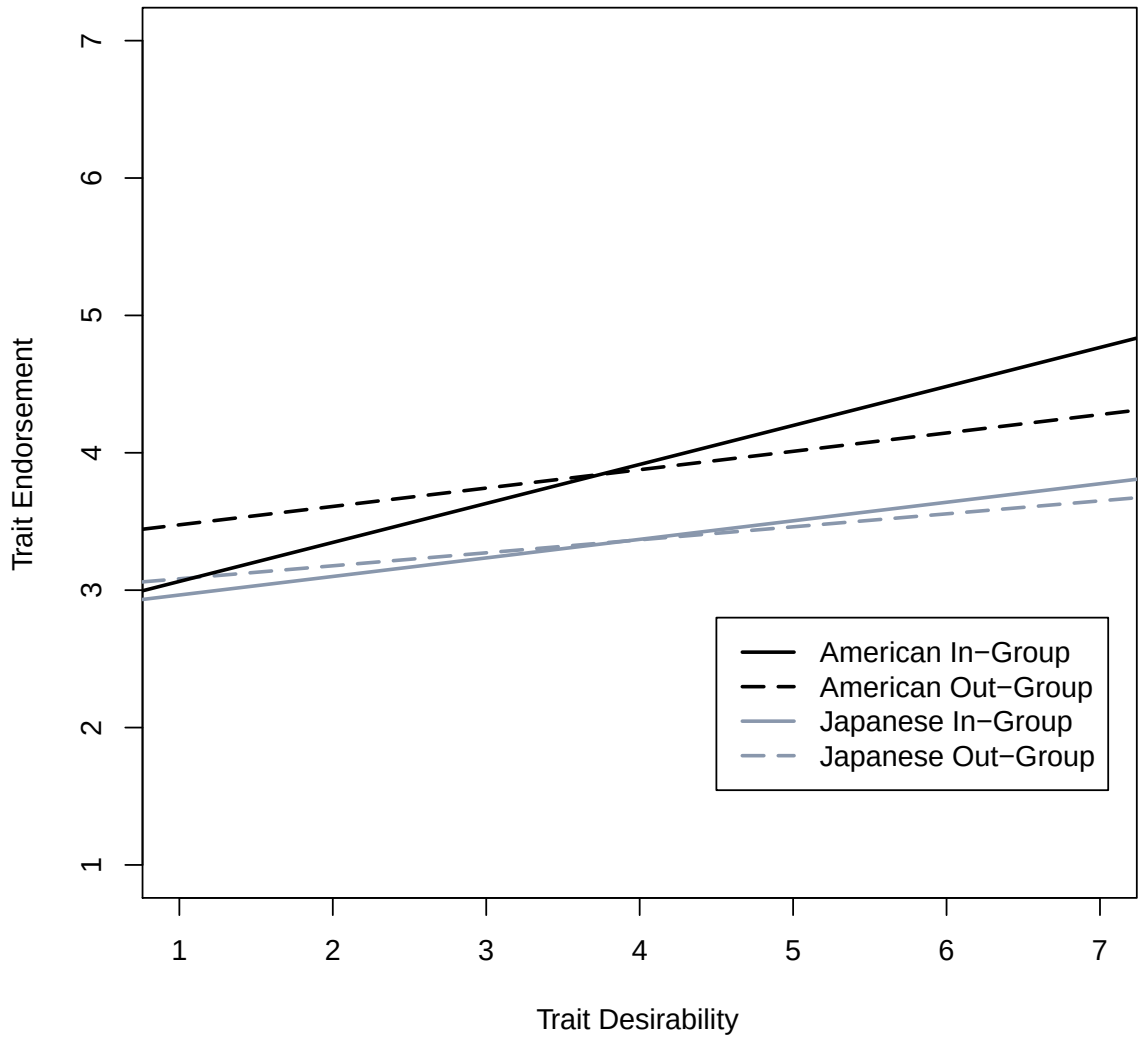
Results indicated that the expected Culture X Desire X Group cross-level interaction was indeed significant, $b = .11$, $z = 6.21$, $p < .001$ (see also Table 18). Although both cultural groups exhibited a significant in-group bias as indicated by Desire X Group interactions, this effect was stronger for Americans, $b = .15$, $z = 17.51$, $p < .001$, than for Japanese, $b = .04$, $z = 2.75$, $p <.01$. Finally, a positive desirability – rating relationship was observed for both cultural groups in rating both the in-group and out-group (p's < .001; see Figure 15).

Table 18. Fixed effect estimates for personality trait analyses.

Fixed Effect	*Coefficient*	*se*	*z*
Intercept			
Intercept, β_{00}	3.41	0.04	80.96***
Culture, β_{01}	0.53	0.05	9.89***
DesireMean, β_{02}	0.16	0.06	2.55**
Desire Slope			
Intercept, β_{10}	0.09	0.02	5.31***
Culture, β_{11}	0.04	0.02	1.79†
DesireMean, β_{12}	0.06	0.03	2.05*
Group			
Intercept, β_{20}	0.02	0.03	0.74
Culture, β_{21}	0.08	0.36	2.30*
DesireMean, β_{32}	0.01	0.04	0.32
Group X Desire			
Intercept, β_{30}	0.04	0.01	2.75**
Culture, β_{31}	0.11	0.02	6.21***
DesireMean, β_{32}	-0.01	0.02	-0.31

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Figure 15. Trait desirability – endorsement slopes for Americans and Japanese for both the in-group and out-group.



Resource Allocation. To simplify presentation of resource allocation results, the seven allocation strategies were recoded as an ordered categorical variable with three possible responses: 1) allocation favouring the out-group, 2) equal distribution among groups, and 3) allocation favouring the in-group. An ordered logistic regression predicting resource allocation from culture indicated that culture was a significant predictor such that Americans were associated with more in-group favouring resource allocation strategies than Japanese, b = 1.43, z

= 9.52, $p < .001$. Interestingly, whereas Americans displayed an in-group bias in resource allocation such that in-group favouring strategies were preferred over out-group favouring strategies, $\chi^2(1) = 263.52$, $p < .001$, this bias was absent for Japanese, $\chi^2(1) = .31$, $p = .58$ (see Tables 19 and 20).

Table 19. Within culture proportions for each of the seven resource allocation options.

	A	**B**	**C**	D	*E*	**F**	*G*
Americans	*.03*	**.18**	**.27**	.49	*.01*	**.03**	*.002*
Japanese	*.08*	**.10**	**.06**	.64	*.07*	**.02**	*.02*

Note: In-group favouring strategies are in bold. Out-group favouring strategies are in italics.

Table 20. Estimated thresholds between resource allocation strategies for each cultural group.

	Out-group/Equal Threshold (*se*)	Equal/In-Group Threshold (*se*)
Americans	-3.08 (.15)	.09 (.08)
Japanese	-1.65 (.14)	1.51 (.13)

Mediation Analysis

The above results established that Americans (versus Japanese) had a greater in-group bias for group identification, perceived intelligence, personality traits, and resource allocation. To establish evidence consistent with self-esteem mediating these cultural differences, we expected that 1) Americans would be significantly higher on self-esteem than Japanese (path A), and 2) self-esteem would positively predict in-group bias (path B) above and beyond the effect of culture. Observation of significant effects for both of these steps is sufficient to establish evidence for mediation (e.g., MacKinnon et al., 2002). In addition, p-values for each indirect

effect (path A times path B) were estimated using the partial posterior method (Biesanz, Falk, & Savalei, 2010; see Table 21).

Consistent with previous research, cultural differences were indeed present in self-esteem, $b = 1.51$, $t(916) = 14.97$, $p < .001$, $d = 1.04$, such that Americans ($M = 5.00$, $SD = 1.46$) reported much higher self-esteem than their Japanese counterparts ($M = 3.49$, $SD = 1.44$). The next step in testing our hypotheses regarding mediation was to add self-esteem as a predictor (in addition to culture) in all models presented in the previous section. In the case of personality trait endorsement, self-esteem was added as a predictor to all level 2 equations (see Krull & MacKinnon, 2001). The results of these analyses indicated that self-esteem was a significant predictor of in-group bias in identification, $b = .12$, $t(915) = 3.45$, $p < .001$, expected performance on intelligence test items, $b = .12$, $t(915) = 2.23$, $p = .03$, personality trait endorsement, $b = .02$, $z = 3.30$, $p <.001$, and was a marginally significant predictor of more in-group favouring resource allocation strategies, $b = .08$, $z = 1.86$, $p = .06$.[16] In all cases the effects

[16] The effect of self-esteem on group intelligence, $b = .10$, $t(894) = 1.86$, $p = .06$, and resource allocation, $b = .07$, $z = 1.48$, $p = .14$, remain in the same direction, but become slightly diminished if all possible covariates are included in these models (gender, SES, education, competition, and picture choice). If modeling interactions between self-esteem and culture to test for cultural variability in how self-esteem predicts each outcome, the interaction was marginally significant for group identification, $b = .14$, $t(914) = 1.86$, $p = .06$, such that self-esteem was a significant predictor for Americans, $b = .17$, $t(914) = 3.89$, $p < .001$, but not for Japanese, $b = .03$, $t(914) = .53$, $p = .60$. Such interactions were not significant for group intelligence, $b = .11$, $t(914) = .98$, $p = .33$, resource allocation, $b = .07$, $z = .68$, $p = .49$, and personality traits, $b = -.01$, $z = -1.24$, $p = .22$, indicating no cultural difference in how self-esteem predicted these dependent variables.

of culture on all in-group bias measures were reduced, but remained significant (see Table 21). Thus, evidence consistent with partial mediation was established for all in-group biases.[17]

Table 21. Mediation analyses results for culture → self-esteem → in-group bias

In-Group Bias	*Indirect Effect*[a]	*p*	*Effect of Culture*[b] *(standard error)*	*p*
Identification	.19	< .001	.68 (.12)	<.001
Intelligence	.18	.03	.97 (.18)	<.001
Personality Traits	.02	<.001	.09 (.02)	<.001
Resource Allocation	.13	.06	1.31 (.16)	<.001

Note: a. The indirect effect is the product of path A and path B. Its associated p-value is the statistical test for mediation (Biesanz et al., 2010). b. The effect of culture is the cultural difference in in-group bias remaining after controlling for self-esteem.

[17] If considered simultaneously with self-esteem an culture as predictors, perception of the teams as being in competition was a significant predictor of in-group bias in identification, $b = .33$, $t(907) = 3.15$, $p < .01$, expected performance on intelligence test items, $b = .34$, $t(907) = 2.14$, $p = .03$, personality trait endorsement, $b = .05$, $z = 3.57$, $p <.001$, and in-group favouring resource allocation strategies, $b = .46$, $z = 3.43$, $p < .001$, and was a significant mediator of cultural differences in identification ($p = .05$), personality trait endorsement ($p =.05$), and resource allocation ($p = .05$), and a marginally significant mediator of perceived intelligence ($p = .07$). In these analyses, self-esteem remained a significant mediator of identification ($p < .001$), intelligence ($p = .02$), personality traits ($p = .001$) and a marginally siginificant mediator of resource allocation ($p = .08$). The results with perceived competition constitute a replication of Buchan et al (2006) and provide evidence for multiple mediators.

Discussion

The results of Study 5 provide evidence of cultural variability on a variety of in-group bias measures under the minimal group paradigm. Americans displayed a much stronger pattern of in-group biases on all measures than Japanese. For perceived intelligence and resource allocation, an in-group bias for Japanese participants was absent. Importantly, our results provide support that these cultural differences may be due, at least in part, to cultural differences in self-esteem. Americans reported higher self-esteem than Japanese, and higher self-esteem individuals tended to display a greater degree of in-group bias on all outcomes.

Our results are therefore consistent with both previous research on the existence of cultural variability in self-enhancement (e.g., Heine & Hamamura, 2007), group-serving biases (Heine, 2003), and research suggesting that minimal group effects may be partly due to a projection of self-feelings and attributes onto the novel in-group (Gramzow & Gaertner, 2005). Furthermore, to the extent that the minimal group effect is explained by implicit self-esteem (e.g., Greenwald & Banaji, 1995), these results may also indicate cultural variability in implicit self-esteem. That is, evaluation of the novel in-group (versus the out-group) may be a reflection of one's own self-feelings and participants may be largely unaware that this process is occurring. There is therefore a growing body of research suggesting that cultural variability exists in implicit self-esteem related phenomena such as the endowment effect (Chapter 4; Maddux et al., 2010), similarity-attraction effect (Heine, Foster, & Spina, 2009), and post-choice dissonance (Heine & Lehman, 1997a; Kitayama, Snibbe, Markus, & Suzuki, 2004; see also Gawronski, Peters, & Strack, 2008). The implication for the present research topic is that theories of intergroup conflict that assume self-enhancement motivations are universal (e.g., self identity theory; Turner et al., 1987) may need to be reformulated without this assumption.

While our theoretical position is that self-esteem is an important component to cultural variability in the minimal group effect we observed, other psychological dimensions or processes

could partly explain our results. For instance, Brewer and Yuki (2007) argue that minimal group paradigms are successful in activating individuals' "collective self," which constitutes abstract social group representations such as "nation" or "university" in which many individuals may never meet each other. While such kind of social identities may be important for Westerners, the "relational self" that is defined by one's social ties in a network of relationships is arguably a more important social identity representation for East Asians (Brewer & Yuki, 2007, Yuki, 2003). Thus, it is possible that minimal group paradigms do not activate a social identity that would lead East Asians to identify with their in-group, and in turn a reduced in-group bias would be observed. Similarly, East Asians may be less likely to trust novel individuals (Yamagishi & Yamagishi, 1994) and perceive there to be few opportunities to form new relationships or change social groups in their current society (Yuki et al., 2007), and thus may be hesitant to identify with a novel in-group. If this were the case, however, we would expect that cultural variability in group identification would be able to nearly fully explain cultural differences in in-group biases for resources allocation, personality trait attributions, and perceived intelligence. Although the study was not specifically designed for this purpose, controlling for in-group bias in identification still results in significant cultural differences on all other in-group bias measures.[18]

A variety of other processes and moderators of minimal group effects or in-group biases have also been observed in the literature. A non-exhaustive list includes the degree of uncertainty participants feel under the paradigm (Greive & Hogg, 1999), whether participants feel like active participants of their in-group or more like observers (Aberson et al., 2000; Brown, Collins, Schmidt, 1988), whether self or group identities are most salient (Verkuyten & Hayendoorn,

[18] Controlling for group identification, the cultural differences are $b = .90$, $t(915) = 5.40$, $p < .001$, for group intelligence, $b = .07$, $z = -3.79$, $p < .001$, for the in-group bias in personality traits, and $b = 1.28$, $z = 8.36$, $p < .001$ for resource allocation.

2002), and the subjective positivity or negativity of the characteristics of some traits rated (Mummendy, Otten, Berger, & Kessler, 2000). At the moment we have little theoretical basis for judging whether some of these dimensions or processes may also be operating at different degrees across cultures and their study represents an area ripe for future research and theory.

Importantly, we have both identified cultural variability in a psychological phenomenon, and take the next step in providing some explanatory evidence for its variability. One logical additional step involves investigating the universality of the minimal group effect based on other experimental conditions and beyond the currently studied populations. The evidence for universality provided by this study is somewhat mixed considering the fact that Japanese displayed an in-group bias on some, but not all measures, and we did not investigate whether minimal group biases have any functional purpose across cultures (see Norenzayan & Heine, 2005). The minimal groups that we created were also not "minimal" in the strictest sense as they were not completely arbitrary (i.e., randomly assigned) and experimental features led participants from both cultural groups to think that the groups were in competition with each other.

Certainly there is ample theory and evidence to suggest that humans have a tendency to create social group boundaries and that this may help us determine who is trustworthy, who to cooperate with, or who to discriminate against (e.g., Henrich & Henrich, 2007; Sidanius, 1993). Current evidence suggests that young children (e.g., 5yr-olds) display minimal group effects across implicit and explicit measures and when groups are as minimal as possible (Dunham, Baron, & Carey, 2011). However, we have already noted a case where the minimal group effect appears to vary across children of different cultures (Wetherell, 1982). Thus, the best theoretical explanation we can offer at this point is that some processes involved in the minimal group effect (e.g., projection of the self onto the in-group) may be innate or occur automatically, but that cultural learning is an important component and can have the power to shape such tendencies further (e.g., automaticity of novel group identification, feelings about the self).

While the sampling strategy we used is advantageous over purely student samples as we have obtained a much more representative cross-section of each population, additional research may investigate whether the minimal group effect is also observed among very different cultural groups, such as those from non-industrialized or small-scale societies (Henrich et al., 2010). The observation or absence of in-group biases in strictly minimal group paradigms among such other samples would be particularly informative for elucidating the innate and culturally shaped processes underlying the minimal group effect. At the very least, we must recognize that theories developed to explain intergroup conflict cannot be culture-free, and that a comprehensive understanding of intergroup conflict requires theory that is able to explain variability in the minimal group effect across a wide variety of contexts and populations and for multiple different types of in-group biases.

CHAPTER 6: GENERAL DISCUSSION

The studies presented in this dissertation used diverse approaches to exploring possible cultural variability in implicit self-esteem. As a whole, these studies provide converging evidence that cultural variability likely exists in implicit self-esteem, but is not adequately captured by implicit self-esteem measures. That is, previous claims that different cultures exhibit the same universal levels of implicit self-esteem are premature and ignore an important body of additional evidence. The strength of these studies lies in the diversity of measurement instruments used and phenomena examined. The summary of results, implications, and limitations below is separated by research strategy and is followed by an overall conclusion.

Implicit Self-Esteem Measures

Summary of Results

Amidst claims based on the IAT that no cultural variability exists in implicit self-esteem (e.g., Yamaguchi et al., 2007), Study 1 found cultural variability using an alternative measure of implicit self-esteem, but no variability with the IAT. It is tempting to conclude that the IAT may be somewhat anomalous among implicit self-esteem measures in *not* finding cultural variability based on this study and the fact that other measures appear to have found evidence for cultural variability in implicit self-esteem (e.g., Cai et al., 2011; Falk et al., 2009; Hetts et al., 1999). But, this conclusion is somewhat premature in light of the findings from Studies 2 and 3.

Studies 2 and 3 explored the validity of a variety of implicit self-esteem measures among a variety of cultural groups. Importantly, these studies concentrated efforts on utilizing new methodological improvements to implicit attitude measurement (Study 2) and utilized alternative conceptualizations of implicit self-esteem that should have elicited more self-reflection or deeper processing of a specific self-facet (Study 3). Thus, we would have expected that at least some consistent criterion validity evidence would emerge for at least one implicit self-esteem measure in combination with some criterion. In general, results from these studies were consistent with

previous research suggesting that implicit self-esteem measures lack convergent and criterion validity (Bosson et al., 2000; Buhrmester et al., 2011a) whereas explicit self-esteem measures performed quite well.

Implications and Limitations for Implicit Self-Esteem Measurement

The results of these studies are particularly problematic for research on implicit self-esteem measurement in general as no clues to a proper future direction were found. Some remaining changes to criteria and implicit self-esteem conceptualization remain to be tested. We have already discussed the possibility that alternative criteria could be examined, such as non-verbal behaviours (Bosson et al., 2000; Robinson & Meier, 2005; Spalding & Hardin, 1999). It could also be that specific conceptualizations of implicit self-esteem must be paired with more specific outcome measures. For example, we might find that automatic reactions to one's own appearance might predict non-verbal behavior in a social situation where one's physical appearance could be important – such as making new friends or trying to find a mate. Finally, even deeper self-reflection than elicited by Study 3 may be necessary for uncovering implicit self-esteem (Buhrmester et al., 2011a).

It is unclear whether alternative methodological approaches to establishing measurement instrument validity would have yielded different results. For example, such a strictly correlational approach is sometimes considered inadequate for establishing the validity of psychological measures (Borsboom et al., 2004; Zumbo, 2007). Instead, Borsboom et al (2004) recommend an experimental approach whereby the underlying construct is manipulated and validity evidence accumulates if a measure responds in an expected way. Some authors have even specifically recommended using such an approach for implicit attitude measures (De Houwer et al., 2009). On the other hand, Messick (1989) suggests that the correlational approach can be useful for construct validation if the pattern of correlations observed can be later formulated into a set of testable hypotheses for future research. Arguably, such an approach is

especially useful considering the diverse theoretical conceptualizations of implicit self-esteem and its possible correlates.

A more troubling explanation for Study 2 and 3's results is the assertion by Tafarodi and Ho (2006; see also Olson, Fazio, & Hermann, 2007) that an unconscious version of self-esteem may not exist. These authors assert that misrepresenting one's self-feelings due to cultural norms can become habituated to the point where it feels or becomes automatic. Narcissists may engage in self-deception and construct a perception of the self that is out of touch with more objective views of the self. Thus although individuals may have various motivations or tendencies to misrepresent their self-feelings or engage in self-deception, there is little that individuals cannot consciously access about their self-feelings. This conceptualization poses a problem for the first definition of implicit self-esteem we proposed in our introduction – that implicit self-esteem is the strength of association individuals unconsciously have between themselves and valence attributes (Greenwald et al., 2002). This position, however, is still compatible with the second definition of implicit self-esteem we presented and the possibility that self-presentational biases could conceal a lack of cultural variability in self-enhancement.

Implications for Implicit Social Cognition Research and Theory

Our position is that the empirical evidence thus far does not clearly imply anything problematic about measurement of other implicit attitudes and that the problems illustrated in this dissertation may be unique to implicit self-esteem. For example, the IAT in general has been found to have decent criterion validity (r = .274) across measurement of a number of implicit attitude domains (race, consumer preference, political preference, etc.) and over 100 studies (Greenwald et al., 2009). Similar meta-analyses examining the validity of other measurement procedures across multiple implicit attitude domains appear to be unavailable. However, a recent meta-analysis found that 12 out of 13 different measures of implicit attitudes towards specific drugs were significant predictors of substance use (r = .31 on average across over 19,000

subjects; Rooke, Hine, & Thorsteinsson, 2008). These results directly contrast the case where multiple different implicit self-esteem measures have all been found to lack validity (e.g, Studies 2 and 3; Bosson et al., 2000; Buhrmester et al., 2011a), and the fact that different implicit self-esteem measures (e.g., IAT and NLT) have perhaps the lowest implicit-explicit measure correlations of any implicit attitude (r = .13 and r = .11, respectively; Hofmann et al., 2005; Krizan & Suls, 2008).

We should note, however, that other researchers have been critical about the possible existence of other implicit attitudes. For instance, Fazio and Olson (2003) are critical of research on implicit attitudes in general, suggesting that it is often atheoretical, and suggest that there is no reason to suppose the existence of dual attitudes – one explicit and one implicit. The fact that implicit attitude measures predict anything above explicit measures can be attributed to simply faulty explicit measures or the existence of measurement error (e.g., Blanton & Jaccard, 2008). Blanton and Jaccard (2008) suggest a similar position for implicit racism – that individuals may be often unaware that some actions are racist, or may be unaware of the source of a racial bias, but there are no racial attitudes of which we are unaware. However, similarly to self-esteem, there may be racial attitudes that we are unwilling to report or behaviours that become habitualized. Blanton and colleagues have also attacked the validity of the race IAT (Blanton et al., 2009), but in our opinion these attacks do not definitively suggest that implicit attitudes in general do not exist, nor do they imply anything about the validity of other implicit attitude measures or the validity of the IAT for other attitudes. Our theoretical stance is that implicit attitudes are likely preconscious (e.g., Epstein, 2003). That is, we are largely unaware of their existence and operation, but can become aware under certain circumstances. For example, IAT researchers (e.g., Greenwald, Nosek, & Siram, 2006) have noted that completion of their measures provides a “palpable” and sometimes unsettling experience – suggesting that individuals may become aware of their implicit attitudes while completing the task.

It would also be presumptuous to say that our results suggest that information processing cannot occur outside of conscious awareness. Clearly there is a large body of evidence testifying to the existence of unconscious and automatic information processing, learning, and memory (e.g., Bargh, 1984, 1994, 1996; Nisbett & Wilson, 1977; Schacter, 1987; Van den Bussche, Van den Noortgate, & Reynvoet, 2009; Wilson & Hodges, 1992). Thus, our results should not be taken to challenge dual processing theories more generally.

It is then difficult to speculate as to why implicit self-esteem presents a unique problematic case for implicit social cognition research and theory. Regardless of whether implicit attitudes exist or not, it is undeniable that implicit self-esteem measures have not been found to predict much, if anything at all, whereas other implicit attitude measures do. Can implicit attitudes exist or information processing occur for other attitude objects, but not for the self? We have already noted that the concept of the self may be far too complex and elaborated to be represented as a single attitude object in memory (see Chapter 3). In contrast, it is possible that humans tend to organize other people and objects into categories or have more simplified representations and opinions of specific others or objects. This may make implicit attitude measurement easier for attitude objects other than the self. Furthermore, we speculate that rapid information processing for other people and objects may facilitate seamless navigation of our social world – e.g., how to quickly respond to others actions, behaviours, etc. – whereas the utility of quickly processing information about the self is less clear (cf. Epstein, 2006; Hetts & Pelham, 2001; Pelham, Carvallo, & Jones, 2005).

Implications and Limitations for Cultural Psychology

While Studies 1 through 3 shed little light on whether cultural variability exists in implicit self-esteem, they do highlight significant methodological problems with the measurement of implicit self-esteem. To our knowledge, Study 2 is the first investigation of whether implicit self-esteem measures have any validity in more than one cultural group.

Implicit self-esteem measures are often thought to assess self-feelings without contamination by self-presentational biases, are cited as indicating that cultural variability in "true" attitudes towards the self do not exist (e.g., Cai et al., 2011), and stand out as the only type of measure that does *not* consistently exhibit cultural variability (Heine & Hamamura, 2007). Since validity evidence for implicit self-esteem measures was weak and inconsistent across different cultural groups for Studies 2 and 3, these results should be taken to invalidate previous conclusions about the lack of cultural variability in implicit self-esteem (Kobayashi & Greenwald, 2003; Yamaguchi et al., 2007). Thus, implicit self-esteem measures are a poor choice for the cross-cultural study of implicit self-esteem, and they do not speak to the question of the cultural variability in self-enhancement. The overwhelming evidence from other methodologies, including some behavioural studies, is that East Asians self-enhance much less than Westerners (Heine & Hamamura, 2007).

There are potential limitations to the approach of establishing criterion validity of implicit self-esteem measures in both cultures as a precondition to comparing cultures on implicit self-esteem measures. Typically in order to compare different cultural groups on mean levels of a construct, some form of measurement invariance ought to be established (e.g., Chen, 2008). For example, the items that make up the construct must have the same factor structure, loadings, and so on within each group. However, if mean-level differences were present on the underlying construct, equal criterion validity in each cultural group would likely be an indication that measurement invariance actually does not hold (Millsap, 1997). Thus, an alternative approach we could have utilized would focus on establishing measurement invariance on each construct we explored across cultures. Our position is that the overall lack of validity of implicit self-esteem measures we found in both cultural groups precludes this approach. Regardless, the main implication for cultural psychology research from these results is that cultural variability in

implicit self-esteem may very well exist, but ought to be assessed using a different theoretical and methodological approach.

Is Implicit Self-Esteem Universally Positive?

One remaining argument relevant to both implicit self-esteem measurement and cultural psychology concerns the positivity of implicit self-esteem scores. That is, it could be that individuals from all cultures have a tendency to automatically and unconsciously feel good about themselves, while still granting that cultural variability in implicit self-esteem exists. The so-called positivity of implicit self-esteem scores is sometimes invoked as evidence for the validity of such measures, assuming that the underlying population must have positive implicit self-esteem (e.g., Rudolph et al., 2008). However, clinically depressed individuals – those in society who we would expect to have negative implicit self-esteem – actually tend to have positive implicit self-esteem as measured by the IAT, NLT, and extrinsic affective simon task (De Raedt, Schacht, Franck, & De Houwer, 2006). In our opinion, this empirical observation suggests that the positivity of implicit self-esteem scores in general is not theoretically meaningful.

Researchers would often like to think that an observed score of zero maps onto a neutral point representing neither a positive nor negative implicit attitude towards the self on an underlying bipolar dimension. However, any systematic mechanism unrelated to implicit self-esteem that causes observed scores to shift away from zero threatens interpretation of the observed metric and the ability to imbue meaning onto the positivity of such scores. A classic example of this phenomenon, but using an explicit measure of self-esteem, was identified by Hamamura and colleagues (2007; for other examples see Blanton & Jaccard, 2006b). Specifically, individuals across cultural groups tend to rate themselves (and any specific other) as better than an abstract “average” other person, and this appears to be due to a cognitive bias (e.g., Klar & Giladi, 1997). Importantly, similar arguments may be applied to implicit attitude

measures in general in that observed scores are likely complicated functions of processes other than just the implicit attitude they intend to measure (e.g., Blanton & Jaccard, 2006b).

To illustrate, we again use the IAT as an example, though note that other implicit measures likely suffer a similar limitation. Blanton and Jaccard (2006b) argued that the IAT rests upon an arbitrary metric and the point at which a rational '0' falls on the IAT may not map onto a lack of implicit preference for one category (self) versus the reference category (e.g., best friend or nonspecific other). In their reply, Greenwald, Nosek, and Sriram (2006) denied that this criticism applies to the IAT and presented data mapping a political preference IAT onto a difference score from an explicit measure. This reply is unconvincing given that the zero point of the explicit measures is also fallible and these results do not replicate with other IAT variants (e.g., Blanton & Jaccard, 2006d).[19] Furthermore, in the case of implicit self-esteem, Pinter and Greenwald (2005) have already granted that the magnitude of the observed IAT scores depends on the choice of the reference category, making the degree of positivity of such scores indeterminate.

To understand how a mechanism unrelated to the implicit attitude could cause shifts in the observed metric, Mitchell and colleagues provide evidence of a cognitive process that can yield positive implicit attitudes on the IAT for which there is apparently no implicit preference (Mitchell, 2004; Chang & Mitchell, 2009, 2011; see also Rothermund & Wentura, 2004, 2001;

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[19] Greenwald, Nosek, and Sriram (2006) also claimed that the multiplicative tests conducted by Greenwald et al (2002) "would have failed to support their theory-based predictions if the IAT's zero values were dislocated relative to rational zero values" (p. 58). However, Greenwald, Rudman et al.'s (2006) own simulations disconfirm this assertion in that confirmation of their theory could reasonably occur under a variety of different conditions in which the IAT's zero point does not map onto the underlying rational zero point (e.g., their Figure 1, Panel D and E).

Rothermund, Wentura, & De Houwer, 2005; cf. Greenwald, Nosek, Banaji, & Klauer, 2005). In one condition, Mitchell (2004) told participants that the categorization task purpose was to identify animals with wings and animals without wings, and in another condition that the task purpose was to identify animals with teeth versus animals without teeth. The underlying stimuli for both groups were identical and contained animals with wings (but no teeth) and animals with teeth (but no wings). Participants in the former condition displayed an implicit preference for animals with wings whereas participants in the latter condition displayed an implicit preference for animals with teeth. Chang and Mitchell (2009, 2011) argue that this occurs because individuals tend to pair the more fluently classified target category with the pleasant stimuli in the IAT, creating an apparent positive implicit preference for the fluently classified target category. For example, searching for winged animals in the above experiment makes such animals more salient, and thus processed more fluently than other animals. To explain in terms of the self-esteem IAT, if it is likely for participants to process self-related stimuli more quickly than other-related stimuli (e.g., best friend; Popa-Roch & Delmas, 2010) or participants employ a strategy where they search for self-related words, this should be sufficient to create an apparent implicit preference for the self.

Implicit Self-Esteem Phenomena

Summary of Results

The supplementary analyses performed for Study 2 and the subsequent Studies 4 and 5 were specifically designed to circumvent the problem of self-presentational biases by using a more indirect approach. We found evidence that the criteria for implicit self-esteem measures exhibited more convergent validity than did implicit self-esteem measures themselves. Although somewhat exploratory, cultural variation in the criteria for implicit self-esteem suggest that Japanese have lower implicit self-esteem, or at least the theoretical correlates of implicit self-esteem, than Euro-Canadians.

Using an alternative definition of implicit self-esteem that posits individuals extend their self-feelings onto self-associated objects and people, Studies 4 and 5 explored cultural variability in phenomenon theoretically exhibiting these qualities (Greenwald & Banaji, 1995). Based on findings of cultural variability in the endowment effect, Study 4 manipulated self-object associations and found results consistent with theory that Japanese are less likely to enhance self-associated objects than are Euro-Canadians. In Study 5, Japanese were less likely than Americans to exhibit an in-group preference in terms of group ratings of identification, personality traits, intelligence, and resource allocation under the minimal group paradigm. These effects were partially mediated by self-esteem.

Implications and Limitations for Cultural Psychology

The main implication of these findings is that cultural variability in implicit self-esteem likely exists, especially if implicit self-esteem is defined as it was for Studies 4 and 5. At the very least, these findings suggest that more indirect ways of measuring self-feelings that potentially circumvent self-presentational concerns still yield cultural variability consistent with the assertion that cultural variability exists in self-esteem.

A brief review of previous literature also indicates that cultures likely differ in many implicit self-esteem related criteria. Some researchers suggest that attachment theory may provide an explanation of how implicit self-esteem development is related to parenting practices (Hetts & Pelham, 2001; Koole & DeHart, 2007), yet cultural differences are apparent for parent-child attachment styles (Rothbaum, Pott, Azuma, Miyake, & Weisz, 2000; Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000). For example, some evidence shows that Chinese are lower in child rearing attitudes such as "acceptance" and higher in "rejection" and "protection and concern" than Canadians (Chen et al., 1998). These results parallel those found in Study 2, and would be compatible with the position that East Asians have lower implicit self-esteem than Westerners.

Whereas some previous studies have failed to find cultural variability in the tendency to experience self-related emotions (e.g., shame, pride, etc. Cai et al., 2007), the results we report from Study 2 suggest strong cultural differences in the tendency to experience positive affect, negative affect, and pride. Data using experience sampling also indicates that Asian-Americans and Japanese experience pride less frequently than Euro-Americans (Scollon, Diener, Oishi, & Biswas-Diener, 2004). There is some evidence that East Asians, versus Westerners, are more likely to make the kinds of attributions for their success/failure that should lead to shame and less likely to make attributions that could lead to pride (e.g., Kashima & Triandis, 1986; see also Kudo & Numazaki, 2003). East Asian children appear to be more likely to have shame experiences and less likely to experience pride (Furukawa, 2005; see also Mesquita & Karasawa, 2004 for a review).

Finally, other investigations across Euro- and Asian-Americans suggest that cultural variability is also present in peer ratings of positive personality attributes (Su & Oishi, 2011). Therefore, under the associative network definition of implicit self-esteem and its accompanying theory regarding implicit self-esteem correlates, the results of Study 2 seem consistent with the literature in suggesting that cultural variability is present in implicit self-esteem. We suggest that a broader, more comprehensive literature review and meta-analysis may be in order.

If we start with a definition of implicit self-esteem consistent with that presented by Greenwald and Banaji (1995), we also find that cultural differences tend to be prominent in phenomena where the self is likely projected onto self-associated objects or people. Specifically, East Asians have weaker group enhancement biases (Heine, 2003; Heine & Lehman, 1997b), display a smaller similarity-attraction effect than Westerners (Heine, Foster, & Spina, 2009), show less of a need to reduce dissonance to justify personal choices, except maybe when self-relevant others are primed (Heine & Lehman, 1997a; Kitayama, Snibbe, Markus, & Suzuki, 2004; see also Gawronski, Peters, & Strack, 2008), and are more likely to make upward

comparisons relative to Westerners – including situations in which failure feedback is given (White & Lehman, 2005). Slightly weaker evidence also suggests that East Asians display fewer self-positive illusions in the form of less unrealistic optimism depending on the methodology used (Rose et al., 2008), and memory might not be biased to maintain a positive self-image as East Asians are also more likely to remember experiencing lower levels of well-being even though online reports are similar across cultures (Oishi, 2002). Research also suggests that East Asians are more likely to see arguments from opposing viewpoints as containing some elements of truth, suggesting that they might not be more likely to view an opposing position's arguments as more invalid than their own (Nisbett, Peng, Choi, & Norenzayan, 2001). In addition, if cultural difference in implicit self-esteem do exist, future research may uncover cultural differences in the other positive illusions other than unrealistic optimism, tendencies to bask in reflected glory, and revising memory to maintain a positive self-image.

Although above analyses and literature review is not intended to be exhaustive, it strongly hints at the possibility that cultural variability exists in implicit self-esteem. While many of the measures examined from Study 2 were also self-report measures and could be contaminated by self-presentational biases, it is not readily obvious how this criticism is applicable to the peer ratings of self-esteem unless these biases extend to close others. Furthermore, it is difficult to invoke cultural variability in self presentational biases as an explanation for phenomena such as upward social comparisons (White & Lehman, 2005), cognitive dissonance (Heine & Lehman, 1997a), and the tendency to like similar others (Heine, Foster, & Spina, 2009). The valuation of a mug that is awarded to oneself and evaluation of a novel in-group are phenomena are also likely far removed from the typical modesty norms or self-presentational biases thought to underlie cultural variability in explicit self-esteem ratings (Kurman, 2003).

In general, this latter approach to examining cultural variability in implicit self-esteem rests upon the assumption that the cultural variability we observed in implicit self-esteem criteria (Study 2) or related phenomena (Studies 4 and 5) is due to the underlying construct of interest – not some systematic measurement error or variance that is due to another source. Although it can be argued that the criteria in Study 2 criteria are multiply determined as are the phenomena in Studies 4 and 5 – that is, are caused by multiple processes – the same can be said of implicit self-esteem measures themselves. We have already noted in previous chapters that researchers have identified multiple sources of method variance for the IAT, for example. We have also already noted the need to conduct future research to determine the multiple causes of criteria in Study 2, and to explore whether multiple other mechanisms are involved in the cultural variability in the endowment effect (Study 4) and the minimal group effect (Study 5). Thus, neither implicit self-esteem measures nor the criteria we have studied are necessarily unidimensional or free from extraneous sources of systematic measurement error. This should create some pause in jumping to conclusions based on such an approach. However, to the extent that cultural variation is found across a wide variety of criteria, the parsimonious explanation is that cultural differences exist in implicit self-esteem. At the very least, such findings beg for an alternative and equally parsimonious explanation, and should spur additional future research to disentangle the effects of self-enhancement and other extraneous psychological processes in explaining such cultural differences.

Concluding Remarks

To a certain extent, the debate over whether cultural variability exists in self-enhancement motivations is a debate over the best methodological approach to investigating this problem (Heine et al., 2007a,b; Sedikides et al., 2005, 2007a,b). The case of implicit self-esteem has been a key part in this debate, with some researchers highlighting this a single piece of evidence (that obtained from the IAT) as indicating a lack of cultural variability in implicit self-

esteem (e.g., Cai et al., 2011; Yamaguchi et al., 2007). We agree that such a restriction of the data would be warranted if such implicit self-esteem methodologies were superior and more valid than other measures. However, the results of our studies suggesting that implicit self-esteem measures lack validity, and thus are unable to speak to the question of cross-cultural similarities or differences in self-enhancement.

Arguably, self-report measures of self-esteem are also problematic for comparing cultures as they may be contaminated with self-presentational biases that potentially vary across cultures. While we agree that self-report measures have possible methodological problems, it may be more productive to examine cross-cultural studies of phenomena that are the indirect consequences of self-enhancement motivations. For example, behavioural studies (e.g., Heine et al., 2001; Heine et al., 2000), implicit self-esteem correlates (Study 2), and phenomena explained by implicit self-esteem (Studies 4 and 5) all exhibit cultural variability and should largely circumvent the self-presentational bias problem. Thus, the focus on implicit attitude measures to the cross-cultural study of self-enhancement is misdirected. Instead of restricting the research base, we should actually broaden the range of studies considered when examining whether cultural variability exists in self-enhancement and implicit self-esteem related processes. When this is done, the results point to cultural variability being present in self-enhancement.

REFERENCES

Aberson, C. L., Healy, M., & Romero, V. (2000). Ingroup bias and self-esteem: A meta-analysis. *Personality and Social Psychology Review, 4,* 157-173.

Abrams, D., & Hogg, M. A. (1988). Comments on the motivational status of self-esteem in social identity and intergroup discrimination. *European Journal of Social Psychology, 18,* 317-334.

Aidman, E. V., & Carroll, S. M. (2003). Implicit individual differences: Relationships between implicit self-esteem, gender identity, and gender attitudes. *European Journal of Personality, 17,* 19–37.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

Alicke, M., & Sedikides, C. (2009). Self-enhancement and self-protection: What they are and what they do. *European Review of Social Psychology, 20,* 1-48.

Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology, 91,* 652-661.

Apicella, C.L. Azevedo, E. M., Christakis, N.A. & Fowler, J.H. (2012*). Isolated hunter-gatherers do not exhibit the endowment effect bias.* Manuscript submitted for publication.

Aronson, E., & Linder, D. E. (1965). Gain and loss of esteem as determinants of interpersonal attractiveness. *Journal of Experimental Social Psychology, 1,* 156-171.

Banse, R., Seise, J., & Zerbes, N. (2001). Implicit attitudes towards homosexuality: Reliability, validity, and controllability of the IAT. *Zeitschrift für Experimentelle Psychologie, 48,* 145–160.

Bargh, J. A. (1984). Automatic and conscious processing of social information. In R. S. Wyer, Jr., & T. K. Srull (Eds), *Handbook of Social Cognition* (Vol. 3, pp. 1-43). Hillsdale, NJ: Erlbaum.

Bargh, J. A. (1994). The four horsement of automaticity: Awareness, efficiency, intention, and control in social cognition. In R. S. Wyer, Jr., & T. K. Srull (Eds), *Handbook of Social Cognition* (2nd ed., pp. 1-40). Hillsdale, NJ: Erlbaum.

Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social Psychology: Handbook of Basic Principles* (pp. 169-183). New York: Guilford.

Bargh, J. A., & Tota, M. E. (1988). Context-dependent automatic processing in depression: Accessibility of negative constructs with regard to self but not others. *Journal of Personality and Social Psychology, 54,* 925–939.

Bates, D., Maechler, M., & Bolker, B. (2011). lme4: Linear mixed-effects models using S4 classes. R package version 0.999375-42 [Computer software]. URL: http://CRAN.R-project.org/package=lme4

Beggan, J.K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, 62, 229–237.

Biesanz, J. C., Falk, C. F., & Savalei, V. (2010). Assessing mediational models: Testing and interval estimation for indirect effects. *Multivariate Behavioral Research, 45,* 661-701.

Blanton, H., & Jaccard, J. (2006a). Tests of multiplicative models in psychology: a case study using the unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 113,* 155-169.

Blanton, H., & Jaccard, J. (2006b). Arbitrary metrics in psychology. *American Psychologist, 61,* 27-41.

Blanton, H. & Jaccard, J. (2006c). Postscript: perspectives on the reply by Greenwald, Rudman, Nosek and Zayas (2006). *Psychological Review, 113,* 166-169.

Blanton, H., & Jaccard, J. (2006d). Arbitrary metrics redux. *American Psychologist, 61,* 62-71.

Blanton, H., & Jaccard, J. (2008). Unconscious racism: A concept in pursuit of a measure. *Annual Review of Sociology, 34,* 277-297.

Blanton, H. Jaccard, J. Christie, C., & Gonzales, P. M. (2007). Plausible assumptions, questionable assumptions and post hoc rationalizations: Will the real IAT, please stand up? *Journal of Experimental Social Psychology, 43,* 399-409.

Blanton, H. Jaccard, J., Gonzales, P. M., & Christie, C. (2006). Decoding the implicit association test: Perspectives on criterion prediction. *Journal of Experimental Social Psychology, 42,* 192-212.

Blanton, H., Jaccard, J., Klick, J., Mellers, B., Mitchell, G., & Tetlock, P. E. (2009). Strong claims and weak evidence: Reassessing the predictive validity of the IAT. *Journal of Applied Psychology, 94,* 567-582.

Bollen, K. A. (1984). Multiple indicators: Internal consistency or no necessary relationship? *Quality and Quantity, 18,* 377-385.

Bornstein, G., Crum, L., Wittenbraker, J., Harring, K., Insko, C. A., & Thibault, J. (1983). On the measurement of social orientations in the minimal group paradigm. *European Journal of Social Psychology, 13,* 321-350.

Borsboom, D. (2005). *Measuring the Mind: Conceptual Issues in Contemporary Psychometrics.* Cambridge: Cambridge University Press.

Borsboom, D., Mellenbergh, G.J., & Van Heerden, J. (2004). The concept of validity. *Psychological Review, 111,* 1061-1071.

Bosson, J. K. (2006). Conceptualization, measurement, and functioning of nonconscious self-esteem. In M. H. Kernis (Ed.), *Self-esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 53-59). New York: Psychology Press.

Bosson, J. K., Lakey, C. E., Campbell, W. K., Zeigler-Hill, V., Jordan, C. H., & Kernis, M. H. (2008). Untangling the links between narcissism and self-esteem: A theoretical and empirical review. *Social and Personality Psychology Compass, 2,* 1415-1439.

Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology, 79,* 631–643.

Boucher, H. C., Peng, K., Shi, J., & Wang, L. (2009). Culture and implicit self-esteem: Chinese are "good" and "bad" at the same time. *Journal of cross-cultural psychology, 40,* 24-45.

Brewer, M. B. (1979). In-group bias in the minimal intergroup situation: a cognitive-motivational analysis. *Psychological Bulletin, 86,* 307-324.

Brewer, M. B., & Yuki, M. (2007). Culture and social identity. In S. Kitayama & D. Cohen (Eds.), *Handbook of Cultural Psychology (pp. 307-322).* New York: Guilford Press.

Brown, J. D. (1986). Evaluations of self and others: Self-enhancement biases in social judgments. *Social Cognition, 4,* 353–376.

Brown, J. D., Collins, R. L., & Schmidt, G. W. (1988). Self-esteem and direct versus indirect forms of self-enhancement. *Journal of Personality and Social Psychology, 55,* 445-453.

Brown, J. D., & Kobayashi, C. (2002). Self-enhancement in Japan and America. *Asian Journal of Social Psychology, 5,* 145-168.

Brosnan, S.F., Jones, O.D., Lambeth, S.P., Mareno, M., Richardson, A., & Schapiro, S. (2007). Endowment effects on chimpanzees. *Current Biology, 19,* 1704–1707.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods.* Newbury Park, CA: Sage.

Buchan, N. R., Johnson, E. J., & Croson, R. T. A. (2006). Let's get personal: an international examination of the influence of communication, culture and social distance on other regarding preferences. *Journal of Economic Behavior & Organization, 60,* 373-398.

Buhrmester, M. D., Blanton, H., & Swann, W. B. (2011a). Implicit self-esteem: Nature, measurement, and a new way forward. *Journal of Personality and Social Psychology, 100,* 365-385.

Buhrmester, M.D., Kwang, T., Gosling, S.D. (2011b). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6,* 3-5.

Buhrmester, M., & Swann, W. B. (2009, February). *The role of the self in the endowment effect.* Poster presented at the meeting of the Society of Personality and Social Psychology, Tampa, FL, USA.

Buhlmann, U., Teachman, B. A., Gerbershagen, A., Kikul, J., & Rief, W. (2008). Implicit and explicit self-esteem and attractiveness beliefs among individuals with body dysmorphic disorder. *Cognitive Therapy and Research, 32,* 213–225.

Byrne, D. (1969). Attitudes and attraction. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 4, pp. 35-89). New York: Academic Press.

Cadinu, M. R., & Rothbart, M. (1996). Self-anchoring and differentiation processes in the minimal group setting. *Journal of Personality and Social Psychology, 70,* 661-677.

Cai, H., Brown, J. D., Deng, C., Oakes, M. A. (2007). Self-esteem and culture: Differences in cognitive self-evaluations or affective self-regard? *Asian Journal of Social Psychology, 10,* 162-170.

Cai, H., Sedikides, C., Gaertner, L., Wang, C., Carvallo, M., Xu, Y., O'Mara, E. M., & Jackson, L. E. (2011). Tactical self-enhancement in China: Is modesty at the service of self-enhancement in East-Asian culture? *Social Psychological and Personality Science*, 2, 59-64.

Cantril, H. (1965). *The Pattern of Human Concern.* New Brunswick, NJ: Rutgers University Press.

Carmon, Z., & Ariely, D. (2000). Focusing on the forgone: Why value can appear so different to buyers and sellers. *Journal of Consumer Research*, *27*, 360–370.

Chang, B., & Mitchell, C. J. (2009). Processing fluency as a source of salience asymmetries in the Implicit Association Test. *Quarterly Journal of Experimental Psychology, 62,* 2030–2054.

Chang, B. P. I., & Mitchell, C. J. (2011). Discriminating between the effects of valence and salience in the implicit association test. *The Quarterly Journal of Experimental Psychology, 64,* 2251-2275.

Chen, F. F. (2008). What happens if we compare chopsticks with forks? The impact of making inappropriate comparisons in cross-cultural research. *Journal of Personality and Social Psychology, 95,* 1005-1018.

Chen, X., Hastings, P. D., Rubin, K. H., Chen, H., Cen, G., & Stewart, S. L. (1998). Child-rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: A cross-cultural study. *Developmental Psychology, 34,* 677-686.

Cheung, B. Y., Chudek, M., & Heine, S. J. (2011). Evidence for a sensitive window for acculturation. Younger immigrants report acculturating at a faster rate. *Psychological Science, 22,* 147-152.

Cialdini, R. B., Borden, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, L. R. (1976). Basking in reflected glory: Three (football) field studies. *Journal of Personality and Social Psychology, 34,* 366-375.

Cohen, D. (2001). Cultural variation: Considerations and implications. *Psychological Bulletin, 127,* 451-471.

Cohen, D., Hoshino-Browne, E., & Leung, A. K-Y. (2007). Culture and the structure of personal experience: Insider and outsider phenomenologies of the self and social world. *Advances in Experimental Social Psychology, 39,* 1-67.

Cohen, J. (1982). Set correlation as a general multivariate data-analytic method. *Multivariate Behavioral Research, 17,* 301-341.

Conner, T., & Barrett, L. F. (2005). Implicit self-attitudes predict spontaneous affect in daily life. *Emotion, 5,* 476-488.

Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. J. (2005). Separating multiple processes in implicit social cognition: The quad model of implicit task performance. *Journal of Personality and Social Psychology, 89,* 469–487.

Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12,* 163-170.

Cvencek, D., Greenwald, A. G., Brown, A. S., Gray, N. S., & Snowden, R. J. (2010). Faking of the implicit association test is statistically detectable and partly correctable. *Basic and Applied Social Psychology, 32,* 302-314.

Czellar, S. (2006). Self-presentational effects in the implicit association test. *Journal of Consumer Psychology, 16,* 92-100.

Davison, A.C. and Hinkley, D.V. (1997) *Bootstrap Methods and Their Application.* Cambridge University Press.

DeHart, T., Pelham, B. W., & Tennen, H. (2006). What lies beneath: Parenting style and implicit self-esteem. *Journal of Experimental Social Psychology, 42,* 1-17.

De Houwer, J., Teige-Mocigemba, S., Spruyt, A., & Moors, A. (2009). Implicit measures: A normative analysis and review. *Psychological Bulletin, 135,* 347-368.

De Houwer, J., Thomas, S., & Baeyens, F. (2001). Associative learning of likes and dislikes: A review of 25 years of research on human evaluative conditioning. *Psychological Bulletin, 127,* 853-869.

De Raedt, R., Schacht, R., Franck, E., & De Houwer, J. (2006). Self-esteem and depression revisited: Implicit positive self-esteem in depressed patients? *Behaviour Research and Therapy, 44,* 1017-1028.

DeSteno, D., Valdesolo, P., & Bartlett, M. Y. (2006). Jealousy and the threatened self: Getting to the heart of the green-eyed monster. Journal of Personality and Social Psychology, 91, 626–641.

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology, 68,* 653-663.

Dijksterhuis, A. (2004). I like myself but I don't know why: Enhancing implicit self-esteem by subliminal evaluative conditioning. *Journal of Personality and Social Psychology, 86,* 345– 355.

Dunham, Y., Baron, A. S., & Carey, S. (2011). Consequences of "minimal" group affiliations in children. *Child Development, 82,* 793-811.

Efron, B., & Tibshirani, R. (1993). *An introduction to the bootstrap*. New York: Chapman & Hall.

Egloff, B., & Schmukle, S. C. (2002). Predictive validity of an implicit association test for assessing anxiety. *Journal of Personality and Social Psychology, 83,* 1441–1455.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12,* 121-138.

Endo, Y., Heine, S. J., & Lehman, D. R. (2000). Culture and positive illusions in close relationships: How my relationships are better than yours. *Personality and Social Psychological Bulletin, 26,* 1571-1586.

Epstein, S. (2003). Cognitive-experiential self-theory of personality. In I. B. Weiner (Series Ed.), T. Millon, & M. J. Lerner (Vol. Eds.), *Handbook of Psychology: Vol. 5. Personality and Social Psychology* (pp. 159-184). Hoboken, NJ: John Wiley & Sons, Inc.

Epstein, S. (2006). Conscious and unconscious self-esteem from the perspective of cognitive-experiential self-theory. In M. H. Kernis (Ed.), *Self-esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 69-76). New York: Psychology Press.

Falk, C.F., Heine, S.J., Yuki, M., & Takemura, K. (2009). Why do Westerners self-enhance more than East Asians? *European Journal of Personality, 23*, 183-203.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology, 54,* 297-327.

Fazio, R. H., & Towles-Schwen, T. (1999). The MODE model of attitude-behavior processes. In S. Chaiken & Y. Trope (Eds.), *Dual-Process Theories in Social Psychology* (97-116).

Fiedler, K., & Bluemke, M. (2005). Faking the IAT: Aided and unaided response control on the implicit association tests. *Basic and Applied Social Psychology, 27*, 307–316.

Fiedler, K., Messner, C., & Bluemke, M. (2006). Unresolved problems with the "I", the "A", and the "T": A logical and psychometric critique of the Implicit Association Test (IAT). *European Review of Social Psychology, 17,* 74-147.

Festinger, L., & Walster, E. (1964). The post-decision process. In L. Festinger (Ed.), *Conflict, Decision, and Dissonance,* (pp. 100-112). Stanford, CA: Stanford University Press.

Franck, E., De Raedt, R., Dereu, M., & Van den Abbeele, D. (2007). Implicit and explicit self-esteem in currently depressed individuals with and without suicidal ideation. *Journal of Behavior Therapy and Experimental Psychiatry,* 38, 75–85.

Fryberg, S. A., & Markus, H. R. (2003). On being American Indian: Current and possible selves. *Self and Identity, 2,* 325-344.

Furukawa, E. (2005). Cross-cultural Differences in Self-Conscious Emotions. *Dissertation Abstracts International, 65* (09), 4869. (UMI No. 3147161)

Gaertner, L., & Insko, C. A. (2000). Intergroup discrimination in the minimal group paradigm: Categorization, reciprocation, or fear? *Journal of Personality and Social Psychology, 79,* 77-94.

Gartner, L., & Insko, C. A. (2001). On the measurement of social orientations in the minimal group paradigm: Norms as moderators of the expression of intergroup bias. *European Journal of Social Psychology, 31,* 143-154.

Gawronski, B. (2002). What does the implicit association test measure? A test of the convergent and discriminant validity of prejudice-related IATs. *Experimental Psychology, 49,* 171-180.

Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin, 132,* 692-731.

Gawronski, B., & Bodenhausen, G. V. (2007). Unraveling the process underlying evaluation: Attitudes from the perspective of the APE model. *Social Cognition, 25,* 687-717.

Gawronski, B., Bodenhausen, G. V., & Becker, A. P. (2007). I like it, because I like myself: Associative self-anchoring and post-decisional change of implicit evaluations. *Journal of Experimental Social Psychology, 43,* 221–232.

Gawronski, B., LeBel, E. P., & Peters, K. R. (2007). What do implicit measures tell us? Scrutinizing the validity of three common assumptions. *Perspectives on Psychological Science, 2,* 181–193.

Gawronski, B., Peters, K. R., & LeBel, E. P. (2008). What makes mental associations personal or extra-personal? Conceptual issues in the methodological debate about implicit attitude measures. *Social and Personality Psychology Compass, 2,* 1002-1023.

Gawronski, B., Peters, K. R., & Strack, F. (2008). Cross-cultural differences versus universality in cognitive dissonance: A conceptual reanalysis. In R. M. Sorrentino, & S. Yamaguchi (Eds.), *Handbook of Motivation and Cognition Across Cultures* (pp. 297-314). New York: Elsevier.

Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology, 60,* 509–517.

Gilbert, D. T., & Osborne, R. E. (1989). Thinking backward: Some curable and incurable consequences of cognitive busyness. *Journal of Personality and Social Psychology, 57,* 940–949.

Glen, I. S., & Banse, R. (2004). Probing the malleability of implicit and explicit self-esteem: An interview approach. *Cahiers de Psychologie Cognitive/Current Psychology of Cognition, 22,* 133–158.

Gramzow, R. H., & Gaertner, L. (2005). Self-esteem and favoritism toward novel in-groups: The self as an evaluative base. *Journal of Personality and Social Psychology, 88,* 801-815.

Gramzow, R. H., Gaertner, L., & Sedikides, C. (2001). Memory for in-group and out-group information in a minimal group context: The self as an informational base. *Journal of Personality and Social Psychology, 80,* 188-205.

Greenholtz, J. F. (2005). Does intercultural sensitivity cross cultures? Validity issues in porting instruments across languages and cultures. *International Journal of Intercultural Relations, 29,* 73-89.

Greenwald., A. G. (1969). The open-mindedness of the counterattitudinal role player. *Journal of Experimental Social Psychology, 5,* 375-388.

Greenwald, A. B. (1980). The totalitarian ego: Fabrication and revision of personal history. *American Psychologist, 35,* 603-618.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102,* 4-27.

Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 109,* 3-25.

Greenwald, A. G., & Farnham, S. D. (2000). Using the implicit association test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology, 79,* 1022-1038.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology, 85,* 197–216.

Greenwald, A. G., Noske, B. A., Banaji, M. R., & Klauer, K. C. (2004). Validity of the salience asymmetry interpretation of the implicit association test: Comment on Rothermund and Wentura (2004). *Journal of Experimental Psychology: General, 134,* 420-425.

Greenwald, A. G., Nosek, B. A., & Sriram, N. (2006). Consequential validity of the implicit association test: Comment on Blanton and Jaccard (2006). *American Psychologist, 61,* 56-61.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97,* 17-41.

Greenwald, A. G., Rudman, L. A., Nosek, B. A. & Zayas, V. (2006). Why so little faith? A reply to Blanton and Jaccard's (2006) skeptical view of testing pure multiplicative theories. *Psychological Review, 113,* 170-180.

Gregg, A. P. (2003). Optimally conceptualizing implicit self-esteem. *Psychological Inquiry, 14,* 35-38.

Gregg, A. P., & Sedikides, C. (2010). Narcissistic fragility: Rethinking its links to explicit and implicit self-esteem. *Self and Identity, 9,* 142-161.

Greive, P. G., & Hogg, M. A. (1999). Subjective uncertainty and intergroup discrimination in the minimal group situation. *Personality and Social Psychology Bulletin, 25,* 926-940.

Hamamura, T., Heine, S. J., & Paulhus, D. L. (2008). Cultural differences in response styles: The role of dialectical thinking. *Personality and Individual Differences, 44,* 932-942.

Hamamura, T., Heine, S. J., & Takemoto, T. R. S. (2007). Why the better-than-average effect is a worse-than-average measure of self-enhancement: An investigation of conflicting findings from studies of East Asian self-evaluations. *Motivation and Emotion, 31,* 247-259.

Hamamura, T., Meijer, Z., Heine, S. J., Kamaya, K., & Hori, I. (2009). Approach-avoidance motivations and information processing: A cross-cultural analysis. *Personality and Social Psychology Bulletin, 35,* 454-462.

Harbaugh, W.T., Krause, K., & Vesterlund, L. (2001). Are adults better behaved than children? Age, experience, and the endowment effect. *Economics Letters, 70,* 175–181.

Heine, S. J. (2003). Self-enhancement in Japan? A reply to Brown and Kobayashi. *Asian Journal of Social Psychology, 6,* 75-84.

Heine, S. J. (2005). Where is the evidence for pancultural self-enhancement? A reply to Sedikides, Gaertner, & Toguchi. *Journal of Personality and Social Psychology, 89,* 531-538.

Heine, S. J. (2008). *Cultural Psychology*. New York: Norton.

Heine, S. J., & Buchtel, E. E. (2009). Personality: The universal and culturally specific. *Annual Review of Psychology, 60,* 369-394.

Heine, S. J., Foster, J.-A. B., & Spina, R. (2009). Do birds of a feather universally flock together? Cultural variation in the similarity-attraction effect. *Asian Journal of Social Psychology, 12,* 247-258.

Heine, S. J., & Hamamura, T. (2007). In search of East Asian self-enhancement. *Personality and Social Psychology Review, 11,* 4-27.

Heine, S. J., Kitayama, S., & Hamamura, T. (2007a). Inclusion of additional studies yields different conclusions: Comment on Sedikides, Gaertner, & Vevea (2005), Journal of Personality and Social Psychology. *Asian Journal of Social Psychology, 10,* 49-58.

Heine, S. J., Kitayama, S., & Hamamura, T. (2007b). Which studies test whether self-enhancement is pancultural? Reply to Sedikides, Gaertner, and Vevea, 2007. *Asian Journal of Social Psychology, 10,* 198-200.

Heine, S. J., Kitayama, S., Lehman, D. R., 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.

Heine, S. J., & Lehman, D. R. (1995). Cultural variation in unrealistic optimism: Does the West feel more invulnerable than the East? *Journal of Personality and Social Psychology, 68,* 595-607.

Heine, S. J., & Lehman, D. R. (1997a). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin, 23,* 389-400.

Heine, S. J., & Lehman, D. R. (1997b). The cultural construction of self-enhancement: An examination of group-serving biases. *Journal of Personality and Social Psychology, 72,* 1268-1283.

Heine, S. J., & Lehman, D. R. (2004). Move the body, change the self: Acculturative effects on the self-concept. In M. Schaller, & C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 305-331). Mahwah, NJ: Lawrence Erlbaum Associates.

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

Heine, S. J., & Raineri, A. (2009). Self-improving motivations and culture: The case of Chileans. *Journal of Cross-Cultural Psychology, 40,* 158-163.

Heine, S. J., & Renshaw, K. (2002). Interjudge agreement, self-enhancement, and liking: Cross-cultural divergences. *Personality and Social Psychological Bulletin, 28,* 578-587.

Heine, S. J., Takata, T., & Lehman, D. R. (2000). Beyond self-presentation: Evidence for self-criticism among Japanese. *Personality and Social Psychology Bulletin, 26,* 71–78.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33,* 61-83.

Henrich, N., & Henrich, J. (2007). *Why humans cooperate: A cultural and evolutionary explanation.* New York, NY: Oxford University Press.

Hetts, J. J., & Pelham, B. W. (2001). A case for the nonconscious self-concept. In G. B. Morskowitz (Ed.), *Cognitive Social Psychology: The Princeton Symposium on the Legacy and Future of Social Cognition* (pp. 105-123). Mahwah, NJ: Lawrence Erlbaum Associates.

Hetts, J. J., Sakuma, M., & Pelham, B. W. (1999). Two roads to positive regard: Implicit and explicit self-evaluation and culture. *Journal of Experimental Social Psychology, 35,* 512-559.

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin, 31,* 1369–1385.

Hogg, M. A. (2003). Social identity. In M. R. Leary & J. P Tangney (Eds.), *Handbook of Self and Identity (pp. 462-479)*. New York: Guilford Press.

Huck, S., Kirchsteiger, G., & Oeschssler, J. (2005). Learning to like what you have: Explaining the endowment effect. *The Economic Journal, 115*, 689-702.

Inquisit 3.0.3.2 [computer software]. (2009). Seattle, WA: Millisecond Software LLC.

Japanese Automobile Inspection & Registration Information Association. (2004). 乗用車の平均使用年数は7年連続で最高齢に. Retrieved June 17, 2010, from http://www.airia.or.jp/publish/pdf/happyou/2004_11hoyudoukou.pdf.

Japanese Ministry of Internal Affairs and Communications (総務省 情報流通行政局) (2010. Retrieved July 3, 2010 from http://www.soumu.go.jp/soutsu/kanto/if/press/p22/p2205/p220528ds.pdf.

Jordan, C. H., Logel, C., Spencer, S. J., & Zanna, M. P. (2006). Nonconscious self-esteem: Is there something you're not telling yourself? In M. H. Kernis (Ed.), *Self-esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 60-68). New York: Psychology Press.

Jordan, C. H., Logel, C., Spencer, S. J., Zanna, M. P., & Whitfield, M. L. (2009). The heterogeneity of self-esteem: Exploring the interplay between implicit and explicit self-esteem. In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), *Attitudes: Insights from the New Implicit Measures* (pp. 251-281). New York: Psychology Press.

Jordan, C. H., Spencer, S. J., & Zanna, M. P. (2005). Types of high self-esteem and prejudice: How implicit self-esteem relates to ethnic discrimination among high explicit self-esteem individuals. *Personality and Social Psychology Bulletin, 31*, 693–702.

Jordan, C. H., Spencer, S. J., Zanna, M. P., Hoshino-Browne, E., & Correll, J. (2003). Secure and defensive high self-esteem. *Journal of Personality and Social Psychology, 85*, 969– 978.

Jones, J. T., Pelham, B. W., Mirenberg, M. C., & Hetts, J. J. (2002). Name letter preferences are not merely mere exposure: Implicit egotism as self-regulation. *Journal of Experimental Social Psychology, 38,* 170-177.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1990). Experimental test of the endowment effect and the Coase theorem. *Journal of Political Economy, 98,* 1325-1347.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica, 47,* 313–327.

Kanngiesser, P., Santos, L. R., Hood, B. M., & Call, J. (2011). The limits of endowment effects in great apes (Pan paniscus, Pan troglodytes, Gorilla gorilla, Pongo pygmaeus). *Journal of Comparative Psychology, 125,* 436-445.

Karpinski, A. (2004). Measuring self-esteem using the implicit association test: The role of the other. *Personality and Social Psychology Bulletin, 30,* 22–34.

Karpinski, A., & Steinman, R. B. (2006). The single category implicit association test as a measure of implicit social cognition. *Journal of Psychology and Social Psychology,* 91, 16-32.

Kashima, Y., & Triandis, H. C. (1986). The self-serving bias in attribution as a coping strategy: A cross-cultural study. *Journal of Cross-Cultural Psychology, 28,* 421-441.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry, 14,* 1-26.

Kim, D. Y. (2003). Voluntary controllability of the implicit association test (IAT). *Social Psychology Quarterly, 66,* 83–96.

Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology, 72,* 1245-1267.

Kitayama, S., Snibbe, A. C., Markus, H. R., & Suzuki, T. (2004). Is there any "free" choice? Self and dissonance in two cultures. *Psychological Science, 13,* 527-533.

Kitayama, S., & Uchida, Y. (2003). Explicit self-criticism and implicit self-regard: Evaluating self and friend in two cultures. *Journal of Experimental Social Psychology, 39,* 476–482.

Klar, Y., & Giladi, E. E. (1997). No one in my group can be below the group's average: A robust positivity bias in favor of anonymous peers. *Journal of Personality and Social Psychology, 73,* 885–901.

Klauer, K. C., Voss, A., Schmitz, F., & Teige-Mocigemba, S. (2007). Process components of the implicit association test: A diffusion-model analysis. *Journal of Personality and Social Psychology, 93,* 353-368.

Knetsch, J.L. (1989). The endowment effect and evidence of non- reversible indifference curves. *American Economic Review, 79,* 1277–1284.

Kobayashi, C., & Brown, J. D. (2003). Self-esteem and self-enhancement in Japan and America. *Journal of Cross-Cultural Psychology, 34,* 567-580.

Kobayashi, C., & Greenwald, A. G. (2003). Implicit-explicit differences in self-enhancement for Americans and Japanese. *Journal of Cross-Cultural Psychology, 34,* 522-541.

Koestner, R. & Mageau, G. (2006). The assessment of implicit and explicit self-esteem: Lessons from motive research. In M. H. Kernis (Ed.), *Self-esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 96-101). New York: Psychology Press.

Koole, S. L., & Coenen, L. H. M. (2007). Implicit self and affect regulation: Effects of action orientation and subliminal self priming in an affective priming task. *Self and Identity, 6,* 118-136.

Koole, S. L. & DeHart, T. (2007) Self-affection without self-reflection: Origins, models, and consequences of implicit self-esteem. In C. Sedikides & S. Spencer (Eds.), *The Self in Social Psychology* (pp. 36-86). New York: Psychology Press.

Koole, S. L., Dijksterhuis, A., & van Knippenberg, A. (2001). What's in a name: Implicit self-esteem and the automatic self. *Journal of Personality and Social Psychology, 80,* 669–685.

Kreft, I. G. G., de Leeuw, J., & Aiken, L. S. (1995). The effect of different forms of centering in hierarchical linear models. *Multivariate Behavioral Research, 30,* 1-21.

Krizan, Z., & Suls, J. (2008). Are implicit and explicit measures of self-esteem related? A meta-analysis for the name-letter test. *Personality and Individual Differences, 44,* 521-531.

Krueger, J. (1998). Enhancement bias in descriptions of self and others. *Personality and Social Psychology Bulletin, 24,* 505-516.

Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research, 36,* 249-277.

Kudo, E., & Numazaki, M. (2003). Explicit and direct self-serving bias in Japan: Reexamination of self-serving bias for success and failure. *Journal of Cross-Cultural Psychology, 34,* 511-521.

Kurman, J. (2003). Why is self-enhancement low in certain collectivist cultures? An investigation of two competing explanations. *Journal of Cross-Cultural Psychology, 34,* 496-510.

Kwan, V. S. Y., Bond, M. H., & Singelis, T. M. (1997). Pancultural explanations for life satisfaction: Adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology, 73,* 1038-1051.

Lakshminaryanan, V., Chen, M.K., & Santos, L.R. (2008). Endowment effect in capuchin monkeys (*Cebus apella*). *Philosophical Transactions of the Royal Society B: Biological Sciences, 363,* 3837–3844.

Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology, 16,* 75-111.

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology, 68,* 518-530.

LeBel, E. P., & Gawronski, B. (2009). How to find what's in a name: Scrutinizing the optimality of five scoring algorithms for the name-letter task. *European Journal of Personality, 23,* 85-106.

Lee, A. Y., Aaker, J. L., & Gardner, W. L. (2000). The pleasures and pains of distinct self-construals: The role of interdependence in regulatory focus. *Journal of Personality and Social Psychology,* 78, 1122-1134.

Little, R. J. A. and Rubin, D. B. (2002). *Statistical Analysis with Missing Data*, 2nd edition. New York: John Wiley.

Lord, C. G., Ross, L. & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37,* 2098-2109.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7,* 83-104.

Maddux, W.W., Yang, H., Falk, C.F., Adam, H., Adair, W., Endo, Y., Carmon, Z., & Heine, S.J. (2010). For whom is parting with possessions most painful? Cultural differences in the endowment effect. *Psychological Science, 21,* 1910-1917.

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

Markus, H., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. *Annual Review of Psychology, 38,* 299-337.

Marsh, H. W., Craven, R. G., & Martin, A. J. (2006). What is the nature of self-esteem? Unidimensional and multidimensional perspectives. In M. H. Kernis (Ed.), *Self-esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 16-24). New York: Psychology Press.

Marsh, H. W., & O'Neill, R. (1984). Self description questionnaire III: The construct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement, 21,* 153-174.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50,* 370–396.

McConnell, A. R., & Leibold, J. M. (2001). Relations among the implicit association test, discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology, 37,* 435-442.

McGregor, I., & Marigold, D. C. (2003). Defensive zeal and the uncertain self: What makes you so sure? *Journal of Personality and Social Psychology, 85,* 838–852.

McGregor, I., Nail, P. R., Marigold, D. C., & Kang, S. J. (2005). Defensive pride and consensus: Strength in imaginary numbers. *Journal of Personality and Social Psychology, 89,* 978–996.

Meagher, B. E., & Aidman, E. V. (2004). Individual differences in implicit and declared self-esteem as predictors of response to negative performance evaluation: Validating implicit association test as a measure of self-attitudes. *International Journal of Testing, 4,* 19–42.

Mesquita, B., & Karasawa, M. (2004). Self-conscious emotions as dynamic cultural processes. *Psychological Inquiry, 15,* 161-166.

Messick, S. (1989). Validity. In R. L. Linn (Ed.), *Educational Measurement (pp. 13-104).* New York: American Council on Education.

Mezulis, A. H., Abramson, L. Y., Hyde, J. S., & Hankin, B. L. (2004). Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and

cultural differences in the self-serving attributional bias. *Psychological Bulletin, 130,* 711–747.

Millsap, R. E. (1997). Invariance in measurement and prediction: Their relationship in the single-factor case. *Psychological Methods, 2,* 248-260.

Minami, K. (2005). Regeneration of city space based on the continuity of orders. *Journal of Asian Architecture and Building Engineering, 4,* 369-373.

Mitchell, C. J. (2004). Mere acceptance produces apparent attitude in the implicit association test. *Journal of Experimental Social Psychology, 40,* 366-373.

Morewedge, C. M., Shu, L. L., Gilbert, D. T., & Wilson, T. D. (2009). Bad riddance or good rubbish? Ownership and not loss aversion causes the endowment effect. *Journal of Experimental Social Psychology,* 45, 947–951.

Muthén, L. K., & Muthén, B. O. (1998-2011). *Mplus User's Guide.* Sixth Edition. Los Angeles, CA: Muthén & Muthén.

Mummendy, A., Otten, S., Berger, U., Kessler, T. (2000). Positive-negative asymmetry in social discrimination: Valence of evaluation and salience of categorization. *Personality and Social Psychology Bulletin, 26,* 1258-1270.

National Automobile Dealers Association. (2008). *NADA data 2008.* Retrieved June 17, 2010, from http://www.nada.org/NR/rdonlyres/0FE75B2C-69F0-4039-89FE-1366B5B86C97/0/NADAData08_no.pdf.

The Nielson Company (2010). Retrived July 3, 2010 from http://en-us.nielsen.com/content/dam/nielsen/en_us/documents/pdf/Three%20Screen%20Reports/Nielsen_Three%20Screen%20Report_Q12010.PDF

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108,* 291-310.

Nisbett, R., & Wilson, T. (1977). Telling more than we can know: Verbal reports on mental proceses. *Psychology Review, 84,* 231-259.

Norenzayan, A., & Heine, S. J. (2005). Psychological universals: What are they and how can we know? *Psychological Bulletin, 131,* 763-784.

Nosek, B. A., & Banaji, M. R. (2001). The go/no-go association task. *Social Cognition, 19,* 625-664.

Nosek, B. A., Greenwald, A. B., & Banaji, M. R. (2007). The implicit association test at age 7: A methodological and conceptual review. In J. A. Bargh (Ed.), *Automatic Processes in Social Thinking and Behavior* (pp. 265-292).

Nosek, B. A., & Smyth, F. L. (2007). A multitrait-multimethod validation of the implicit association test. *Experimental Psychology, 54,* 14-29.

Nosek, B. A., & Sriram, N. (2007). Faulty assumptions: A comment on Blanton, Jaccard, Gonzales, and Christie (2006). *Journal of Experimental Social Psychology, 43,* 393-398.

Oakes, M. A., Brown, J. D., & Cai, H. (2008). Implicit and explicit self-esteem: Measure for measure. *Social Cognition, 26,* 778-790.

Olson, M. A., Fazio, R. H., & Hermann, A. D. (2007). Reporting tendencies underlie discrepancies between implicit and explicit measures of self-esteem. *Psychological Science, 18,* 287–291.

Oishi, S. (2002). The experiencing and remembering of well-being: A cross-cultural analysis. *Personality and Social Psychology Bulletin, 28,* 1398-1406.

Osborne, R. E., & Gilbert, D. T. (1992). The preoccupational hazards of social life. *Journal of Personality and Social Psychology, 62,* 219–228.

Otten, S. (2002). “Me and us” or “us and them”? The self as a heuristic for defining minimal ingroups. *European Review of Social Psychology, 13,* 1-33.

Otten, S., & Epstude, K. (2006). Overlapping mental representations of self, ingroup, and outgroup: Unraveling self-stereotyping and self-anchoring. *Personality and Social Psychology Bulletin, 32,* 957-969.

Otten, S., & Moskowitz, G. B. (2000). Evidence for implicit evaluative in-group bias: Affect-biased spontaneous trait inference in a minimal group paradigm. *Journal of Experimental Social Psychology, 36,* 77-89.

Otten, S., & Wentura, D. (1999). About the impact of automaticity in the minimal group paradigm: Evidence from affective priming tasks. *European Journal of Social Psychology, 29,* 1049-1071.

Otten, S., & Wentura, D. (2001). Self-anchoring and in-group favoritism: An individual profiles analysis. *Journal of Experimental and Social Psychology, 37,* 525-532.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128,* 3–72.

Parker, G., Tupling, H., & Brown, L.B. (1979). A parental bonding instrument. *British Journal of Medical Psychology, 52,* 1-10.

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 17-59). San Diego: Academic Press.

Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? *Journal of Personality and Social Psychology, 74,* 1197-1208.

Paulhus, D. L., Graf, P., & van Selst, M. (1989). Attentional load increases the positivity of self-presentation. *Social Cognition, 7,* 389–400.

Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224-239). New York: Guilford Press.

Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology, 89,* 277-293.

Pelham, B. W., Carvallo, M., & Jones, J. T. (2005). Implicit egotism. *Current Direcetions in Psychological Science, 14,* 106-110.

Pelham, B. W., & Swann, W. B. (1989). From self-conceptions to self-worth: On the sources and structure of global self-esteem. *Journal of Personality and Social Psychology, 57,* 672-680.

Pennebaker, J. W., Booth, R. J., & Francis, M. E. (2007). Linguistic Inquiry and Word Count: LIWC [Computer software]. Austin, TX: LIWC.net.

Peters, E., Slovic, P., & Gregory, R. (2003). The role of affect in the WTA/WTP disparity. *Journal of Behavioral Decision Making, 16,* 309–330.

Petty, R. E., Briñol, P., & DeMarree, K. G. (2007). The meta-cognitive model (MCM) of attitudes: Implications for attitude measurement, change, and strength. *Social Cognition, 25,* 657-686.

Pinter, B., & Greenwald, A. G. (2005). Clarifying the role of the ‘‘other’’ category in the self-esteem IAT. *Experimental Psychology, 52,* 74–79.

Pontari, B. A., & Schlenker, B. R. (2000). The influence of cognitive load on self-presentation: Can cognitive busyness help as well as harm social performance? *Journal of Personality and Social Psychology, 78,* 1092–1108.

Popa-Roch, M., & Delmas, F. (2010). Prejudice implicit association test effects: The role of self-related heuristics. *Zeitschrift für Psychologie / Journal of Psychology, 218,* 44-50.

Pyszczynski, T., Grenberg, J., Solomon, S., & Arndt, J. (2004). Why do people need self-esteem? A theoretical and empirical review. *Psychological Bulletin, 130,* 435-468.

Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54,* 890-902.

R Development Core Team (2011). R: A language and environment for statistical computing (Version 2.14.1) [Computer software]. Vienna, Austria: R Foundation for Statistical Computing. URL: http://www.R-project.org/

Raudenbush, S. W., & Bryk, A. S. (2002). Hierarchical linear models: Applications and data analysis methods (2nd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Rennie, L. J., & Dunne, M. (1994). Gender, ethnicity, and students' perceptions about science and science-related careers in Fiji. *Science Education, 78,* 285-300.

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin, 27,* 151-161.

Robinson, M. D., & Meier, B. P. (2005). Rotten to the core: Neuroticism and implicit evaluations of the self. *Self and Identity, 4,* 361-372.

Robinson, M. D., Mitchell, K. A., Kirkeby, B. S., & Meier, B. P. (2006). The self as a container: Implications for implicit self-esteem and somatic symptoms. *Metaphor and Symbol, 21,* 147–167.

Robinson, M. D., & Wilkowski, B. M. (2006). Loving, hating, vacillating: Agreeableness, implicit self-esteem, and neurotic conflict. *Journal of Personality, 74,* 935–977.

Rooke, S. E., Hine, D. W., & Thorsteinsson, E. B. (2008). Implicit cognition and substance use: A meta-analysis. *Addictive Behaviors, 33,* 1314-1328.

Rose, J. P., Endo, Y., Windschitl, P. D., & Suls, J. (2008). Cultural differences in unrealistic optimism and pessimism: The role of egocentrism and direct versus indirect comparison measures. *Personality and Social Psychology Bulletin, 34,* 1236-1248.

Rosenberg, M. (1965). *Society and the Adolescent Self-image.* Princeton, NJ: Princeton University Press.

Rothbaum, F., Pott, M., Azuma, H., Miyake, K., & Weisz, J. (2000). The development of close relationships in Japan and the United States: Paths of symbiotic harmony and generative tension. *Child Development, 71,* 1121-1142.

Rothbaum, F., Weisz, J., Pott, M., Miyake, K., & Morelli, G. (2000). Attachment and culture: Security in the United States and Japan. *American Psychologist, 10,* 1093-1104.

Rothermund, K., & Wentura, D. (2001). Figure-ground asymmetries in the Implicit Association Test (IAT). *Zeitschrift für Experimentelle Psychologie, 48,* 94-106.

Rothermund, K., & Wentura, D. (2004). Underlying processes in the implicit association test: Dissociating salience from associations. *Journal of Experimental Psychology: General, 133,* 139-165.

Rothermund, K., Wentura, D., & De Houwer, J. (2005). Validity of the salience asymmetry account of the Implicit Association Test: Reply to Greenwald, Nosek, Banaji, and Klauer (2005). *Journal of Experimental Psychology: General, 134,* 426-430.

Rubin, M., & Hewstone, M. (1998). Social identity theory's self-esteem hypothesis: A review and some suggestions for clarification. *Personality and Social Psychology Review, 2,* 40-62.

Rudman, L. A., Dohn, M. C., & Fairchild, K. (2007). Implicit self-esteem compensation: Automatic threat defense. *Journal of Personality and Social Psychology, 93,* 789–813.

Rudolph, A., Schröder-Abé, M., Schütz, A., Gregg, A. P., & Sedikides, C. (2008). Through a glass, less darkly? Reassessing convergent and discriminant validity in measures of implicit self-esteem. *European Journal of Psychological Assessment, 24,* 273-281.

Sato, K., Yuki, M., & Oishi, S. (2007). *The influence of relational mobility on self-esteem*. Paper presented at the 7th Conference of Asian Association of Social Psychology, Kota Kinabalu, Malaysia, July.

Sato, K., Yuki, M., Takemura, K., Schug, J., & Oishi, S. (2008). *The ''openness'' of a society determines the relationship between self-esteem and subjective well-being (1): A cross-societal comparison.* Paper presented at the 9th annual meeting of the Society of Personality and Social Psychology, Albuquerque, NM, February.

Satorra, A., & Bentler, P. M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye & C. C. Clogg (Eds.), *Latent variables analysis: Applications for developmental research* (pp. 399–419). Thousand Oaks, CA: Sage.

Savalei, V. (2010). Expected versus observed information in SEM with incomplete normal and nonnormal data. *Psychological Methods, 15,* 352-367.

Schacter, D. L. (1987). Implicit memory: History and current status. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 13,* 501-518.

Scheff, T. L., & Fearon, D. S., Jr. (2004). Cognition and emotion? The dead end in self-esteem research. *Journal for the Theory of Social Behavior, 34,* 73-90.

Schröder-Abé, M., Rudolph, A., & Schütz, A. (2007). High implicit self-esteem is not necessarily advantageous: Discrepancies between explicit and implicit self-esteem and their relationship with anger expression and psychological health. *European Journal of Personality, 21,* 319–339.

Schröder-Abé, M., Rudolph, A., Wiesner, A., & Schütz, A. (2007). Self-esteem discrepancies and defensive reactions to social feedback. *International Journal of Psychology, 42,* 174–183.

Scollon, C. N., Diener, E., Oishi, S., & Biswas-Diener, R. (2004). Emotions across cultures and methods. *Journal of Cross-Cultural Psychology, 35,* 304-326.

Sedikides, C. (1993). Assessment, enhancement, and verification determinants of the self-evaluation process. *Journal of Personality and Social Psychology, 65,* 317-338.

Sedikides, C., Gaertner, L., & Toguchi, Y. (2003). Pancultural self-enhancement. *Journal of Personality and Social Psychology, 84,* 60-70.

Sedikides, C., Gaertner, L., & Vevea, J. L. (2005). Pancultural self-enhancement reloaded: A meta-analytic reply to Heine (2005). *Journal of Personality and Social Psychology, 89,* 539-551.

Sedikides, C., Gaertner, L. & Vevea, J. L. (2007a). Inclusion of theory-relevant moderators yield the same conclusions as Sedikides, Gaertner, and Vevea (2005): A meta-analytic reply to Heine, Kitayama, and Hamamura (2007). *Asian Journal of Social Psychology 10,* 59-67.

Sedikides, C., Gaertner, L. & Vevea, J. L. (2007b). Evaluating the evidence for pancultural self-enhancement. *Asian Journal of Social Psychology, 10,* 201-203.

Sedikides, C., & Gregg, A. P. (2008). Self-enhancement: Food for thought. *Perspectives on Psychological Science, 3,* 102-115.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research, 46,* 407-441.

Shweder, R. A. (1990). Cultural psychology: What is it? In J. W. Stigler, R. A. Shweder, & G. Herdt (Eds.). *Cultural psychology: Essays on comparative human development* (pp. 1-43). Cambridge, England: Cambridge University Press.

Sidanius, J. (1993). The psychology of group conflict and the dynamics of oppression: A social dominance perspective. In W. McGuire & S. Iyengar (Eds.), *Current approaches to political psychology* (pp. 183- 219). Durham, NC: Duke University Press.

Smith, P. B. (2004). Acquiescent response bias as an aspect of cultural communication style. *Journal of Cross-Cultural Psychology, 35,* 50-61.

Spalding, L. R., & Hardin, C. D. (1999). Unconscious unease and self-handicapping: Behavioral consequences of individual differences in implicit and explicit self-esteem. *Psychological Science, 10,* 535-539.

Spencer-Rodgers, J., Peng, K., Wang, L., & Hou, Y. (2004). Dialectical self-esteem and East-West differences in psychological well-being. *Personality and Social Psychology Bulletin, 30,* 1416-1432.

Strahilevitz, M.A., & Loewenstein, G. (1998). The effect of ownership history on the valuation of objects. *Journal of Consumer Research, 25,* 276–289.

Steffens, M. C. (2004). Is the implicit association test immune to faking? *Experimental Psychology, 51,* 165–179.

Su, J. C., & Oishi, S. (2011). Re-examining the positivity of self-evaluations among East Asians and European Americans. *Journal of Research in Personality, 45,* 642-647.

Suh, E., Diener, E., Oishi, S., & Triandis, H. C. (1998). The shifting basis of life satisfaction judgments across cultures: Emotions versus norms. *Journal of Personality and Social Psychology, 74,* 482-493.

Suls, J. (1991). Similarity and self-esteem in downward comparison. In J. Suls & T. A. Wills (Eds.), *Social Comparison: Contemporary Theory and Research* (pp. 51-78). Hillsdale, NJ: Erlbaum.

Swann, W. B., Hixon, J. G., Stein-Seroussi, A., & Gilbert, D. T. (1990). The fleeting gleam of praise: Cognitive processes underlying behavioral reactions to self-relevant feedback. *Journal of Personality and Social Psychology, 59,* 17–26.

Swann, W. B., Wenzlaff, R. M., Krull, D. S., & Pelham, B. W. (1992). The allure of negative feedback: Self-verification strivings among depressed persons. *Journal of Abnormal Psychology, 101,* 293-306.

Szeto, A., Sorrentino, R. M., Yasunaga, S., Otsubo, Y., Kouhara, S., & Sasayama, I. (2009). Using the IAT across cultures: A case of implicit self-esteem in Japan and Canada. *Asian Journal of Social Psychology, 12,* 211-220.

Tafarodi, R. W. (1998). Paradoxical self-esteem and selectivity in the processing of social information. *Journal of Personality and Social Psychology, 74,* 1181-1196.

Tafarodi, R. W., & Ho, C. (2006). Implicit and explicit self-esteem: What are we measuring? *Canadian Psychology, 47,* 195-202.

Tafarodi, R. W., & Swann, W. B. (2001). Two-dimensional self-esteem: theory and measurement. *Personality and Individual Differences, 31,* 653-673.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American, 223,* 96-102.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology, 1,* 149-178.

Tajfel, H. & Turner, J.C. (1986). A social identity theory of intergroup behaviour. In S. Worchel & W.G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7-24). Chicago: Nelson-Hall.

Takada, H., & Jain, D. (1991). Cross-National Analysis of Diffusion of Consumer Durable Goods in Pacific Rim Countries. *Journal of Marketing, 55,* pp. 48-54.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103,* 193-210.

Teige-Mocigemba, S., Klauer, K. C., & Rothermund, K. (2008). Minimizing method-specific variance in the IAT: A single block IAT. *European Journal of Psychological Assessment, 24,* 237-245.

Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances In Experimental Social Psychology* (Vol. 21, pp. 181-227). New York: Academic.

Tice, D. M. (1991). Esteem protection or enhancement? Self-handicapping motives and attributions differ by trait self-esteem. *Journal of Personality and Social Psychology, 60,* 711-725.

Tracy, J. L., Cheng, J. Y., Robins, R. W., & Trzesniewski, K. H. (2009). Authentic and hubristic pride: The affective core of self-esteem and narcissism. *Self and Identity, 8,* 196-213.

Tracy, J. L., & Robins, R. W. (2004). Putting the self into self-conscious emotions: A theoretical model. *Psychological Inquiry, 15,* 103-125.

Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review, 96,* 506-520.

Tropp, L. R., & Wright, S. C. (2003). Evaluations and perceptions of self, group, ingroup, and outgroup: Comparisons between Mexican-American and European-American children. *Self and Identity, 2,* 203–221.

Turner, J. C., Hogg, M., Oakes, P., Reicher, S., & Wetherell, M. (1987). *Rediscovering the social group: A self-categorization theory.* Oxford, UK: Blackwell.

Turner, J. C., & Reynolds, K. J. (2001). The social identity perspective in intergroup relations: Theories, themes, and controversies. In R. Brown & S. Gaertner (Eds.). *Blackwell handbook of social psychology: Intergroup processes* (pp. 133-152). Malden, MA: Blackwell.

Van Boven, L., Dunning, D., & Loewenstein, G. (2000). Egocentric empathy gaps between owners and buyers: Misperceptions of the endowment effect. *Journal of Personality and Social Psychology, 79,* 66–76.

Van den Bussche, E., Van den Noortgate, W., & Reynvoet, B. (2009). Mechanisms of masked priming: A meta-analysis. *Psychological Bulletin, 135,* 452-477.

Verkuyten, M., & Hagendoorn, L. (2002). In-group favoritism and self-esteem: The role of identity level and trait valence. *Group Processes and Intergroup Relations, 5,* 285-297.

Verplanken, B., Friborg, O., Wang, C. E., Trafimow, D. & Woolf, K. (2007). Mental habits: Metacognitive reflection on negative self-thinking. *Journal of Personality and Social Psychology, 92,* 526-541.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scale. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Wetherell, M. (1982). Cross-cultural studies of minimal groups: Implications for the social identity theory of intergroup relations. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 207-240). Cambridge, UK: Cambridge University Press.

Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin, 90,* 245-271.

Wilson, T. D., & Dunn, E. W. (2004). Self-knowledge: Its limits, value, and potential for improvement. *Annual Review of Psychology, 55,* 493-518.

Wilson, T. D., & Hodges, S. D. (1992). Attitudes as temporary constructions. In A. Tesser & L. Martin (Eds.), *The construction of social judgment* (pp. 37-65). Hillsdale, NJ: Erlbaum.

Whetstone, M. R., Okun, M. A., & Cialdini, R. B. (1992). *The modest responding scale.* Paper presented at the convention of the American Psychological Society, San Diego.

White, K., & Lehman, D. R. (2005). Culture and social comparison seeking: The role of self-motives. *Personality and Social Psychology Bulletin, 31,* 232-242.

Wu, S., & Keysar, B. (2007). The effect of culture on perspective taking. *Psychological Science, 18,* 600-606.

Yamagishi, T., Jin, N., & Kiyonari, T. (1999). Bounded generalized reciprocity: Ingroup favoritism and ingroup boasting. *Advances in Group Processes, 16,* 161-197.

Yamagishi, T., & Mifune, N. (2008). Does shared group membership promote altruism? Fear, greed, and reputation. *Rationality and Society, 20,* 5-30.

Yamagishi, T., & Yamagishi, M. (1994). Trust and commitment in the United States and Japan. *Motivation and Emotion, 18,* 129-166.

Yamaguchi, S., Greenwald, A. G., Banaji, M. R., Murakami, F., Chen, D., Shiomura, K., et al. (2007). Apparent universality of positive implicit self-esteem. *Psychological Science, 18,* 498–500.

Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology, 30,* 165–200.

Yuki, M. (2003). Intergroup comparison versus intragroup relationships: A cross-cultural examination of social identity theory in North American and East Asian cultural contexts. *Social Psychology Quarterly, 66,* 166-183.

Yuki, M., Schug, J. R., Horikawa, H., Takemura, K., Sato, K., & Yokota, K., et al. (2007). Development of a scale to measure perceptions of relational mobility in society. *CERSS Working Paper 75,* Center for Experimental Research in Social Sciences, Hokkaido University.

Zeigler-Hill, V. (2006). Discrepancies between implicit and explicit self-esteem: Implications for narcissism and self-esteem instability. *Journal of Personality, 74,* 119–143.

Zhang, H., & Chan, D. K-S. (2009). Self-esteem as a source of evaluative conditioning. *European Journal of Social Psychology, 39,* 1065-1074.

Zou, X., Tam, K.-P., Morris, M. W., Lee, S.-l., Lau, I. Y.-M., & Chiu, C.-y. (2009). Culture as common sense: Perceived consensus vs. personal beliefs as mechanisms of cultural influence. *Journal of Personality and Social Psychology, 97,* 579-597.

Zumbo, B.D. (2007). Validity: Foundational Issues and Statistical Methodology. In C.R. Rao and S. Sinharay (Eds.), *Handbook of Statistics, Vol. 26: Psychometrics, (pp. 45-79).* The Netherlands: Elsevier Science B.V.

Appendix A: Supplemental Analyses for Study 1

The tables on the following pages display a reanalysis of the data from Study 1, showing the results with and without covariates (age, gender, compensation; Tables 22-23) and with using group-mean centering for ratings of traits with each individual's average mean added as a level 2 predictor (RatingMean; e.g., Enders & Tofighi, 2007; Tables 24-25). In the latter approach, we would expect that the cultural differences are largely due to a within-person process that differs across cultures (e.g., rating – endorsement slopes within each person are lower for Japanese versus Euro-Canadians); the results concur with this prediction. R's lme4 package (R Development Core Team, 2011; Bates, Maechler, & Bolker, 2011) using Laplace approximation was used for estimation. Some results differ slightly than that originally reported in Falk et al. (2009) and appearing in the main text of this dissertation; this appears to be due to use of a different computer program used for estimation. However, note that the effects of theoretical interest remain significant regardless of the analysis method and are highlighted in bold on each table.

Table 22. HLM fixed effects for the basic model in Study 1 with and without covariates.

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Endorsement Mean					
Intercept	.52 (.11)***	.52 (.08)***	.52 (.08)***	.60 (.10)***	.54 (.08)***
Culture1	.09 (.11)	.10 (.11)	.07 (.11)	.05 (.11)	.07 (.11)
Culture2	-.44 (.19)*	-.43 (.11)***	-.43 (.11)***	-.61 (.17)***	-.48 (.10)***
Age	.02 (.01)	.02 (.01)†			
Gender	-.11 (.10)		-.11 (.10)		
Compensation	.08 (.15)			.14 (.15)	
Rating Slope					
Intercept	1.11 .(08)***	1.06 (.06)***	1.05 (.06)***	1.08 (.07)***	1.05 (.06)***
Culture1	**-.29 (.08)*** **	**-.27 (.08)*** **	**-.25 (.08)*** **	**-.26 (.08)*** **	**-.25 (.08)*** **
Culture2	**-1.06 (.14)*** **	**-.94 (.08)*** **	**-.92 (.08)*** **	**-.99 (.12)*** **	**-.92 (.07)*** **
Age	-.01 (.01)	-.01 (.01)			
Gender	.01 (.07)		.00 (.07)		
Compensation	.11 (.11)			.08 (.11)	

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Load Slope					
Intercept	-.00 (.14)	-.03 (.10)	.01 (.10)	-.01 (.12)	-.01 (.10)
Culture1	-.09 (.14)	-.09 (.13)	-.10 (.13)	-.10 (.13)	-.10 (.13)
Culture2	.03 (.23)	.08 (.13)	-.00 (.13)	.04 (.21)	.05 (.12)
Age	.01 (.02)	.01 (.02)			
Gender	.11 (.11)		.11 (.11)		
Compensation	.00 (.19)			.02 (.18)	
Rating X Load Slope					
Intercept	-.06 (.07)	-.08 (.06)	-.06 (.06)	-.05 (.07)	-.07 (.05)
Culture1	.02 (.07)	.02 (.07)	.01 (.07)	.00 (.07)	.01 (.07)
Culture2	.05 (.13)	.09 (.07)	.05 (.07)	.03 (.11)	.07 (.07)
Age	.01 (.01)	.01 (.01)			
Gender	.03 (.06)		.03 (.06)		
Compensation	.03 (.10)			.05 (.10)	

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 23. HLM fixed effects for the model with IATSE in Study 1 with and without covariates.

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Endorsement Mean					
Intercept	.52 (.11)***	.52 (.08)***	.52 (.08)***	.60 (.10)***	.54 (.08)***
Culture1	.09 (.11)	.10 (.11)	.07 (.11)	.05 (.11)	.07 (.11)
Culture2	-.44 (.19)*	-.43 (.11)***	-.43 (.11)***	-.61 (.17)***	-.49 (.10)***
Age	.02 (.01)	.02 (.01)			
Gender	-.11 (.10)		-.11 (.10)		
Compensation	.08 (.15)			.14 (.15)	
IATSE	-.02 (.12)	-.03 (.12)	-.00 (.12)	-.02 (.12)	-.01 (.12)
Rating Slope					
Intercept	1.12 (.08)***	1.06 (.06)***	1.05 (.06)***	1.09 (.07)***	1.05 (.06)***
Culture1	**-.29 (.08)*** **	**-.27 (.08)*** **	**-.25 (.07)*** **	**-.26 (.08)*** **	**-.25 (.07)*** **
Culture2	**-1.08 (.14)*** **	**-.94 (.08)*** **	**-.93 (.08)*** **	**-1.01 (.12)*** **	**-.92 (.07)*** **
Ag	-.01 (.01)	-.01 (.01)			
Gender	.03 (.07)		.01 (.07)		

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Compensation	.13 (.11)			.10 (.11)	
IATSE	**-.18 (.08)***	**-.17 (.08)***	**-.18 (.08)***	**-.18 (.08)***	**-.17 (.08)***
Load Slope					
Intercept	-.01 (.14)	-.03 (.10)	.01 (.10)	-.01 (.12)	-.02 (.10)
Culture1	-.09 (.14)	-.09 (.13)	-.10 (.13)	-.10 (.13)	-.10 (.13)
Culture2	.03 (.23)	.09 (.13)	-.00 (.13)	.04 (.21)	.05 (.12)
Age	.01 (.02)	.01 (.02)			
Gender	.11 (.11)		.11 (.11)		
Compensation	.00 (.19)			.01 (.18)	
IATSE	.04 (.13)	.05 (.13)	.04 (.13)	.05 (.13)	.05 (.13)
Rating X Load Slope					
Intercept	-.08 (.08)	-.08 (.06)	-.07 (.06)	-.06 (.07)	-.07 (.05)
Culture1	.02 (.07)	.02 (.07)	.01 (.07)	.00 (.07)	.01 (.07)

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Culture2	.07 (.13)	.09 (.07)	.06 (.07)	.05 (.11)	.07 (.07)
Age	.01 (.01)	.01 (.01)			
Gender	.02 (.06)		.02 (.06)		
Compensation	.01 (.11)			.03 (.10)	
IATSE	.08 (.07)	.08 (.07)	.08 (.07)	.08 (.07)	.09 (.07)

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 24. HLM fixed effects for the basic model in Study 1 using group mean centering for trait desirability ratings.

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Endorsement Mean					
Intercept	.49 (.11)***	.50 (.08)***	.50 (.08)***	.58 (.10)***	.53 (.08)***
Culture1	.10 (.11)	.10 (.11)	.07 (.11)	.06 (.11)	.07 (.11)
Culture2	-.41 (.19)*	-.42 (.11)***	-.42 (.11)***	-.60 (.17)***	-.48 (.10)***
Age	.02 (.01)	.02 (.01)†			
Gender	-.14 (.09)		-.14 (.09)		
Compensation	.06 (.15)			.13 (.15)	
RatingMean	.14 (.04)***	.13 (.04)**	.15 (.04)***	.14 (.04)***	.14 (.04)***
Rating Slope					
Intercept	1.12 (.08)***	1.07 (.06)***	1.05 (.06)***	1.08 (.07)***	1.05 (.06)***
Culture1	**-.28 (.08)*** **	**-.26 (.08)*** **	**-.24 (.08)** **	**-.25 (.08)** **	**-.24 (.08)** **
Culture2	**-1.07 (.14)*** **	**-.96 (.08)*** **	**-.93 (.08)*** **	**-1.00 (.13)*** **	**-.93 (.08)*** **
Age	-.01 (.01)	-.01 (.01)			
Gender	.01 (.07)		-.00 (.07)		

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Compensation	.11 (.11)			.08 (.11)	
RatingMean	.03 (.03)	.03 (.03)	.03 (.03)	.03 (.03)	.03 (.03)
Load Slope					
Intercept	-.00 (.14)	-.03 (.10)	.01 (.10)	-.01 (.12)	-.02 (.10)
Culture1	-.09 (.14)	-.09 (.13)	-.11 (.13)	-.10 (.13)	-.10 (.13)
Culture2	.03 (.23)	.09 (.13)	.00 (.13)	.04 (.21)	.06 (.12)
Age	.01 (.02)	.01 (.02)			
Gender	.12 (.11)		.12 (.11)		
Compensation	.01 (.19)			.02 (.18)	
RatingMean	-.03 (.05)	-.03 (.05)	-.03 (.05)	-.02 (.05)	-.02 (.05)
Rating X Load Slope					
Intercept	-.06 (.08)	-.08 (.06)	-.07 (.06)	-.05 (.07)	-.07 (.05)
Culture1	.02 (.07)	.02 (.07)	.01 (.07)	.01 (.07)	.01 (.07)

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Culture2	.05 (.13)	.09 (.07)	.06 (.07)	.03 (.11)	.07 (.07)
Age	.01 (.01)	.01 (.01)			
Gender	.03 (.06)		.03 (.06)		
Compensation	.03 (.10)			.05 (.10)	
RatingMean	-.00 (.03)	-.00 (.03)	-.00 (.03)	.00 (.03)	.00 (.03)

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Table 25. HLM fixed effects for the IATSE model in Study 1 using group mean centering for trait desirability ratings.

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Endorsement Mean					
Intercept	.49 (.11)***	.50 (.08)***	.50 (.08)***	.58 (.10)***	.53 (.08)***
Culture1	.10 (.11)	.10 (.11)	.08 (.11)	.06 (.11)	.07 (.11)
Culture2	-.41 (.19)*	-.42 (.11)***	-.42 (.11)***	-.60 (.17)***	-.48 (.10)***
Age	.02 (.01)†	.02 (.01)†			
Gender	-.14 (.09)		-.14 (.09)		
Compensation	.06 (.15)			.13 (.15)	
RatingMean	.14 (.04)***	.13 (.04)**	.15 (.04)***	.14 (.04)***	.14 (.04)***
IATSE	-.01 (.12)	-.02 (.12)	.01 (.12)	-.01 (.12)	-.00 (.12)
Rating Slope					
Intercept	1.12 (.08)***	1.06 (.06)***	1.05 (.06)***	1.09 (.07)***	1.05 (.06)***
Culture1	**-.28 (.08)*** **	**-.26 (.08)*** **	**-.24 (.08)** **	**-.26 (.08)*** **	**-.24 (.08)** **
Culture2	**-1.09 (.14)*** **	**-.96 (.08)*** **	**-.93 (.08)*** **	**-1.02 (.13)*** **	**-.93 (.07)*** **
Age	-.01 (.01)	-.01 (.01)			

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Gender	.02 (.07)		.01 (.07)		
Compensation	.13 (.11)			.10 (.11)	
RatingMean	.02 (.03)	.03 (.03)	.02 (.03)	.02 (.03)	.02 (.03)
IATSE	**-.16 (.09)†**	**-.15 (.08)†**	**-.16 (.08)†**	**-.17 (.09)***	**-.16 (.08)†**
Load Slope					
Intercept	.00 (.14)	-.03 (.10)	.01 (.10)	-.01 (.12)	-.01 (.10)
Culture1	-.10 (.14)	-.09 (.14)	-.11 (.13)	-.11 (.13)	-.11 (.13)
Culture2	.02 (.23)	.09 (.13)	.00 (.13)	.04 (.21)	.06 (.12)
Age	.01 (.02)	.01 (.02)			
Gender	.12 (.11)		.12 (.11)		
Compensation	.01 (.19)			.02 (.18)	
RatingMean	-.03 (.05)	-.03 (.05)	-.03 (.05)	-.02 (.05)	-.02 (.05)
IATSE	.03 (.13)	.04 (.13)	.03 (.13)	.05 (.13)	.04 (.13)

Fixed Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Rating X Load Slope					
Intercept	-.07 (.08)	-.08 (.06)	-.07 (.06)	-.06 (.07)	-.07 (.05)
Culture1	.02 (.07)	.02 (.07)	.01 (.07)	.01 (.07)	.01 (.07)
Culture2	.07 (.13)	.09 (.07)	.06 (.07)	.05 (.11)	.07 (.07)
Age	.01 (.01)	.01 (.01)			
Gender	.02 (.06)		.02 (.06)		
Compensation	.01 (.10)			.03 (.10)	
RatingMean	-.00 (.03)	.00 (.03)	.00 (.03)	.00 (.03)	.00 (.03)
IATSE	.07 (.07)	.08 (.07)	.08 (.07)	.08 (.07)	.08 (.07)

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Appendix B: Results for Japanese in Study 2 Pre- and Post-Tsunami

Since data collection for the Japanese participants in Study 2 was interrupted by the March 11, 2011 earthquake and tsunami, we compared the means on all measures for data collected before and after this event (see Table 26). Due to estimation difficulties (i.e., lack of convergence of the EM algorithm for the pre-tsunami group), means, standard deviations, and univariate tests of group differences are based on all available data for each measure, rather than the use of advanced missing data techniques. To reduce Type I error, MANOVA was used to test for group differences on four types of measures separately: 1) explicit self-esteem, 2) implicit self-esteem, 3) criterion measures (excluding peer ratings), and 4) peer ratings of self-esteem. Peer ratings of self-esteem was used as a separate category due to the necessity of using listwise deletion for these analyses, and the high proportion of missing data for these criterion measures.

Results revealed no significant overall differences in explicit self-esteem, Wilk's Λ = .94, $F(7, 102) = .94$, $p = .48$, implicit self-esteem, Wilk's Λ = .91, $F(9, 95) = 1.01$, $p = .43$, and criterion measures other than peer ratings, Wilk's Λ = .91, $F(10, 96) = 1.00$, $p = .45$. Significant differences were observed overall in peer ratings, Wilk's Λ = .65, $F(3, 35) = 6.16$, $p < .01$. This appeared to be due to ratings obtained after the tsunami as being lower (versus before the tsunami) on the peer version of the RSES, $t(37) = 3.28$, $p <.01$, and SC, $t(37) = 2.42$, $p = .02$. On the one hand, these results may warrant some further caution in interpreting any results involving peer ratings obtained for the Japanese sample in Study 2. However, given that few mean differences were found across these groups, it supports our decision to treat all Japanese as a single cultural group in the analyses for Study 2.

Table 26. Descriptive statistics for all measures for Japanese pre- and post-tsunami in Study 2.

	Pre-Tsunami		*Post-Tsunami*		*Difference*	
Measure	*M*	*SD*	*M*	*SD*	*t (df)*	*p*
RSES	1.66	.45	1.50	.44	1.65 (110)	.10
SL	1.68	.60	1.59	.63	.62 (110)	.54
SC	1.66	.55	1.53	.49	1.18 (110)	.24
FD	4.93	.67	4.68	.74	1.64 (109)	.10
FT	44.63	32.78	43.70	28.73	.15 (109)	.88
SAQ	6.21	.79	5.90	1.10	1.43 (109)	.16
FU	51.11	13.84	46.71	13.60	1.49 (108)	.14
BNT	.85	2.18	.91	2.07	-.13 (107)	.44
AMP	.61	.20	.58	.19	.80 (107)	.43
IAT	.28	.34	.34	.35	-.78 (107)	.44
SB-IAT	1.67	4.75	3.19	7.37	-1.04 (107)	.30
SC-IAT	.38	.21	.25	.34	1.89 (106)	.06
GNAT-SP	.31	1.52	.50	1.05	-.70 (104)	.49
GNAT-SU	.63	1.22	.62	1.22	.06 (105)	.96
SEL	.41	.35	.30	.36	1.39 (105)	.17
APT	-1.02	5.18	-3.29	8.85	1.32 (110)	.19
AST	.46	1.67	-.01	1.62	1.29 (105)	.20
PBI-MC	2.15	.52	2.06	.56	.71 (106)	.48
PBI-FC	1.85	.54	1.71	.65	1.04 (106)	.30
PBI-MO	1.19	.59	1.13	.49	.56 (106)	.58
PBI-FO	.76	.42	.93	.43	-1.78 (106)	.08
PA	2.95	.51	2.78	.61	1.31 (106)	.19

	Pre-Tsunami		*Post-Tsunami*		*Difference*	
Measure	*M*	*SD*	*M*	*SD*	*t (df)*	*p*
NA	2.26	.66	2.54	.80	-1.64 (106)	.10
PRIDE-A	2.65	.52	2.49	.67	1.13 (106)	.26
PRIDE-H	2.34	.57	2.33	.66	.07 (106)	.94
NAR	1.89	.49	1.81	.48	.76 (106)	.45
FR-RSES	3.88	.37	3.18	.50	3.28 (37)	<.01
FR-SC	3.29	.66	2.79	.43	.92 (37)	.36
FR-SL	2.85	.54	2.61	.60	2.42 (37)	.02

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. The reader is encouraged to print Appendix D for a list of abbreviations.

Appendix C: Missing Data Analyses for Studies 2 and 3

Within each culture (Study 2) or experimental condition (Study 3) the EM algorithm was used to obtain maximum likelihood estimates of all means and the variance-covariance matrix for all measures simultaneously, which we report as point estimates. Inferences (*p*-values) were obtained by resampling (with replacement) methods with 10,000 bootstrap replications (e.g., Davison & Hinkley, 1997; Efron & Tibshirani, 1993). Within each bootstrap replication we computed the above EM estimates. For inferences regarding each correlation (or average correlation), each individual's scores on all measures was treated as a single unit for the purpose of resampling. The quantiles of the resulting bootstrap distribution for each correlation (or average correlation) was used to calculate *p*-values (two-sided).

Although these procedures sound complicated, they are some of the best known methods for handling the missing data present in our sample and the type of inferences we wish to make (e.g., inferences about average correlations). Provided that the presence of the missing values does not depend exclusively on the missing values themselves (i.e., not missing at random), our approach provides unbiased estimates of each statistic and provides greater power than discarding participants with missing data (Little & Rubin, 2002). That is, commonly used alternative approaches such as discarding cases with incomplete data is more likely to result in biased estimates of statistics under more types of missing data mechanisms. If implicit self-esteem – criterion relationships were small effect sizes, this approach would be to the benefit of implicit self-esteem measures. Furthermore, analytic approximations to the sampling distribution for the average of several correlations are unknown, but can be approximated via bootstrapping methods.

Appendix D: Abbreviations for All Measures in Studies 2 and 3

Explicit Self-Esteem Measures
RSES – Rosenberg self-esteem scale
SC – Self-competence
SL – Self-liking
FD – Feeling Differentials
SAQ – Self-attributes questionnaire
FU – False uniqueness

Implicit Self-Esteem Measures
BNT – Birthday number test
NLT – Name letter test
AMP – Affect misattribution procedure
IAT – Implicit association test
SB-IAT – Single block IAT
SC-IAT – Single category IAT
GNAT-SP – Go/no-go association test (self-pleasant)
GNAT-SU – Go/no-go association test (self-unpleasant)
SEL – Self-evaluation under load
APT – Affective priming task

Criterion Measures
AST – Ambiguous statements task
PBI-MC – Parental bonding instrument (mother's care)
PBI-FC – Parental bonding instrument (father's care)
PBI-MO – Parental bonding instrument (mother's overprotection)
PBI-FO – Parental bonding instrument (father's overprotection)
PA – Positive affect
NA – Negative affect
PRIDE-H – Hubristic pride
PRIDE-A – Authentic pride
NAR – Narcissism
FR-RSES – Friend rating of Rosenberg self-esteem
FR-SC – Friend rating of self-competence
FR-SL – Friend rating of self-liking
HINT – Habit index of negative thinking
FSQ – Feedback seeking questionnaire
ES-SC – Essay rating of self-competence (independently rated)
ES-SL – Essay rating of self-liking (independently rated)
ES-G – Essay rating of global self-esteem (independently rated)
ES-PA – Positive affect words used in participants' essays
ES-NA – Negative affect words used in participants' essays

Response Biases
IM – Impression management
SD – Self-deception
MOD – Modesty

Appendix E: Factor Analysis for Study 2

To provide a more formal test for the convergent validity of all measures, confirmatory factor analysis (CFA) models were fit to each type of measure and within each culture. Although these analyses were partly exploratory, CFA provides more fine-grained control over the models and also provides tests of model fit. Recall, however, that the statistics to examine in assessing convergent validity, provided we have fit plausible models to the data, are the standardized loadings for each measure. Estimation was done with Mplus (Muthén & Muthén, 1998-2011), using full information maximum likelihood with robust corrections for non-normality and the observed information matrix (Satorra & Bentler, 1994; Savalei, 2010; Yuan & Bentler, 2000).

In the case of explicit self-esteem measures, a single-factor CFA model was fit to all measures within each culture. This model did not provide evidence of perfect fit to the data for Euro-Canadians, χ^2 (14) = 45.93, p < .001, RMSEA = .15, 90%CI [.10, .19], CFI = .90, and Asian-Canadians, χ^2 (14) = 56.02, p < .001, RMSEA = .13, 90%CI [.09, .16], CFI = .93, but yielded decent fit for the Japanese χ^2 (14) = 22.71, p = .06, RMSEA = .08, 90%CI [.00, .13], CFI = .97. However, standardized loadings for all variables were quite high (all greater than .31) and significant for all variables (Table 27). This may suggest that there is strong convergent validity among explicit self-esteem measures, but the factor structure is likely more complicated than a single factor CFA model.

Table 27. Standardized loadings for explicit self-esteem measures.

ESE Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
RSES	.90***	.92***	.85***
SL	.88***	.87***	.89***
SC	.76***	.77***	.63***
FD	.64***	.60***	.61***

ESE Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
FT	.77***	.74***	.31**
SA	.55***	.63***	.68***
FU	.34**	.38***	.55***

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

For implicit self-esteem measures, we again fit a single-factor CFA model to the data, but correlated the residuals for the two GNAT tasks as clearly these shared method variance. These models in general provided excellent fit to the data for Euro-Canadians, χ^2 (26) = 23.94, p = .58, RMSEA = .00, 90%CI [.00, .07], CFI = 1.00, slightly worse fit for Asian-Canadians, χ^2 (26) = 50.59, p < .01, RMSEA = .07, 90%CI [.04, .10], CFI = .91, and again good fit or the Japanese χ^2 (26) = 33.44, p = .15, RMSEA = .05, 90%CI [.00, .10], CFI = .93. Inspection of the standardized loadings, however, tells a different story (Table 28). Loadings were anything but consistent across cultures and significant interpretable loadings were rare. For instance, among Euro-Canadians, the SC-IAT, GNAT-SP, GNAT-SU, and SEL had significant loadings that made theoretical sense. However, recall that only the SC-IAT exhibited any criterion validity evidence. Among Asian-Canadians, the IAT, SC-IAT, and GNAT-SP had significant positive loadings, but none of these measures had any predictive validity. Finally, none of the loadings for the Japanese sample were significant, and there was evidence of some estimation difficulty as exhibited by a standardized loading greater than 1.

Table 28. Standardized loadings for implicit self-esteem measures.

ISE Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
IAT	.09	.43**	-.25
BNT	.10	-.04	.02

ISE Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
SB-IAT	-.03	.20	-.13
SC-IAT	.37*	.43**	-.02
AMP	-.13	-.02	.15
GNAT-SP	.65***	.41*	-1.23
GNAT-SU	-.66**	-.12	.89
SEL	.37*	.14	.00
APT	.39**	.14	-.18

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

For the criteria, a bifactor confirmatory factor analysis model was fit to the data within each culture. Bifactor models allow modeling of an underlying common factor (e.g., self-esteem) while recognizing that some measures likely tend to share some unique variance with each other (e.g., among PBI measures) that would not be shared with other variables (e.g., across PBI and affectively related measures). This unique variance can be explicitly modeled by correlating uniqueness among similar measures, or by adding a latent factor for each group of these measures. We chose the former strategy for the models reported below. That is, uniquenesses were correlated among all PBI measures, among all affect related measures (positive affect, negative affect, authentic pride, and hubristic pride), among measures specifically related to self-related emotions towards the self (authentic pride, hubristic pride, and narcissism), and among friend ratings of self-esteem.

This model provided decent fit to the data for Euro-Canadians, χ^2 (48) = 58.84, p = .14, RMSEA = .05, 95%CI [.00, .08], CFI = .97, and Asian-Canadians, χ^2 (48) = 68.01, p = .03, RMSEA = .05, 95%CI [.02, .07], CFI = .97, but slightly worse fit for the Japanese, χ^2 (48) = 88.36, p < .001, RMSEA = .09, 95%CI [.06, .12], CFI = .89. Inspection of the standardized

loadings revealed fairly consistent and interpretable patterns across cultures (see Table 29). With the exception of hubristic pride, all loadings are in the same direction within each culture and many reached conventional levels of statistical significance.[20] These results, though not perfect, are quite surprising considering the exploratory nature of the analyses, and may suggest that such criteria could be explained in part by a common underlying factor representing some kind of self-feelings. Since the largest loadings appear to be for affective-related indicators (e.g., positive affect), the underlying feelings towards the self may be based largely in individuals' affective experiences. There is some risk (e.g., among Euro-Canadians) that positive affect essentially defines the factor.

Table 29. Standardized loadings for criterion measures.

Criterion Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
AST	.22†	.19†	.44***
PBI-MC	.04	.45***	.40**
PBI-FC	.35**	.37***	.25†
PBI-MO	-.05	-.26*	-.49***
PBI-FO	-.18†	-.33**	-.31**
PA	1.04**	.60***	.65***
NA	-.78**	-.55***	-.67***
PRIDE-A	.85**	.58***	.45**
PRIDE-H	.12	.08	-.14
NAR	.29†	.46***	.33**

[20] The low loadings for hubristic pride are likely due to the fact that it tends to only correlated with narcissism and other affect-related indicators. The relationship among unique error variances for these constructs is partialled out of the main underlying factor.

Criterion Measure	*Euro-Canadians*	*Asian-Canadians*	*Japanese*
FR-RSES	.19	.59***	.48**
FR-RC	.28	.55***	.19
FR-SL	.24†	.62***	.29

†$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Appendix F: Effect of Covariates on Cultural Differences in Study 2

Cultural variability was present in age, $F(2, 203) = 11.46$, $p < .001$, and gender, $\chi^2(2) = 66.16$, $p < .001$, across Euro-Canadians, Asian-Canadians, and Japanese in Study 2. This appendix reports analyses of cultural variability on all explicit self-esteem, implicit self-esteem, and criterion measures, controlling for age and gender (female = -.5, male = .5).Culture was modeling as two dummy codes with Euro-Canadians as the reference group. Since many measures are on different metric, we report standardized regression coefficients (see Table 30). Appropriate techniques for conducting analysis in the presence of missing data were again employed (see Appendix C).

Table 30. Cultural differences in Study 2 with and without covariates.

Effect	β	*p*	β	*p*	β	*p*	β	*p*
RSES								
Euro vs. AC	-.12	.05	-.13	.05	-.11	.06	-.11	.06
Euro vs. Japanese	-.44	<.001	.45	<.001	-.43	<.001	-.44	<.001
Age	-.04	.42	-.04	.39				
Gender	-.02	.76			-.02	.71		
SL								
Euro vs. AC	.01	.92	-.01	.94	.02	.74	.02	.76
Euro vs. Japanese	-.42	<.001	-.44	<.001	-.42	<.001	-.43	<.001
Age	-.05	.33	-.05	.31				
Gender	-.03	.57			-.04	.52		
SC								
Euro vs. AC	-.28	<.001	-.28	<.001	-.26	<.001	-.26	<.001
Euro vs. Japanese	-.55	<.001	-.54	<.001	-.54	<.001	-.53	<.001

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.05	.37	-.05	.38				
Gender	.02	.75			.01	.81		
FD								
Euro vs. AC	-.08	.19	-.09	.16	-.07	.24	-.08	.21
Euro vs. Japanese	-.19	<.01	-.23	<.001	-.19	<.01	-.23	<.001
Age	-.03	.51	-.04	.41				
Gender	-.10	.06			-.11	.05		
FT								
Euro vs. AC	-.06	.38	-.06	.32	-.04	.52	-.04	.48
Euro vs. Japanese	-.54	<.001	-.59	<.001	-.53	<.001	-.58	<.001
Age	-.06	.26	-.07	.20				
Gender	-.12	.04			-.12	.03		
SAQ								
Euro vs. AC	-.19	<.01	-.18	<.01	-.18	<.01	-.18	<.01
Euro vs. Japanese	-.48	<.001	-.45	<.001	-.48	<.001	-.45	<.001
Age	-.02	.68	-.02	.78				
Gender	.08	.14			.08	.16		
FU								
Euro vs. AC	-.13	.04	-.12	.05	-.12	.05	-.12	.05
Euro vs. Japanese	-.50	<.001	-.46	<.001	-.50	<.001	-.46	<.001
Age	-.03	.63	-.02	.73				
Gender	.09	.12			.08	.12		
BNT								
Euro vs. AC	-.01	.94	-.01	.93	-.01	.89	-.01	.89
Euro vs. Japanese	.00	.99	-.00	.97	-.00	.98	-.00	.95

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	.01	.80	-.01	.81				
Gender	-.01	.93			-.00	.94		
AMP								
Euro vs. AC	-.06	.33	-.06	.34	-.08	.21	-.07	.23
Euro vs. Japanese	-.13	.05	-.11	.08	-.13	.04	-.11	.07
Age	.05	.34	-.05	.31				
Gender	.04	.43			.05	.39		
IAT								
Euro vs. AC	-.04	.50	-.04	.57	-.03	.62	-.03	.67
Euro vs. Japanese	-.15	.02	-.10	.11	-.14	.03	-.09	.12
Age	-.04	.41	-.03	.52				
Gender	.12	.03			.12	.04		
SB-IAT								
Euro vs. AC	-.08	.19	-.08	.20	-.08	.20	-.08	.21
Euro vs. Japanese	.00	.95	.02	.76	.01	.93	.02	.74
Age	-.01	.83	-.01	.87				
Gender	.03	.54			.03	.56		
SC-IAT								
Euro vs. AC	.10	.13	.10	.13	.09	.16	.08	.16
Euro vs. Japanese	.05	.45	.04	.52	.04	.50	.03	.57
Age	.04	.44	.04	.46				
Gender	-.03	.64			-.02	.69		
GNAT-SP								
Euro vs. AC	-.07	.29	-.07	.29	-.07	.27	-.07	.26
Euro vs. Japanese	.16	.01	.15	.02	.16	.01	.15	.01

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	.00	.99	-.00	.97				
Gender	-.02	.69			-.02	.69		
GNAT-SU								
Euro vs. AC	-.05	.47	-.05	.44	-.04	.47	-.05	.45
Euro vs. Japanese	.26	<.001	.24	<.001	.26	<.001	.24	<.001
Age	-.01	.90	-.01	.84				
Gender	-.05	.39			-.05	.39		
SEL								
Euro vs. AC	-.06	.32	-.06	.31	-.08	.18	-.08	.18
Euro vs. Japanese	-.63	<.001	-.63	<.001	-.64	<.001	-.64	<.001
Age	.07	.18	.07	.18				
Gender	.01	.93			.01	.84		
APT								
Euro vs. AC	.12	.06	.12	.05	.08	.17	.09	.14
Euro vs. Japanese	-.03	.67	.03	.58	-.04	.51	.02	.73
Age	.11	.03	.13	.02				
Gender	.14	.01			.15	<.01		
AST								
Euro vs. AC	.01	.89	.00	.94	-.01	.86	-.01	.83
Euro vs. Japanese	.13	.04	.10	.11	.13	.06	.09	.13
Age	.07	.18	.06	.23				
Gender	-.08	.14			-.08	.17		
PBI-MC								
Euro vs. AC	-.17	<.01	-.17	<.01	-.11	.07	-.11	.06
Euro vs. Japanese	-.17	.01	-.17	<.01	-.14	.03	-.15	.02

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.19	<.001	-.19	<.001				
Gender	-.01	.86			-.03	.63		
PBI-FC								
Euro vs. AC	-.04	.55	-.05	.49	.00	.94	.00	.99
Euro vs. Japanese	-.02	.76	-.08	.21	.00	.97	-.06	.33
Age	-.15	<.01	-.16	<.01				
Gender	-.13	.02			-.15	<.01		
PBI-MO								
Euro vs. AC	.16	<.01	.16	.01	.14	.02	.14	.02
Euro vs. Japanese	-.05	.48	-.02	.72	-.06	.40	-.03	.63
Age	.07	.18	.08	.15				
Gender	.05	.33			.06	.26		
PBI-FO								
Euro vs. AC	.18	<.01	.18	<.01	.18	<.01	.17	<.01
Euro vs. Japanese	-.02	.78	-.03	.61	-.02	.74	-.03	.58
Age	.03	.63	.02	.66				
Gender	-.03	.57			-.03	.60		
PA								
Euro vs. AC	-.36	<.001	-.36	<.001	-.34	<.001	-.33	<.001
Euro vs. Japanese	-.44	<.001	-.42	<.001	-.43	<.001	-.41	<.001
Age	-.08	.13	-.08	.15				
Gender	.04	.45			.04	.53		
NA								
Euro vs. AC	.00	.99	-.00	.99	.02	.73	.02	.74
Euro vs. Japanese	.24	<.001	.23	<.001	.25	<.001	.24	<.001

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.08	.14	-.08	.13				
Gender	-.01	.86			-.02	.76		
PRIDE-A								
Euro vs. AC	-.18	<.01	-.17	<.01	-.15	.01	-.15	.04
Euro vs. Japanese	-.20	<.01	-.17	<.01	-.19	<.01	-.16	<.01
Age	-.09	.09	-.08	.11				
Gender	.07	.21			.06	.27		
PRIDE-H								
Euro vs. AC	.05	.41	.06	.35	.08	.18	.09	.15
Euro vs. Japanese	.16	<.01	.21	<.001	.18	<.01	.22	<.001
Age	-.11	.03	-.11	.05				
Gender	.12	.04			.11	.06		
NAR								
Euro vs. AC	-.10	.09	-.10	.12	-.10	.11	-.09	.13
Euro vs. Japanese	-.34	<.001	-.27	<.001	-.33	<.001	-.27	<.001
Age	-.02	.70	-.01	.88				
Gender	.14	.01			.14	.01		
FR-RSES								
Euro vs. AC	-.15	.07	-.14	.08	-.14	.09	-.13	.09
Euro vs. Japanese	-.39	<.001	-.36	<.001	-.38	<.001	-.36	<.001
Age	.04	.58	-.03	.63				
Gender	.07	.36			.06	.39		
FR-SC								
Euro vs. AC	-.34	<.001	-.33	<.001	-.34	<.001	-.33	<.001
Euro vs. Japanese	-.54	<.001	-.48	<.001	-.54	<.001	-.48	<.001

Effect	*β*	*p*	*β*	*p*	*β*	*p*	*β*	*p*
Age	-.00	.96	.01	.90				
Gender	.14	.06			.14	.06		
FR-SL								
Euro vs. AC	-.07	.40	-.06	.42	-.05	.55	-.04	.57
Euro vs. Japanese	-.55	<.001	-.53	<.001	-.54	<.001	-.52	<.001
Age	-.08	.27	-.07	.28				
Gender	.05	.48			.04	.53		

Note: Euro = Euro-Canadian; AC = Asian-Canadian. The reader is encouraged to print Appendix D for a list of abbreviations.

Appendix G: Supplemental Analyses for Study 4

The below is the results section of Study 4 written using the statistics and language typically presented under the ANOVA framework. Note that inferences are exactly the same as that reported in Chapter 4. Since cultural differences were observed in age, $t(131) = 1.98$, $p = .05$, but not gender, $\chi^2(1) = .02$, $p = .89$, following the below section are results including age as a covariate (Table 31). Note that the predicted three-way Writing Task x Culture x Role interaction is still significant even if age is included as a covariate.

Endowment effect across conditions and cultures.

A 2 (Writing Task: object-association vs. no object-association) x 2 (Role: buyer vs. seller) x 2 (Culture: European-Canadian vs. Japanese) between-subjects ANOVA revealed a significant overall endowment effect: Owners' average selling price (M = C$4.39, SD = 2.63) was higher than buyers' average purchase price (M = C$3.22, SD = 2.58), $F(1,125) = 8.08$, $p < .01$, $\eta^2_p = .061$.

However, this effect was qualified by the predicted three-way, Writing Task x Culture x Role interaction, $F(1,125) = 8.25$, $p < .01$, $\eta^2_p = .062$. We then decomposed this interaction to test our specific prediction that the cultural difference would emerge in the object-association condition, but not in the no-object-association condition. As predicted, the Culture x Role interaction was significant in the object-association condition, $F(1,125) = 13.56$, $p < .001$, $\eta^2_p = .098$ (see Figure 14). When the self-object associations were made salient, Euro-Canadians showed a significant endowment effect {M_{buyer} = C$2.57, SD = 2.08; M_{seller} = C$5.73, SD = 2.88; $F(1,125) = 16.31$, $p < .001$, $\eta^2_p = .115$} whereas Japanese showed a non-significant but distinct tendency toward a reverse endowment effect {M_{buyer} = C$6.09, SD = 3.06; M_{seller} = C$4.94, SD = 2.44; $F(1,125) = 1.73$, $p = .19$, $\eta^2_p = .014$}. In the no-object-association condition, the Culture x Role interaction was non-significant, $F(1,125) = .80$, $p = .70$, $\eta^2_p = .001$, with Japanese showing a

marginally significant endowment effect{M_{buyer} = C$2.56, SD = 1.27; M_{seller} = C$4.13, *SD* = 2.68; $F(1,125) = 3.03$, $p = .08$, $\eta^2_p = .115$} and Euro-Canadians showing a non-significant effect{M_{buyer} = C$2.21, SD = 1.85; M_{seller} = C$3.33, *SD* = 2.20; $F(1,125) = 2.24$, $p = .14$, $\eta^2_p = .018$; see Figure 13}.

Within-culture comparisons further elucidated this pattern. Euro-Canadians had a marginally larger endowment effect in the object-association condition than in the no-object-association condition, $F(1,125) = 3.56$, $p = .06$, $\eta^2_p = .028$. In contrast, the endowment effect for Japanese was significantly larger in the no-object-association condition than in the object-association condition, $F(1,125) = 4.69$, $p = .03$, $\eta^2_p = .036$.

Table 31. Endowment effect results in Study 4 controlling for age.

Effect	*β (se)*	*β (se)*
Culture	-.11 (.33)	-.30 (.32)
Role	-1.08 (.29)***	-1.19 (.29)***
Writing Task	-.76 (.30)*	-.90 (.29)**
Culture x Role	1.41 (.44)**	1.62 (.44)***
Culture x Writing Task	.36 (.45)	.60 (.44)
Role x Writing Task	.67 (.43)	.77 (.41)†
Culture x Role x Writing Task	**-1.54 (.63)***	**-1.79 (.62)******
Age	.33 (.14)*	
Age x Role	-.48 (.24)*	
Age x Writing Task	-.40 (.18)*	
Age x Role x Writing Task	.66 (.45)	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Culture was coded as Euro-Canadian = 0, Japanese = 1, Role as Seller = 0, Buyer = 1, and Writing Task as Object Association = 0, No Object Association = 1. All coefficients reported here are standardized regression coefficients.

Appendix H: Supplemental Analyses for Study 5

Here we report results for Study 5 with and without inclusion of possible covariates that differed across cultures: SES (standardized), gender (female = -.5, male = .5), educational level (recoded as a 5-point scale with greater values indicating more education and standardized), choice of picture (Blue = -.5, Green = .5), tendency to view the teams as in competition (not in competition = -.5, in competition = .5). Results for in-group bias in identification (standardized) appear in Table 32, group intelligence (standardized) in Table 33, resource allocation in Table 34, and personality traits in Table 35 with Group coded with out-group as the reference category (i.e., Out-group = 0; In-group = 1). Parallel results also including self-esteem as a predictor (also standardized) appear in Tables 36 through 39. After group-mean centering was employed for trait desirability ratings, all variables were then standardized across all participants for the results of the multilevel models in Tables 35 and 39. Note that in all analyses culture was coded as a dummy variable with Japanese as the reference group (i.e., Japanese = 0; American = 1). This coding scheme is intended to facilitate comparisons across predictors and allow the results for identification and intelligence to be interpretable as standardized regression coefficients. Thus, coefficients may differ from the unstandardized results reported in the main text, but inferences will remain the same.

Table 32. In-group bias in identification with and without covariates in Study 5.

Effect	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*
Culture	**.53 (.07)*** **	**.54 (.07)*** **	**.52 (.07)*** **	**.54 (.07)*** **	**.53 (.07)*** **	**.52 (.07)*** **	**.53 (.07)*** **
SES	.03 (.03)	.06 (.03)†					
Gender	-.02 (.06)		-.02 (.06)				
Education	-.08 (.03)*			-.08 (.03)**			
Picture Choice	.02 (.07)				.01 (.07)		
Competition	.20 (.06)**					.20 (.06)**	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effect of culture is in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 33. In-group bias in intelligence ratings with and without covariates in Study 5.

Effect	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*
Culture	**.43 (.07)*** **	**.46 (.07)*** **	**.47 (.07)*** **	**.47 (.07)*** **	**.44 (.07)*** **	**.46 (.07)*** **	**.47 (.07)*** **
SES	-.06 (.03)†	-.04 (.03)					
Gender	.04 (.07)		.03 (.07)				
Education	-.06 (.03)†			-.03 (.03)			
Picture Choice	-.23 (.07)***				-.23 (.07)***		
Competition	.15 (.07)*					.14 (.07)*	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effect of culture is in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 34. In-group bias in resource allocation with and without covariates in Study 5.

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Culture	**1.35 (.15)*** **	**1.42 (.15)*** **	**1.43 (.15)*** **	**1.42 (.15)*** **	**1.37 (.15)*** **	**1.42 (.15)*** **	**1.43 (.15)*** **
SES	-.10 (.07)	-.09 (.07)					
Gender	.04 (.14)		.03 (.13)				
Education	-.02 (.07)			.02 (.07)			
Picture Choice	-.52 (.14)***				-.52 (.14)***		
Competition	.44 (.14)**					.46 (.14)***	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effect of culture is in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 35. In-group bias in personality trait ratings with and without covariates in Study 5.

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Intercept							
Intercept, β_{00}	-.30 (.03)***	-.30 (.03)***	-.30 (.03)***	-.30 (.03)***	-.30 (.03)***	-.30 (.03)***	-.30 (.03)***
Culture, β_{01}	42 (.04)***	.41 (.04)***	.42 (.04)***	.41 (.04)***	.41 (.04)***	.42 (.04)***	.41 (.04)***
DesireMean, β_{02}	.05 (.02)*	.05 (.02)**	.05 (.02)**	.05 (.02)**	.05 (.02)**	.05 (.02)**	.05 (.02)**
SES	-.01 (.02)	.01 (.02)					
Gender	.04 (.04)		.04 (.04)				
Education	-.00 (.02)			-.00 (.02)			
Picture Choice	-.02 (.04)				-.02 (.04)		
Competition	-.02 (.04)					-.03 (.04)	
Desire Slope							
Intercept, β_{10}	.16 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***
Culture, β_{11}	.07 (.04)†	.06 (.03)*	.06 (.04)	.07 (.04)†	.07 (.04)†	.08 (.04)†	.07 (.04)†
DesireMean, β_{12}	.04 (.02)†	.05 (.02)*	.04 (.02)*	.04 (.02)*	.04 (.02)*	.04 (.02)†	.05 (.02)*
SES	-.02 (.02)	-.01 (.02)					

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Gender	-.10 (.03)**		-.11 (.03)**				
Education	-.01 (.02)			-.01 (.02)			
Picture Choice	-.02 (.04)				-.02 (.04)		
Competition	-.02 (.03)					-.02 (.03)	
Group							
Intercept, β_{20}	.02 (.02)	.02 (.02)	.02 (.02)	.01 (.02)	.02 (.02)	.02 (.02)	.02 (.02)
Culture, β_{21}	.07 (.03)*	.06 (.03)*	.06 (.03)*	.07 (.03)*	.07 (.02)**	.06 (.03)*	.06 (.03)*
DesireMean, β_{32}	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)
SES	-.03 (.01)**	-.02 (.01)					
Gender	-.00 (.03)		.00 (.03)				
Education	-.03 (.01)*			-.03 (.01)*			
Picture Choice	.08 (.02)**				.07 (.03)**		
Competition	.04 (.03)					.03 (.03)	
Group X Desire							
Intercept, β_{30}	.07 (.03)**	.07 (.03)**	.08 (.03)**	.07 (.03)**	.07 (.03)**	.07 (.03)*	.07 (.03)**
Culture, β_{31}	**.20 (.03)*** **	**.20 (.03)*** **	**.20 (.03)*** **	**.20 (.03)*** **	**.20 (.03)*** **	**.19 (.03)*** **	**.20 (.03)*** **

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
DesireMean, β_{32}	.00 (.02)	-.01 (.02)	-.01 (.02)	-.00 (.02)	-.01 (.02)	-.00 (.02)	-.01 (.02)
SES	-.01 (.01)	.02 (.01)					
Gender	.09 (.03)***		.09 (.03)***				
Education	-.07 (.01)***			-.06 (.01)***			
Picture Choice	.02 (.03)				.01 (.03)		
Competition	.11 (.03)***					.10 (.03)***	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effect of culture on moderating in-group bias in trait ratings is in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 36. In-group bias in identification including self-esteem and with and without covariates in Study 5.

Effect	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*
Culture	**.40 (.07)*** **	**.40 (.07)*** **	**.41 (.07)*** **	**.42 (.07)*** **	**.42 (.07)*** **	**.41 (.07)*** **	**.42 (.07)*** **
Self-Esteem	**.14 (.04)*** **	**.15 (.04)*** **	**.12 (.04)*** **	**.13 (.04)*** **	**.12 (.04)*** **	**.12 (.04)*** **	**.12 (.04)*** **
SES	.06 (.03)†	.09 (.03)**					
Gender	-.03 (.06)		-.03 (.06)				
Education	-.07 (.03)*			-.09 (.03)**			
Picture Choice	.01 (.07)				-.00 (.07)		
Competition	.20 (.06)**					.20 (.06)**	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effects of culture and self-esteem are in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 37. In-group bias in intelligence ratings including self-esteem and with and without covariates in Study 5.

Effect	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*	*β (se)*
Culture	**.36 (.08)*** **	**.40 (.08)*** **	**.40 (.08)*** **	**.40 (.08)*** **	**.36 (.08)*** **	**.40 (.08)*** **	**.40 (.07)*** **
Self-Esteem	**.07 (.04)†**	**.07 (.04)***	**.08 (.04)***	**.08 (.04)***	**.08 (.04)***	**.08 (.04)***	**.08 (.04)***
SES	-.04 (.04)	-.02 (.03)					
Gender	.03 (.07)		.03 (.07)				
Education	-.05 (.03)			-.04 (.03)			
Picture Choice	-.24 (.07)***				-.24 (.07)***		
Competition	.15 (.07)*					.14 (.07)*	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effects of culture and self-esteem are in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 38. In-group bias in resource allocation including self-esteem and with and without covariates in Study 5.

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Culture	**1.25 (.17)*** **	**1.31 (.16)*** **	**1.32 (.16)*** **	**1.31 (.16)*** **	**1.24 (.16)*** **	**1.31 (.16)*** **	**1.31 (.16)*** **
Self-Esteem	**.12 (.08)**	**.12 (.08)**	**.13 (.07)†**	**.13 (.07)†**	**.15 (.07)***	**.13 (.07)†**	**.14 (.07)†**
SES	-.07 (.07)	-.06 (.07)					
Gender	.03 (.14)		.03 (.13)				
Education	-.01 (.07)			.02 (.07)			
Picture Choice	-.53 (.14)***				-.53 (.14)***		
Competition	.44 (.14)***					.46 (.14)***	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effects of culture and self-esteem are in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.

Table 39. In-group bias in personality trait ratings including self-esteem and with and without covariates in Study 5.

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Intercept							
Intercept, β_{00}	-.29 (.04)***	-.29 (.04)***	-.29 (.04)***	-.29 (.04)***	-.29 (.04)***	-.29 (.04)***	-.29 (.04)***
Culture, β_{01}	.41 (.05)***	.40 (.05)***	.41 (.05)***	.41 (.05)***	.40 (.05)***	.41 (.05)***	.41 (.05)***
DesireMean, β_{02}	.05 (.02)*	.05 (.02)**	.05 (.02)**	.05 (.02)*	.05 (.02)**	.05 (.02)*	.05 (.02)**
Self-Esteem	.02 (.02)	.01 (.02)	.01 (.02)	.01 (.02)	.01 (.02)	.01 (.02)	.01 (.02)
SES	.02 (.02)	.01 (.02)					
Gender	.04 (.04)		.04 (.04)				
Education	-.00 (.02)			-.00 (.02)			
Picture Choice	-.02 (.04)				-.02 (.04)		
Competition	-.02 (.04)					-.03 (.04)	
Desire Slope							
Intercept, β_{10}	.16 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***	.17 (.03)***
Culture, β_{11}	.07 (.04)	.07 (.04)†	.06 (.04)	.07 (.04)†	.07 (.04)	.08 (.04)†	.07 (.04)†
DesireMean, β_{12}	.04 (.02)†	.05 (.02)*	.04 (.02)*	.04 (.02)*	.05 (.02)*	.04 (.02)†	.05 (.02)*

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Self-Esteem	-.00 (.02)	-.00 (.02)	.00 (.02)	.00 (.02)	.00 (.02)	-.00 (.02)	.00 (.02)
SES	-.02 (.02)	-.01 (.02)					
Gender	-.10 (.03)**		-.11 (.03)**				
Education	-.01 (.02)			-.01 (.02)			
Picture Choice	-.02 (.04)				-.01 (.04)		
Competition	-.02 (.03)					-.02 (.03)	
Group							
Intercept, β_{20}	.03 (.02)	.03 (.02)	.03 (.02)	.03 (.02)	.04 (.02)	.03 (.02)	.04 (.02)
Culture, β_{21}	.05 (.03)	.03 (.03)	.04 (.03)	.04 (.03)	.05 (.03)	.03 (.03)	.04 (.03)
DesireMean, β_{32}	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)	.00 (.01)
Self-Esteem	.02 (.01)	.03 (.01)*	.03 (.01)*	.03 (.01)*	.03 (.01)*	.03 (.01)*	.03 (.01)*
SES	-.03 (.01)*	-.01 (.01)					
Gender	-.00 (.03)		-.00 (.03)				
Education	-.03 (.01)*			-.03 (.01)*			
Picture Choice	.07 (.03)**				.01 (.04)		
Competition	.04 (.03)					.03 (.03)	

Effect	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*	*b (se)*
Group X Desire							
Intercept, β_{30}	.10 (.03)***	.10 (.03)***	.10 (.03)***	.10 (.03)***	.10 (.03)***	.09 (.03)***	.10 (.03)***
Culture, β_{31}	**.16 (.03)*** **	**.15 (.03)*** **	**.16 (.03)*** **	**.15 (.03)*** **	**.15 (.03)*** **	**.15 (.03)*** **	**.16 (.03)*** **
DesireMean, β_{32}	-.00 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.00 (.02)	-.01 (.02)
Self-Esteem	**.04 (.01)** **	**.06 (.01)*** **	**.04 (.01)** **	**.05 (.01)*** **	**.05 (.01)*** **	**.04 (.01)*** **	**.05 (.01)*** **
SES	.00 (.01)	.03 (.01)*					
Gender	.09 (.03)***		.09 (.03)***				
Education	-.07 (.01)***			.06 (.01)***			
Picture Choice	.02 (.03)				.01 (.02)		
Competition	.11 (.03)***					.09 (.03)***	

Note: †$p \leq .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. Effect of culture and self-esteem on moderating in-group bias in trait ratings are in bold. For the coding scheme and scaling of the variables in these analyses, see the introductory paragraph of Appendix H.