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## Uncertainty Orientation and Emotional Responses to Everyday Life Within and Across Cultures

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# UNCERTAINTY ORIENTATION AND EMOTIONAL RESPONSES TO EVERYDAY LIFE WITHIN AND ACROSS CULTURES

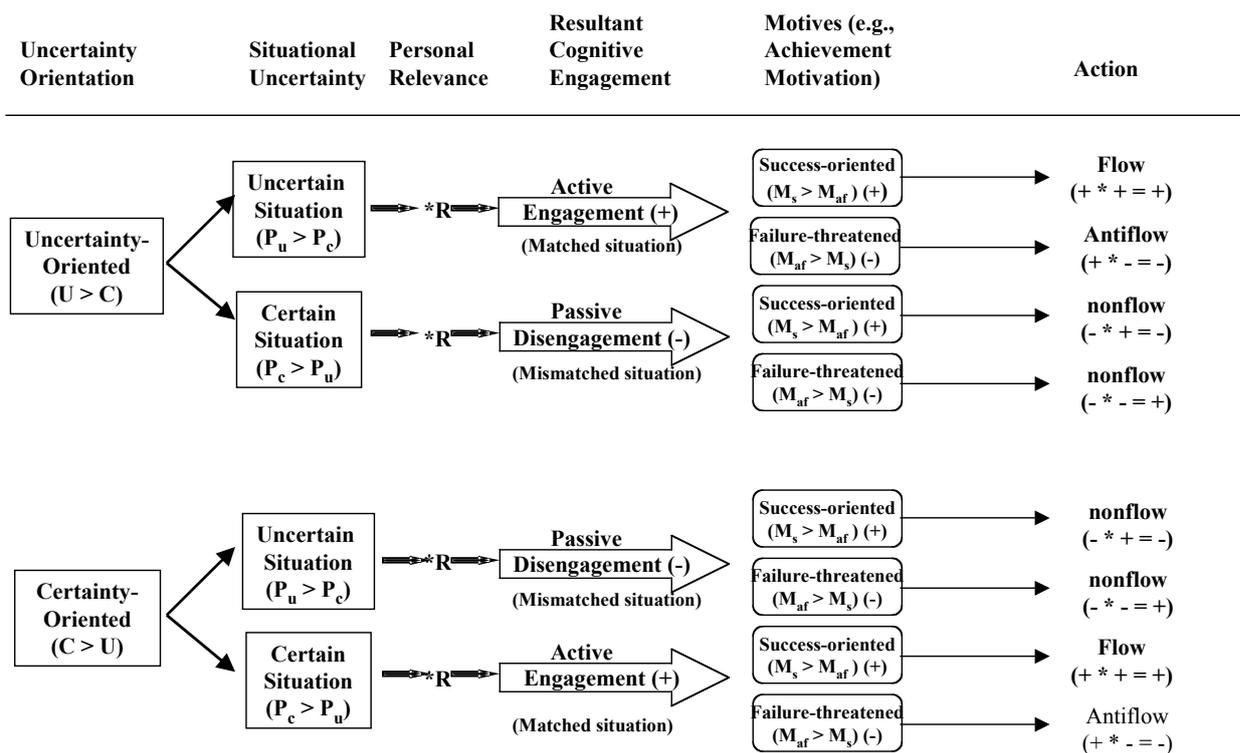
**Richard M. Sorrentino, Yasunao Otsubo, Satoru Yasunaga,  
Sadafusa Kouhara, Andrew Szeto & John Nezlek**

## INTRODUCTION

In this paper, we present a model of how individuals react emotionally to everyday life events as a combined function of their uncertainty orientation and the culture within which they reside. We then present results from three studies that support this model and/or offer some ideas about how cultures differ as a function of ecological differences in uncertainty orientation. The research presented here stems from the theory of uncertainty orientation (Sorrentino, Smithson, Hodson, Roney, & Walker, 2003; Sorrentino & Roney, 2000). This is a formal theory of self-regulation which asserts that people differ in important ways in terms of how they handle uncertainty. At opposite ends of a continuum are those considered uncertainty-oriented (UOs) or certainty-oriented (COs). For UOs, the preferred method of handling uncertainty is to seek out information and engage in activity that will directly resolve the uncertainty. These are the “need to know” type of people who try to understand and discover aspects of the self and the environment about which they are uncertain. COs, on the other hand, develop a self-regulatory style that circumvents uncertainty. Given the choice, COs will undertake activities that maintain clarity; when confronted with uncertainty, they will rely on others or heuristic devices instead of on more direct methods of resolving uncertainty.

Figure 1 illustrates how the formal model works in combination with the uncertainty orientation of the individual, the uncertainty and the personal relevance of the situation, and relevant approach and avoidance motives (in this illustration we have achievement-related motives) that are aroused in such situations. The formal model of uncertainty orientation states that when situations are uncertain, UOs experience active engagement. Here they will increase their systematic processing of information and decrease their use of heuristic information processing, compared to situations that are more certain. In contrast, when the situation can be characterized by certainty, UOs will be passively engaged in the situation and will rely on heuristics or other nonsystematic means of processing information. COs are just the opposite. That is, they actively engage in situations of certainty, increasing their systematic processing here, and passively engage in situations of uncertainty, increasing their heuristic processing here. These different processing styles are accentuated as situations become more personally relevant (e.g., Sorrentino, Bobocel, Gitta, Olson, & Hewitt, 1988).

Although uncertainty orientation is primarily concerned with the informational aspects of uncertainty or certainty, uncertainty orientation also interacts with the uncertainty of the situation and relevant affective variables, such as achievement-related motives, to predict differences in behavior. For example, as shown in Figure 1, success-oriented persons, that is those who are motivated by anticipating pride in accomplishment, are more actively engaged in and have more flow experiences (e.g., Csikszentmihalyi, 1975, see below) in situations that match their uncertainty orientation than in situations that do not match their orientation. Although failure-threatened persons, that is, those who are negatively motivated by anticipating shame over failure, are also actively engaged, they are most likely to have what we call antiflow experiences in situations that match their uncertainty orientation than in situations that do not (e.g., Roney & Sorrentino, 1995; Sorrentino, Short, & Raynor, 1984). When the situation does not match one's uncertainty orientation, disengagement leads to a state of nonflow, in which success-oriented people experience passive negative emotions such as boredom, and failure-threatened people experience passive positive emotions such as relief. Finally, although Figure 1 illustrates the interaction of uncertainty orientation with achievement-related motives, other affectively-based motives (e.g., affiliation, fear of rejection, power, fear of weakness) may also interact with uncertainty orientation.



**Figure 1**  
**A Multiplicative Model of Thought, Action, and Emotion**  
 (Adapted from Sorrentino et al., 2002)

In the research that follows, we present data showing what happens to people whose individual uncertainty orientation matches or does not match the uncertainty

orientation of their cultures. First we establish the groundwork supporting the notion that Canada is more likely to be a UO-centric society, whereas Japan is more likely to be CO-centric. We then present evidence that people react to everyday life in an active or passive emotional manner as specified by the theory. Finally, we present evidence from two studies showing what happens to matched and mismatched individuals in terms of self-esteem and defensive self-enhancement attempts.

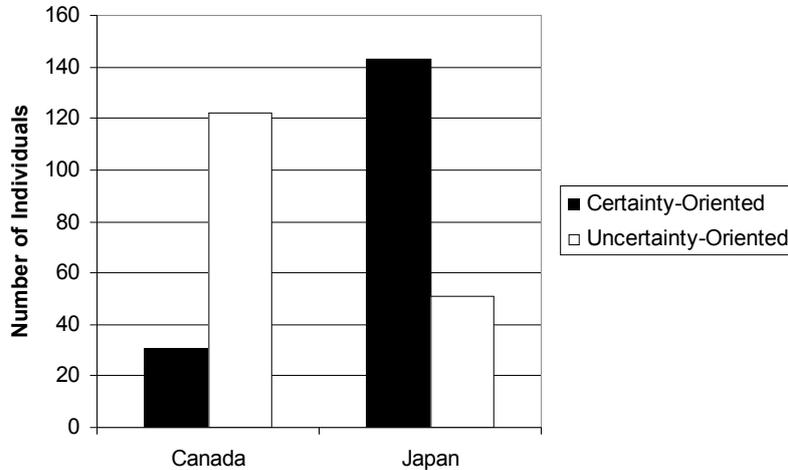
## UNCERTAINTY ORIENTATION ACROSS CULTURES

In a study by Shuper, Sorrentino, Otsubo, Hodson, and Walker (2004), one of the questions addressed was whether students from Western cultures are more uncertainty-oriented than students from Eastern cultures. To the extent that Eastern Cultures tend to be more group-based or self-interdependent than self-independent (Markus & Kitayama, 1991), and if they prefer certainty more than people in Western Cultures (Hofstede, 1980), then research on uncertainty orientation would strongly imply that Eastern cultures are more likely to be “CO-centric”, or predominantly certainty-oriented, whereas Western cultures should be “UO-centric”, or predominantly uncertainty-oriented. As summarized in Sorrentino and Roney (2000), research has shown a general tendency for UOs to prefer uncertainty and COs to prefer certainty, and for UOs to be predominantly individualistic or self-oriented whereas COs appear to be predominantly group-oriented.

Participants in the Shuper et al. (2004) study numbered 535 men and women. The Canadian participants consisted of 210 undergraduate psychology students from the University of Western Ontario who participated as part of a course requirement. The Japanese participants consisted of 325 undergraduate students, 115 from Fukuoka University of Education, 138 from Kurume University, and 72 from Yamaguchi Prefectural University who participated at the request of their instructors. One of the measures in the study was the resultant uncertainty measure (Sorrentino, Hanna, and Roney, 1992). This measure consists of two independent components, nUncertainty and Authoritarianism. nUncertainty (Sorrentino, Roney, & Hanna, 1992) measures an individual's need to resolve uncertainty within the self and the environment, whereas authoritarianism (Cherry & Byrne, 1972) assesses the individual's desire to maintain clarity. Uncertainty is a projective measure and stories were scored by expert scorers from their respective countries.

Participants' scores on the authoritarian measure were transformed to z-scores and subtracted from nUncertainty z-scores to produce the resultant measure of uncertainty orientation. In addition to examining the resultant uncertainty scores, a tertile split then divided the sample into an uncertainty-oriented group (those scoring in the highest third on the resultant measure, or UOs), a certainty-oriented group (those scoring in the lowest third, or COs), and moderates (those scoring in the middle third). Using individuals' resultant uncertainty scores, Canadian participants were found to be significantly more uncertainty oriented ( $M = 1.01$ ) than Japanese participants ( $M = -0.64$ ),  $p < .001$ , as predicted. This finding was further supported through a chi-square analysis comparing the number of COs and UOs found in each country's sample. As can be seen in Figure 2, when the resultant uncertainty orientation scores were formed from the combined sample, the Japanese students consisted of more COs ( $n = 143$ ) than UOs ( $n = 51$ ), whereas the Canadian students consisted of more UOs ( $n = 122$ ) than COs ( $n = 33$ ),  $\chi^2 = 97.75$ ,  $p < .001$ . This finding was also replicated

by Szeto, Sorrentino, Yasunaga, Otsubo, Kouhara, Sasayama, and McGregor (2006) and by Sorrentino, Nezlek, Yasunaga, Otsubo, Kouhara, and Shuper (2006).



**Figure 2**  
**Frequency of Uncertainty- and Certainty-Oriented Persons in Combined Japanese and Canadian Sample (Adapted from Shuper et al., 2004)**

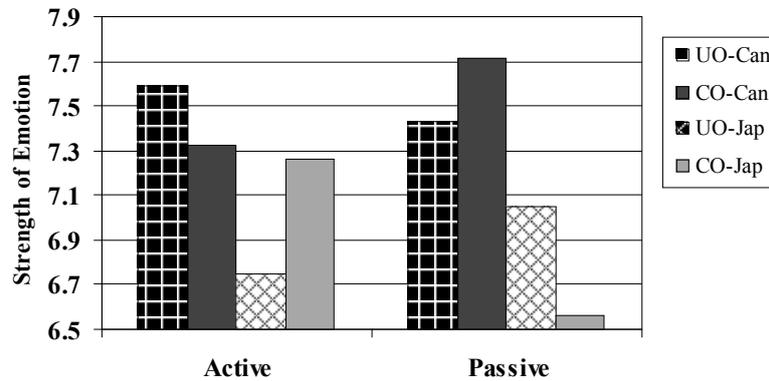
Although these data lend support to this hypothesis, one may wonder whether UOs and COs in the two different countries operate in a similar manner. That is, are UOs in Japan similar to UOs in Canada, and are COs similar to each other in the two countries? Support for the notion that they are similar comes from two studies in Japan that are based on two studies in Canada. In the first study in Japan, Yasunaga and Kouhara (1995) found that whereas UOs preferred to find out new information about the self, that is choose items from a test that would resolve uncertainty about a new and important ability, COs preferred nondiagnostic items, that is items that would tell them nothing new about the self. This is a partial replication of a study by Sorrentino & Hewitt (1984) that found similar results for Canadian UOs and COs. In a second study by Yasunaga and Kouhara (2005), when faced with a life-threatening disease versus one which is not life-threatening, UOs were more likely to undertake activity when they could resolve uncertainty about the life-threatening disease. COs, however, were more likely to undertake the activity when there was no uncertainty. This study is a conceptual replication of one by Brouwers and Sorrentino (1992) which found similar results among Canadian students.

### **PASSIVE VERSUS ACTIVE AFFECTIVE REACTIONS TO EVERYDAY LIFE SITUATIONS**

The study by Sorrentino et al. (2006) is a direct test of the predictions about affective responses to matched and mismatched situations articulated by Sorrentino and Roney (2000) and Sorrentino et al. (2003) in their formal theory of uncertainty orientation. Returning to Figure 1, it can be seen that in situations in which personal and situational/cultural uncertainty orientation match, positively motivated people (e.g.,

success-oriented persons) are predicted to be in flow and negatively motivated people to be in anti-flow. In situations that do not match their uncertainty orientation, people will react more passively and be in a state of nonflow. Adapting Csikszentmihalyi's (1975) notion of flow to the current model, flow is feeling good about the self while concentrating on the activity at hand. According to Sorrentino, et al. (2003, p. 1), "it occurs when the person engages in a situation that has positive information value (attaining or maintaining clarity for uncertainty-oriented vs. certainty-oriented persons, respectively) and the person is positively motivated to undertake the activity; in other words, when positive information value and positive motivation are matched." The opposite of flow, according to these authors, is what they call "anti-flow." Here there is still a match between positive information value and motivation, but the motivation is negative. The person in this state feels badly about the self while acting in or attempting to avoid a situation that he or she fears. Finally, people in mismatched situations, that is, where their uncertainty orientation does not match that of the situation, do not experience flow or anti-flow experiences as they do not involve the self-system. In the present study, the model shown in Figure 1 is expanded to incorporate differences in emotional experience (primarily active versus passive emotional responses), as a function of uncertainty orientation and country of origin. It was hypothesized that whereas UOs in Canada will have more active and less passive emotional experiences than COs in Canada, COs in Japan will have more active and less passive emotional experiences than UOs in Japan. Here we present some of the data from the larger study done in Canada and Japan (Sorrentino et al., 2006). Specifically, we discuss analyses of relationships between uncertainty orientation and dispositional mood. Our measure of mood was based on a two-dimensional circumplex such as Russell (1980), which distinguished active and passive emotions, as well as positive and negative emotions (e.g., *happy* = active, positive; *relaxed* = passive, positive; *nervous* = active, negative; *sad* = passive, negative). For each of 20 moods, participants were asked to indicate "how much you usually feel this way," using a 7-point scale (1 = *not at all*, 7 = *very much*). Participants were 105 students from the University of Western Ontario in Canada, and 115 students from Kurume University and Yamaguchi Prefectural University in Japan. In addition to the measures of uncertainty orientation used in the previous study, we also measured achievement-related motives (e.g., Sorrentino, Short, & Raynor, 1984; and using a measure devised by Atkinson & Feather, 1966). Because of the limited sample size, it was not possible to use these as anything other than covariates in the present study. Nevertheless, by controlling for achievement-related motives which should be related to positive and negative affect, we were able to test our primary prediction related to active and passive emotions.

A 2 (Uncertainty Orientation)  $\times$  2 (Country)  $\times$  2 (Sex)  $\times$  2 (Emotions) analysis of variance with repeated measures on the last factor and with achievement-related motives as a covariate produced a significant Uncertainty Orientation  $\times$  Country  $\times$  Emotions interaction,  $p < .026$ . Figure 3 illustrates that the pattern of interaction is as predicted, Canadian UOs reported more active and fewer passive emotions than Canadian COs; Japanese COs reported more active and fewer passive emotions than did Japanese UOs. The fact that this study was able to yield the predicted pattern of emotional responses reported by university students in two countries as a function of whether their personality matches their environment is most encouraging.



**Figure 3**

**Active vs. Passive Emotion as a function of Country and Uncertainty Orientation (UO = uncertainty-oriented, CO = certainty-oriented, Can = Canada, Jap =Japan)**  
**(Adapted from Sorrentino et al., 2006)**

Unexpectedly, we also found a significant uncertainty orientation $\times$ country $\times$ positive vs. negative emotions interaction,  $F(1, 107) = 4.473, p < .037$ . The pattern of interaction here is similar to the one shown in Figure 2, but for positive versus negative emotions. Canadian UOs reported more positive emotions than Canadian COs, but Japanese UOs had fewer positive emotions than Japanese COs. Conversely, Canadian UOs reported fewer negative emotions than Canadian COs, but Japanese UOs had more negative emotions than did Japanese COs. Apparently, then, people mismatched with their culture not only experience more passive emotions, but with greater negativity as well.

## **DEFENSIVE REACTIONS AS A FUNCTION OF UNCERTAINTY ORIENTATION AND CULTURE**

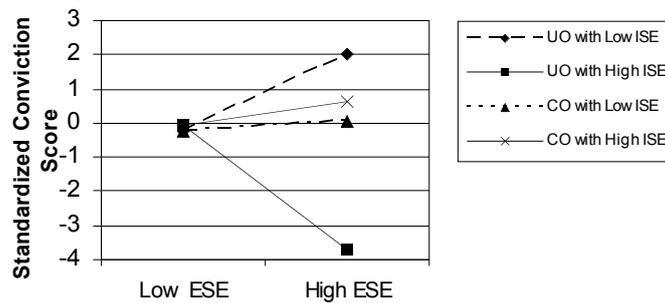
In this remaining section, we summarize what we consider to be defensive reactions by participants in the Shuper et al. (2004) study and in a recent study by Szeto et al. (2006). The theme of this research is that because people are mismatched with regard to their culture's preferred way of coping with uncertainty (i.e., COs in Canada, UOs in Japan), they may have greater defensiveness and self-enhancement tendencies than people in matched situations (i.e., UOs in Canada, COs in Japan). The Shuper et al. study was exploratory, and it examined measures thought to be important cross-cultural differences. These were unrealistic optimism, uncertainty avoidance, and individualism. Unrealistic optimism is the tendency to see one's self as more likely to have positive events and less likely to have negative events happen to him or her than to similar others (Heine & Lehman, 1995; Weinstein, 1980). Uncertainty avoidance and individualism are Hofstede's (1980) measures used at the ecological level and self-defined. Here, however, Shuper et al. interpreted their meaning at the individual level as anticipation of anxiety and freedom in the workplace, respectively. As can be seen in Table 1, whereas the COs in Canada had higher levels of unrealistic optimism, uncertainty avoidance and

lower levels of individualism than UOs in Canada, it is the UOs in Japan who show this pattern as compared to COs.

**Table 1**  
**Mean Uncertainty Orientation × Country Interaction (all *p* < .05) Scores on**  
**Measures of Unrealistic Optimism, Uncertainty Avoidance, Individualism, and**  
**Compensatory Conviction (UO = Uncertainty-Oriented, CO = Certainty-Oriented)**  
**(See Shuper et al., 2004)**

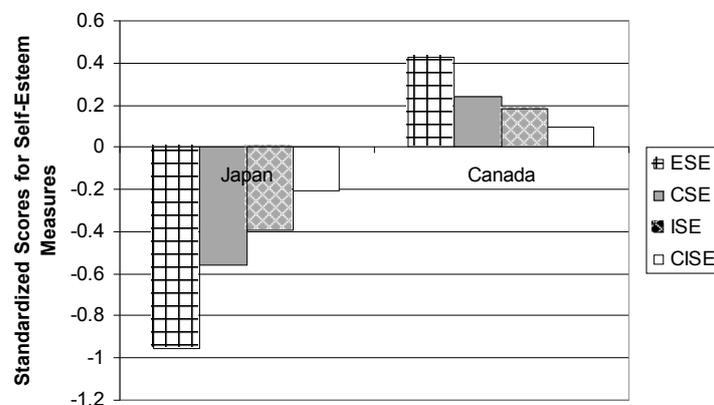
	Japan		Canada	
	UOs	COs	UOs	COs
Unrealistic Optimism	0.84	0.36	0.91	1.46
Uncertainty Avoidance	9.86	9.40	8.71	9.29
Individualism–Collectivism	-0.01	0.25	0.20	-0.41

The Szeto et al. study was a direct result of the above study and made a priori predictions regarding compensatory conviction (McGregor, 2003; McGregor, Zanna, Holmes, & Spencer, 2001). Participants in the Canadian sample were 195 undergraduates from the University of Western Ontario. Japanese participants were 90 undergraduates from Kurume University in Kurume, Fukuoka Prefecture. These university students participated in a paradigm used by McGregor and Marigold (2003) to examine compensatory conviction. After testing for both their implicit and explicit self-esteem, participants were primed to think of a dilemma they or their friend had not resolved. Following the priming manipulation, participants were given several measures used to assess the strength of their convictions on such things as their attitudes toward abortion and capital punishment. McGregor and Marigold (2003) found that participants high in explicit self-esteem and low in implicit self-esteem would be the ones most likely to show the greatest strength in their convictions, with this difference greatest in the own than friend's dilemma condition. This is because raising uncertainty about one's behavior in one situation can be compensated for by reasserting one's beliefs in another domain. Szeto et al. predicted that this difference should be greatest for people who are mismatched in their culture, that is, UOs in Japan and COs in Canada. This was partially supported by the results. Using regression analysis on a combined measure of attitudes on the two social issues, there was a significant Uncertainty Orientation × Culture × Explicit Self-Esteem × Implicit Self-Esteem interaction ( $t = 2.796, p = .006$ ). Japanese UOs with high explicit and low implicit self-esteem evinced a trend towards higher conviction scores than Japanese COs with high explicit and low implicit self-esteem (see Figure 4). This difference was greater than other combinations of implicit and explicit self-esteem. This is interesting because these Japanese UOs possessing defensive self-esteem showed the predicted higher conviction response regardless of dilemma priming condition. That is, they engaged in defensiveness whether the uncertainty was about their own dilemma or about their friend's dilemma. Moreover, UOs who are high in both implicit and explicit self-esteem show the lowest conviction scores of all self-esteem combinations. Although it would be premature to draw any conclusions from these results, they do suggest intriguing possibilities for future research. Perhaps UOs with defensive self-esteem are just as bothered by a friend's dilemma as their own, and perhaps UOs with a secure sense of self (i.e., both high explicit and implicit self-esteem) are better able to cope with being mismatched with regard to their culture's style of facing uncertainty. In Canada, however, UOs with high explicit and low implicit did not show this trend.



**Figure 4**  
**Implicit and Explicit Self-Esteem as a function of Uncertainty Orientation for Japanese Participants only (UO = Uncertainty-Oriented, CO = Certainty-Oriented, ESE = Explicit Self-Esteem, ISE = Implicit Self-Esteem)**  
 (Adapted from Szeto et al., 2006)

Another interesting finding from Szeto et al. (2004) was results comparing explicit and implicit self-esteem across cultures. The four types of self-esteem, including two explicit (Explicit Self-Esteem and Collective Self-Esteem) and two implicit self-esteem (Implicit Association Test for Self-Esteem and Implicit Association Test for Collective Self-Esteem; see Greenwald, McGhee, & Schwartz, 1998) measures, were subjected to a Culture  $\times$  Self-Esteem Repeated Measures ANOVA, where the four types of self-esteem were standardized before analysis. Multivariate results indicate a significant Culture  $\times$  Self-Esteem 2-way interaction,  $p < .000$ . Figure 5 shows an interesting pattern for the level of self-esteem across cultures. For the Canadians, both explicit self-report measures of self-esteem are greater than both implicit measures of self-esteem. However, for the Japanese, this pattern was reversed. That is, implicit measures tended to be greater than self-report measures for these participants. This finding suggests that the Japanese participants might show restraint when explicitly evaluating themselves according to cultural norms. Implicitly, however, they actually hold higher implicit evaluations of the self than might be expected. Conversely, Canadian participants inflate their evaluation of the self explicitly but actually hold lower automatic evaluations of the self.



**Figure 5**

**Self-Esteem as a Function of Culture (ESE = Explicit Self-Esteem, CSE =  
Collective Self-Esteem, ISE = Implicit Self-Esteem, CISE = Collective Implicit  
Self-Esteem)  
(Adapted from Szeto et al., 2006).**

## CONCLUSIONS

Taken together, results from the three studies reported here strongly suggest that uncertainty orientation is a critical individual difference variable that may have important implications for examining differences between and within cultures. Within cultures, our data suggest that those people who match the values of their society have a better sense of self, perceive more freedom and less anxiety in work situation, are more realistic about what their future holds, and more likely to demonstrate defensive behaviours than those who do not match their societal values. The former individuals also are more actively involved and have greater flow or anti-flow emotional experiences than their mismatched counterparts. With regard to our university samples, students in Canada appear representative of a UO-centric society, whereas students in Japan appear representative of a CO-centric society. Controversy currently rages regarding whether East-West differences truly distinguish between individualistic and collectivistic societies; a plausible alternative explanation is that East-West differences might be a function of how these societies cope with uncertainty. Whereas an interdependent self may be an outgrowth of a CO-centric society and an independent self may be an outgrowth of a UO-centric society, it is the way an individual or society confronts uncertainty that may well be the critical underlying dynamic.

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