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# Cultural Differences in Unrealistic Optimism and Pessimism: The Role of Egocentrism and Direct Versus Indirect Comparison Measures

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*Recent research has raised questions regarding the consistency of unrealistic optimism and related self-enhancing tendencies, both within cultures and across cultures. The current study tested whether the method used to assess unrealistic optimism influenced cross-cultural patterns in the United States and Japan. The results showed that the direct method (a single comparison judgment between self and peers) produced similar patterns across cultures because of cognitive biases (e.g., egocentrism); specifically, participants were unrealistically optimistic about experiencing infrequent/negative events but pessimistic about experiencing frequent/negative events. However, the indirect method (separate self- and peer judgments) produced different patterns across cultures because culturally specific motivational biases emerged using this method; specifically, the U.S. sample was more unrealistically optimistic than the Japanese sample. The authors discuss how these results might influence the interpretation of previous findings on culture and self-enhancement.*

**Keywords:** *unrealistic optimism; egocentrism; culture; self-enhancement; direct versus indirect method*

Over the past several decades, researchers have found cultural differences in various judgment and

decision-making processes and phenomena (see review in Weber & Hsee, 2000). For instance, people from Eastern/interdependent cultures (e.g., East Asia, South America), as compared to people from Western/independent cultures (e.g., North America, Western Europe), display greater overconfidence in probability judgments (Yates et al., 1989; Yates, Lee, & Bush, 1997), are generally less risk averse (Hsee & Weber, 1999; Weber & Hsee, 1998), and are less likely to commit the fundamental attribution error (Choi, Nisbett, & Norenzayan, 1999; for general reviews on culture, see Lehman, Chiu, & Schaller, 2004; Markus & Kitayama, 1991). The current study examined the role of egocentrism and measurement method in cross-cultural patterns of a widely cited judgment bias—*unrealistic optimism*.

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In a seminal study, Weinstein (1980) asked student participants to compare their own chances of experiencing a series of events (e.g., cancer) to the average student's chances. On average, participants rated themselves as less likely than the average student to experience negative events but more likely to experience positive events—that is, they were unrealistically optimistic about their futures (see also Klein & Weinstein, 1997; Perloff & Fetzler, 1986; Weinstein, 1984, 1987). This tendency and related comparative bias tendencies, such as believing one has better-than-average attributes (Alicke, 1985), have been well documented in samples from Western cultures (Chambers & Windschitl, 2004) and have been shown to influence behavioral intentions and affective responses (e.g., see Klein, 2002). In addition, such self-enhancing tendencies have been attributed to Western/independent motivations for personal achievement and superior distinction from others (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Chambers & Windschitl, 2004; Heine & Hamamura, 2007; Klein & Kunda, 1993; Markus & Kitayama, 1991; Regan, Snyder, & Kassir, 1995; Taylor & Brown, 1988; Weinstein & Klein, 1996).

In contrast, people from Eastern/interdependent cultures are proposed to be less self-enhancing, and even self-deprecating or self-critical, because of motivations to self-improve, maintain harmony with others, and see oneself as similar to others (see Heine & Hamamura, 2007; Heine, Lehman, Markus, & Kitayama, 1999; Markus & Kitayama, 1991). Indeed, in some studies (Chang, Asakawa, & Sanna, 2001; Heine & Lehman, 1995), people from Western cultures (i.e., North Americans) tended to be more unrealistically optimistic than people from Eastern cultures (i.e., Japan) when comparing their chances of experiencing negative events to the average person's. On this basis, Heine and Lehman (1995) concluded that “self-enhancing biases (such as unrealistic optimism) are, for the most part, absent from the motivational repertoire of Japanese” (p. 595). As additional support for this claim, Easterners have also been less self-enhancing than Westerners in other domains and judgments, such as in their baseline levels of explicit self-esteem, responses to negative feedback, attributions of personal responsibility, and judgments of how their traits and other attributes compare to others (see review by Heine & Hamamura, 2007; see also Heine, 2005; Heine et al., 1999; Heine, Kitayama, & Lehman, 2001; Heine & Lehman, 1999; Kanagawa, Cross, & Markus, 2001; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; although see Brown, 2003; Kurman, 2001; Sedikides, Gaertner, & Toguchi, 2003). These results support the idea that Westerners are broadly more motivated toward self-enhancement than Easterners.

However, a different body of research has found evidence that counters these divergent cultural motivations. For instance, Westerners sometimes believe they are worse than average (Kruger, 1999; see also Burson, Larrick, & Klayman, 2006; Moore & Kim, 2003; Rose & Windschitl, 2008; Windschitl, Kruger, & Simms, 2003) and are unrealistically pessimistic about the future (Blanton, Axsom, McClive, & Price, 2001; Chambers, Windschitl, & Suls, 2003; Kruger & Burrus, 2004). For example, North American participants reported that they would cope worse than others if they actually experienced severe/negative events (e.g., HIV/AIDS) and believed they were less likely than others to experience infrequent/positive events (e.g., living past 100) but more likely than others to experience frequent/negative events (e.g., auto accident) (Blanton et al., 2001; Chambers et al., 2003; Kruger & Burrus, 2004). In addition, Easterners sometimes believe they are better than average (Brown & Kobayashi, 2002; Endo, 2007a, 2007b; Hamamura, Heine, & Takemoto, 2007; Ito, 1999; Kurman, 2001; Sedikides et al., 2003; Toyama & Sakurai, 2001) and hold unrealistically optimistic views of the future in some cases (Endo, 2007a; Ji, Zhang, Osborne, & Guan, 2004). In short, motivational accounts that broadly posit self-enhancement (e.g., unrealistic optimism) in the West and self-criticism (e.g., unrealistic pessimism) in the East do not fully account for the findings in the literature.

### *Cognitive and Measurement Factors in Comparative Biases*

Insight about the source of these conflicting results comes from recent research, conducted mainly with Western samples, that has focused on measurement and cognitive (as opposed to motivational) factors in explaining biases in comparative judgments. For instance, there have been two basic methodologies used to assess people's judgments of comparative standing (Chambers & Windschitl, 2004). First, the *direct method* involves a single question in which participants compare their own standing on some dimension to a specified comparison group (e.g., “How likely are you to have a heart attack, relative to the average student of your age/sex?”). Second, the *indirect method* involves a difference score calculated from separate absolute ratings made for the self (e.g., “How likely are you to have a heart attack?”) and for a specified comparison group (e.g., “How likely is the average student of your age/sex to have a heart attack?”). In the next two sections, we discuss these two methods and their implications for understanding cross-cultural differences.

*The direct method.* When making a direct comparison between the self and others, there is evidence that

Westerners are egocentric, which is the idea that there is something different about the way people process self-information versus information about a referent group (e.g., the average student) when making comparative judgments (Aucote & Gold, 2005; Blanton et al., 2001; Chambers et al., 2003; Chambers & Windschitl, 2004; Eiser, Pahl, & Prins, 2001; Klar & Giladi, 1997, 1999; Kruger, 1999; Kruger & Burrus, 2004; Kruger, Windschitl, Burrus, Fessel, & Chambers, 2008; Rose & Windschitl, 2008; Windschitl et al., 2003; Windschitl, Rose, Stalkfleet, & Smith, in press).<sup>1</sup> The specific type of egocentrism we will focus on here is differential weighting, whereby people attend to or weight self-information more heavily than information about the comparison group when formulating direct comparisons— even though logically both should be important for making the comparison. Differential weighting may be a result of having greater confidence in information about the self or from chronic self-focus (see Chambers & Windschitl, 2004). In the case of making comparative likelihood predictions about experiencing future events, the outcome of this processing bias is that *comparative* likelihood judgments primarily reflect *self*-assessments (e.g., thoughts about the personal likelihood of experiencing the event). Differential weighting has been shown to lead to unrealistic optimism when a negative event is generally infrequent on an absolute level (i.e., has a low base rate) but unrealistic pessimism when a negative event is frequent on an absolute level (i.e., has a high base rate) (Chambers et al., 2003; Kruger & Burrus, 2004).

Most studies investigating comparative optimism across cultures using the direct method have generally found evidence of unrealistic optimism in both Easterners and Westerners (although the latter are sometimes more optimistic; see review in Heine & Hamamura, 2007). We propose that this occurred because the events that researchers tended to study were not only negative but also generally infrequent (i.e., have low rather than high base rates). Hence, when participants in both the East and the West were asked to make direct comparisons about infrequent/negative events, they may have given too much consideration to the unlikelihood for themselves but too little consideration to the comparison group for whom this also should be true—resulting in unrealistically optimistic patterns. If researchers ask, however, about frequent/negative events (e.g., the flu), then unrealistic pessimism may be evident cross-culturally because of egocentrism (Chambers et al., 2003; Kruger & Burrus, 2004). This notion was tested in the current study.

*The indirect method.* Although cognitive biases, such as egocentrism, should play a key role when using the direct method, they may be less influential when using

the indirect method because judgments about the self and a comparison group are “unpacked” into two questions. Thus, the tendency to consider self-information at the neglect of information about the comparison group should be less prominent. Instead, participants can consider the standings of the self and the comparison group separately, which often produces results that diverge from the direct method (see Aucote & Gold, 2005; Chambers et al., 2003; Chambers & Suls, 2007; Eiser et al., 2001; Klar, Medding, & Sarel, 1996; Price, Pentecost, & Voth, 2002; Rose, 2008; see review by Chambers & Windschitl, 2004).

In cross-cultural studies using the indirect method to measure comparative optimism (which happen to be very few), Westerners tend to be unrealistically optimistic, whereas Easterners tend to be unrealistically pessimistic or neutral (neither optimistic nor pessimistic) (see review in Heine & Hamamura, 2007). Such results might reflect differences in cross-cultural prototypes of the average person (i.e., more negative prototypes in Western cultures) or they may be a manifestation of an Eastern/interdependent motivation to be self-critical and not to differentiate the self from others (see work on the superordinary bias in Ohashi & Yamaguchi, 2004) versus a Western/independent motivation toward self-enhancement and superior differentiation from others (Heine & Hamamura, 2007; Markus & Kitayama, 1991). Such motivational patterns in comparative judgments may only be detected when using indirect (as opposed to direct) methods because robust cognitive processing biases, such as differential weighting, are not influential for the indirect method and thus do not dominate the result patterns for that method. Along these lines, Heine and Hamamura (2007) argue that Westerners are motivated to be self-enhancing and Easterners are motivated to be self-critical but that such patterns may only arise using particular methods (e.g., the indirect method of measuring comparative optimism). Furthermore, these authors suggest the possibility that direct methods “are artificially inflating people’s self-enhancement, whereas the other methods [e.g., indirect methods] are providing reasonably accurate assessments of people’s motivations” (p. 7). Regardless of whether one method is more accurate or appropriate (see Discussion), we propose that the direct method does not inflate self-enhancement per se, but it does facilitate egocentric judgments, which can lead to both self-enhancing and self-critical data patterns depending on other factors (e.g., event frequency). The different data patterns that these two methods produce were explored in the current study.

### *Current Study*

In this study, participants in Japan and the United States responded to likelihood judgment questions

about negative health events that varied in event frequency (i.e., base rate) and severity (Chambers et al., 2003; Kruger & Burrus, 2004). Specifically, participants made direct comparative judgments (i.e., the direct method) and absolute judgments about the self and the average student (i.e., the indirect method). The overall goal of this study was to systematically examine cultural differences in unrealistic optimism (and pessimism) using direct versus indirect methods.

For the indirect method, we predicted that there would be different patterns across cultures. In particular, we expected that U.S. participants would report lower absolute risk estimates for themselves than for the average student for most events (i.e., unrealistic optimism). In contrast, we expected that Japanese participants would report absolute risk estimates for themselves that were equal to or even higher than the risk estimates provided for the average student for most events (i.e., unrealistic pessimism or neutrality) (Heine & Hamamura, 2007). We also expected that the general event frequency (or base rate) should not moderate the degree of comparative bias computed from the indirect index (Chambers et al., 2003; Klar et al., 1996; although see Price et al., 2002). These predictions for the indirect method reflect motivational differences hypothesized about the cultures (i.e., self-enhancement in the West and self-criticism in the East) but no role for egocentrism.

For the direct method, we expected that patterns of unrealistic optimism would be similar across cultures because of the aforementioned influence of cognitive biases, such as egocentrism, on direct comparisons (see Blanton et al., 2001; Chambers et al., 2003; Endo, 2007a, 2007b; Heine & Hamamura, 2007; Kruger & Burrus, 2004). Egocentrism in direct comparisons was expected among Japanese participants in light of emerging evidence in Eastern cultures that self-information is (a) highly accessible and utilized in judgments (Endo, 1987) and (b) more related to direct comparative judgments than information about the comparison group (Endo, 2007a, 2007b).<sup>2</sup> Although a cross-cultural examination of egocentrism in comparative biases has not heretofore been conducted, this evidence strongly suggests there will be analogous patterns of egocentrism and unrealistic optimism (and pessimism) across cultures. If egocentrism influences direct comparisons in both cultures, then event frequency should affect whether unrealistic optimism or pessimism emerges. If participants in both samples think primarily about whether an event will happen to them (but neglect whether the event will happen to others) when making direct comparisons, then unrealistic optimism should be observed for infrequent/negative events, but unrealistic pessimism should be observed for frequent/negative events (Chambers et al., 2003; Kruger & Burrus, 2004).

Although similarity between Japanese and U.S. participants in patterns of unrealistic optimism (pessimism) was predicted for the direct method, an alternative hypothesis can be tendered. It is possible that Easterners might be less egocentric and more focused on the comparison group (i.e., the average student) than Westerners when making direct comparative judgments. This alternative assumes that because people in Eastern cultures are more interdependent, they may spontaneously think about others when making judgments about the self or the world around them (Markus & Kitayama, 1991). The reduced role of egocentrism might then result in less robust patterns of unrealistic optimism or pessimism (not dependent on event frequency), and the responses may instead reflect motivational tendencies to be self-critical. In this study, we directly tested this alternative hypothesis against our main hypothesis for direct comparative judgments.

## METHOD

### *Event Selection*

We identified 32 negative health events for use as target events in this study (see Table 1). A wide range of events was included so there would be adequate representation of high severity/high frequency, high severity/low frequency, low severity/high frequency, and low severity/low frequency events.

### *Participants*

Participants for the main study were 127 students from the University of Iowa (United States) and 123 students from Kansai University (Japan). Students from both countries participated in the study as part of a psychology course requirement and were comparable in age (U.S. sample  $M = 18.63$  years,  $SD = 1.40$ ; Japanese sample  $M = 20.44$  years,  $SD = 3.99$ ).

### *Measures and Procedures*

First, participants made direct comparative judgments regarding the likelihood of experiencing each of the 32 events on 7-point scales. The basic format for the direct comparative judgment question was "Compared to the average [insert school name] student of the same age and sex, how likely is it that you will [have a heart attack] before the age of 50?" ( $-3 = much\ less\ likely\ than\ the\ average\ student$ ,  $3 = much\ more\ likely\ than\ the\ average\ student$ ).

Next, participants made absolute likelihood judgments for the self and for the average student on 7-point

**TABLE 1:** Direct Comparative Likelihood Estimates

Event	Comparative Likelihood (Japan)		Comparative Likelihood (United States)	
	M	SD	M	SD
Addicted to cocaine	-1.96**	1.44	-1.98**	1.35
Allergy to bananas	-1.86**	1.37	-1.31**	1.44
Gain 100 pounds	-1.48**	1.48	-1.41**	1.52
Head lice	-1.20**	1.38	-0.94**	1.33
Attempt suicide	-1.18**	1.85	-1.69**	1.58
Struck by lightning	-0.93**	1.34	-0.49**	1.07
Contract HIV/AIDS	-0.91**	1.30	-1.62**	1.27
Paralyzed from neck down	-0.89**	1.23	-0.52**	1.28
Dislocate finger playing a sport	-0.76**	1.80	0.10	1.68
Sleepwalking problem	-0.66**	1.37	-0.66**	1.32
Black eye	-0.45**	1.55	-0.19	1.46
Pulled muscle	-0.34**	1.23	0.84**	1.34
Contract a toenail fungus	-0.28*	1.35	-0.44**	1.28
Develop a brain tumor	-0.17	1.25	-0.66**	1.09
Heart attack	-0.15	1.36	-0.34**	1.44
Go blind	-0.15	1.47	-0.65**	1.47
Ovarian, breast, or testicular cancer	-0.15	1.39	0.04	1.31
Chronic nightmares	-0.11	1.56	-0.72**	1.26
Laryngitis	-0.03	1.73	-0.27**	1.14
Rash from poison ivy or plant	-0.02	1.69	-0.11	1.37
High blood pressure	0.16	1.69	0.17	1.47
Cataracts in your eyes	0.16	1.36	-0.11	1.39
Bloody nose	0.20	1.73	0.20	1.49
Auto accident	0.28**	1.08	0.39**	1.10
Arthritis	0.46**	1.43	0.56**	1.33
Flu	0.50**	1.28	0.47**	1.00
Some form of cancer	0.51**	1.31	0.34**	1.24
Age-related hearing loss	0.67**	1.38	-0.06	1.34
Acne breakout	0.68**	1.51	0.37**	1.43
Tooth cavity	0.73**	1.91	0.09	1.53
Sore throat or throat infection	0.92**	1.34	0.67**	1.16
Skinned knee	1.18**	1.21	0.76**	1.00
Overall	-0.22	0.79	-0.29*	0.74

NOTE: Comparative likelihood ratings were made on a 7-point scale ( $-3 = \text{less likely than the average student to experience the event}$ ;  $3 = \text{more likely than the average student to experience the event}$ ). Values significantly different from the midpoint (0) are marked with asterisks (\* $p < .05$ ; \*\* $p < .01$ ). The values in the "Overall" row were not significantly different between cultures,  $t(62) = -0.32, p > .10$ .

scales. The basic format for the self question was "How likely is it that you will [have a heart attack] before the age of 50?" (1 = *extremely unlikely*, 7 = *extremely likely*). The basic format for the average student question was "How likely is it that the average [insert school name] student of the same age/sex as you will [have a heart attack] before the age of 50?" (1 = *extremely unlikely*, 7 = *extremely likely*). The ratings for these two absolute measures were used to calculate indirect unrealistic optimism (pessimism) for each event. Participants either made all 32 judgments about the self first or all 32 judgments about the average student first. This counterbalancing factor was not influential for our main results and will not be discussed further. We did not counterbalance the order in which direct and indirect (i.e.,

absolute) responses were elicited; previous work has shown that such counterbalancing is not influential to the overall patterns of comparative bias (Chambers & Suls, 2007; Endo, 2007b).

Finally, participants judged the perceived severity/harm of each event on 7-point scales. Specifically, the basic format asked participants to "Indicate how severe or harmful you think it would be for someone to [have a heart attack]" (1 = *not at all severe or harmful*, 7 = *very severe or harmful*).

#### Translation of Materials

We developed both English and Japanese questionnaires for this study, and participants read questionnaires

in their native languages. The initial questionnaire version was written in English and then translated into Japanese. The Japanese version was then back translated and checked for adequate accuracy and compatibility.

## RESULTS

### *Direct Comparative Judgments*

*Overall direct comparisons.* First, we report whether the overall direct comparative judgments (collapsed across all events) differed across cultural samples (see Table 1). When averaging across the 32 events for the U.S. sample, the direct comparison value was  $-.29$  ( $SD = .74$ ),  $t(31) = -2.20$ ,  $p < .05$ , indicating that overall, participants were unrealistically optimistic—they tended to believe they were less likely than others to experience the negative events. For the Japanese sample, the overall direct comparison value across events was  $-.22$  ( $SD = .79$ ),  $t(31) = -1.62$ ,  $p = .11$ , indicating a similar trend toward unrealistic optimism. A  $t$  test comparing these means for the U.S. and Japanese samples was not significant,  $t(62) = -0.32$ ,  $p > .10$ . This finding is consistent with our prediction that the unrealistic optimism detected by direct comparison measures would not differ between the two samples.

*Proportion of events associated with optimism and pessimism.* The proportion of events eliciting unrealistic optimism, pessimism, and neutrality was computed for each sample. Unrealistic optimism was signified if the mean comparison value for the event was significantly less than 0 ( $ts > -2$ ,  $ps < .05$ ), unrealistic pessimism if the mean comparison value was significantly greater than 0 ( $ts > 2$ ,  $ps < .05$ ), and neutrality (neither unrealistic optimism nor pessimism) if the mean comparison value was not significantly different from 0 ( $ts < |2|$ ,  $ps > .05$ ). The results showed that U.S. participants were unrealistically optimistic about 15 events, unrealistically pessimistic about 8 events, and neutral about 9 events. Japanese participants were unrealistically optimistic about 13 events, unrealistically pessimistic about 9 events, and neutral about 10 events (see Table 1). A chi-square analysis indicated these proportions did not differ across cultural samples,  $\chi^2(2, N = 32) = 0.61$ ,  $p > .10$ , which was again consistent with our main hypothesis.

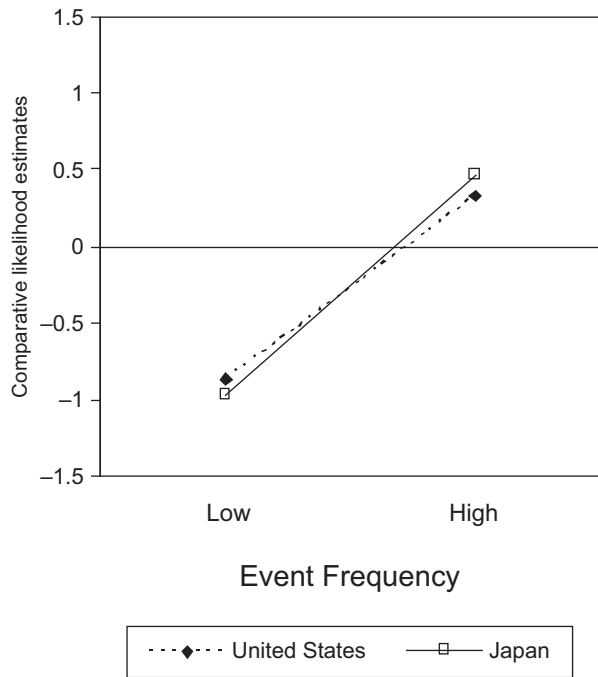
*Relationship between event frequency and severity on direct comparisons.* We next examined the relationship between event characteristics (frequency and severity) and direct comparative judgments and whether these relationships differed across cultures. First, the frequency and severity of the events within each culture

were quantified. To quantify event frequency, we assumed that the mean of the participants' judgments about the likelihood of the average student's experiencing an event would be a suitable proxy for the overall perceived frequency or base rate of the event (an assumption that was supported by results from pilot testing).<sup>3</sup> We assigned a frequency score/rank to each event that ranged from 1 (the event receiving the lowest mean judgment) to 32 (the event receiving the highest mean judgment). These ranks were culture specific, but it is notable that the correlation between frequency ranks was very high between cultures,  $r(30) = .88$ ,  $p < .01$ . Each event was also given a severity ranking from 1 to 32, based on the mean severity ratings from our main participants. Again, although the ranks were culture specific, the correlation between the ranks from the two cultures was very high,  $r(30) = .93$ ,  $p < .01$ .<sup>4</sup>

To examine the relations between event characteristics (frequency and severity) and direct comparative judgments, a regression analysis with events as the unit of analysis was conducted. In the first step, the rankings of severity and frequency for each event were entered as predictors as well as a dummy-coded variable representing culture. The means of the direct comparisons for each of the 32 events within each culture (64 means total) were the criterion variables. In the second step, all two-way interaction terms (Severity  $\times$  Frequency, Severity  $\times$  Culture, Frequency  $\times$  Culture) and the three-way interaction term (Severity  $\times$  Frequency  $\times$  Culture) were included.

Overall, the main effects model accounted for 69% of the variance in direct comparative judgments,  $F(3, 60) = 44.50$ ,  $p < .01$ . As predicted, there was a significant main effect for event frequency,  $\beta = .88$ ,  $SE = .07$ ,  $t(62) = 10.14$ ,  $p < .01$ , where comparative judgments were higher (i.e., less optimistic) for frequent than for infrequent events. This result is consistent with an ego-centric account—for example, for frequent events, participants saw themselves as likely to experience the event and this had a disproportionate influence on their comparative judgments of likelihood. Severity had no effect ( $\beta = -.08$ ,  $p > .20$ ), which conflicts with the motivational prediction that participants would believe they were less likely than others to experience events that were most harmful. There also was no main effect of culture ( $\beta = -.04$ ,  $p > .20$ ), which again indicates there was no difference in the overall patterns of unrealistic optimism between U.S. and Japanese samples.

The second (interactions) model did not account for a significant proportion of the variance beyond the main effects model,  $R^2\Delta = .01$ ,  $F(4, 56) = 0.35$ ,  $p > .20$ . All interactions were nonsignificant (all  $\beta$ s  $< |1.10|$ ,  $ps > .20$ ). Importantly, the robust effect that event frequency had on direct comparative ratings did not depend on



**Figure 1** Direct comparative likelihood estimates as a function of event frequency and culture.

NOTE: Lower values indicate more optimistic judgments.

culture. Indeed, the Culture  $\times$  Event frequency interaction was not significant ( $\beta = -.08$ ,  $p > .20$ ), which was an indication that participants in both cultures were egocentric in their direct comparisons. For visual purposes, we plotted comparative likelihood estimates as a function of culture at 1 SD above and below the mean of event frequency (see Figure 1).

### Indirect Comparative Judgments

**Overall indirect comparisons.** First, we report how overall indirect comparisons (collapsed across all events) differed between cultural samples (see Table 2). We calculated indirect comparisons by subtracting the mean absolute judgment for the average student for a given event from the mean absolute judgment for the self for that same event. When averaged across the 32 events for the U.S. sample, the overall indirect comparison value was  $-.58$  ( $SD = .37$ ),  $t(31) = -9.03$ ,  $p < .01$ , which reflects unrealistic optimism. That is, U.S. participants reported self-likelihood estimates that were lower than their likelihood estimates for the average student. For the Japanese sample, the overall indirect comparison value was  $-.22$  ( $SD = .31$ ),  $t(31) = -3.99$ ,  $p < .01$ ,

which also reflects unrealistic optimism. However, as expected, a  $t$  test comparison of the mean indirect comparison values revealed that the U.S. sample was more unrealistically optimistic overall,  $t(62) = -4.29$ ,  $p < .01$ .

**Proportion of events associated with optimism and pessimism.** We next examined the proportion of events in each sample that elicited unrealistic optimism ( $ts > -2$ ,  $ps < .05$ ), pessimism ( $ts > 2$ ,  $ps < .05$ ), and neutrality ( $ts < |2|$ ,  $ps > .05$ ), all based on the indirect indices. The U.S. sample was unrealistically optimistic about 26 events and neutral about the remaining 6 events. The Japanese sample was unrealistically optimistic about 13 events, unrealistically pessimistic about 1 event, and neutral about 18 events (see Table 2). These proportions differed across samples,  $\chi^2(2, N = 32) = 11.33$ ,  $p < .01$ . In short, the U.S. sample was unrealistically optimistic more often than the Japanese sample for the indirect index.

**Relationship between event frequency and severity on indirect comparisons.** Next, to examine the relationship between event characteristics (frequency and severity) and indirect comparisons, a regression analysis using events as the unit of analysis was conducted in an identical fashion as described earlier for the direct comparisons. The first step of the regression included the rankings of severity, the rankings of event frequency, and the dummy-coded cultural variable as predictors (same as described earlier). The calculated indirect comparison means (64 total) were the criterion variables. The second step of the regression included the interaction terms.

Overall, the main effects model accounted for 23% of the variance in indirect comparisons,  $F(3, 60) = 6.08$ ,  $p < .01$ . This was driven by a significant main effect of culture,  $\beta = -.46$ ,  $SE = .09$ ,  $t(62) = -4.23$ ,  $p < .01$ , indicating that Japanese participants were less optimistic than U.S. participants. There were no main effects of severity or event frequency, as predicted ( $\beta s < .10$ ,  $ps > .30$ ).

The second (interactions) model did not account for a significant proportion of the variance beyond the main effects model,  $R^2\Delta = .02$ ,  $F(4, 56) = 0.37$ ,  $p > .20$ . All interactions were nonsignificant (all  $\beta s < |.14|$ ,  $ps > .30$ ). An important aspect of these results was that event frequency was unrelated to indirect comparisons and that this effect did not depend on culture, as indicated by the nonsignificant Culture  $\times$  Event frequency interaction ( $\beta < -.10$ ,  $p > .30$ ). As with the direct method, we plotted the indirect comparative likelihood estimates as a function of culture at 1 SD above and below the mean of event frequency (see Figure 2).

**TABLE 2:** Indirect Comparative Likelihood Estimates

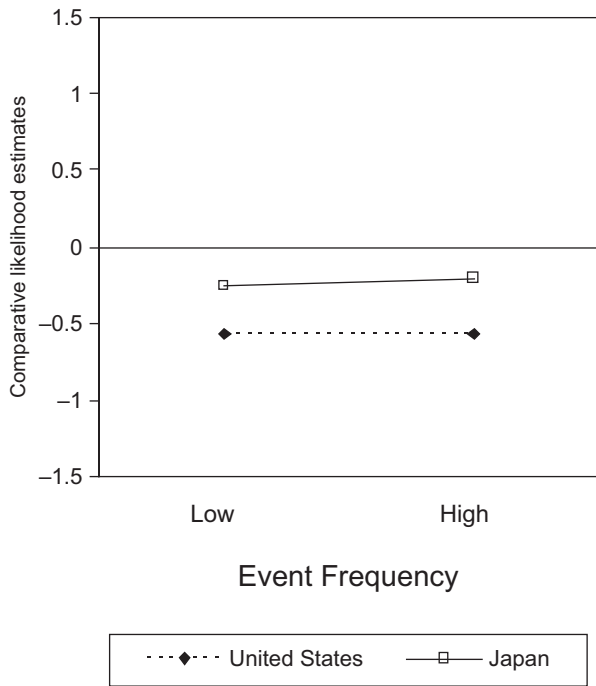
Event	Comparative Likelihood (Japan)		Comparative Likelihood (United States)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Dislocate finger playing a sport	-1.08**	1.82	-0.55**	2.13
Addicted to cocaine	-0.66**	1.47	-1.27**	1.29
Contract HIV/AIDS	-0.64**	1.35	-1.31**	1.42
Allergy to bananas	-0.59**	1.30	-0.47**	1.25
Tooth cavity	-0.56**	1.98	-1.26**	1.87
Gain 100 pounds	-0.48**	1.32	-1.33**	1.20
Attempt suicide	-0.47**	1.82	-0.83**	1.45
High blood pressure	-0.43**	1.67	-0.66**	1.56
Flu	-0.43**	1.40	-0.44**	1.14
Bloody nose	-0.41**	1.71	-0.80**	1.89
Black eye	-0.37**	1.22	-0.74**	1.79
Auto accident	-0.31**	1.34	-0.83**	1.37
Head lice	-0.27*	1.15	-0.99**	1.29
Acne breakout	-0.25	1.53	-0.76**	1.61
Contract a toenail fungus	-0.23	1.41	-0.52**	1.64
Arthritis	-0.22	1.31	-0.16	1.74
Sleepwalking problem	-0.18	1.36	-0.37**	1.52
Pulled muscle	-0.18	1.32	-0.08	1.47
Cataracts in your eyes	-0.17	1.42	-0.25	1.51
Develop a brain tumor	-0.11	1.25	-0.34**	1.14
Ovarian, breast, or testicular cancer	-0.07	1.39	-0.42**	1.37
Heart attack	-0.05	1.29	-0.77**	1.28
Rash from poison ivy or plant	-0.04	1.45	-0.56**	1.76
Age-related hearing loss	0.00	1.57	-0.48**	1.54
Skinned knee	0.00	1.28	-0.16	1.25
Some form of cancer	0.01	1.44	-0.46**	1.34
Paralyzed from neck down	0.06	0.95	-0.01	1.00
Chronic nightmares	0.12	1.30	-0.54**	1.37
Struck by lightning	0.15	1.11	-0.12	0.96
Laryngitis	0.17	1.75	-0.69**	1.28
Sore throat or throat infection	0.28	1.66	-0.26**	1.06
Go blind	0.39**	1.35	-0.24*	1.34
Overall	-0.22*	0.31	-0.58**	0.37

NOTE: Indirect comparative likelihood biases were computed by subtracting likelihood estimates for the average student from likelihood estimates for the self. Thus, negative values indicate unrealistic optimism. Values that are significantly different from the midpoint (0) are marked with asterisks (\* $p < .05$ ; \*\* $p < .01$ ). The values in the "Overall" row were significantly different between cultures,  $t(62) = -4.29$ ,  $p < .05$ .

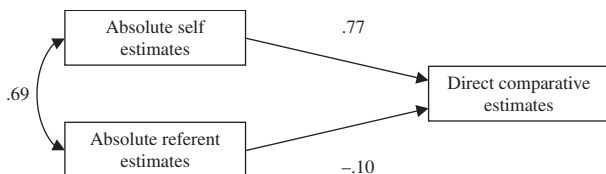
### *How Absolute Judgments and Direct Comparative Judgments Relate*

Earlier, we reported that there was a significant relationship between event frequency and direct comparison judgments. This finding is consistent with the hypothesis that participants were egocentric when making direct comparisons. However, we examined this possibility more precisely by testing the extent to which direct comparison judgments were more related to absolute judgments about the self than to absolute judgments about the average student. To assess this, we conducted separate path analyses for all participants, relating their absolute self-judgments and their absolute judgments of the average student (predictor variables) to their direct comparative judgments (criterion variables)

(see Blanton et al., 2001; Chambers et al., 2003; Kruger, 1999; Kruger & Burrus, 2004; Windschitl et al., 2003). This procedure was followed for each participant and then the individual beta values were averaged across all participants. As expected, these analyses provided evidence that participants in both samples were egocentric; that is, the direct comparative judgments were more related to the absolute self-judgments than to the absolute judgments about the average student. Specifically, for the U.S. sample, the average beta for the self was .77,  $t(125) = 4.23$ ,  $p < .01$ , whereas the average beta for the average student was only  $-.10$ ,  $t(125) = -0.43$ ,  $p > .10$ . Furthermore, these betas were significantly different from one another,  $t(125) = 11.96$ ,  $p < .01$  (see Figure 3). Similarly, for the Japanese sample, the average beta for the self was .76,  $t(121) = 5.30$ ,



**Figure 2** Indirect comparative likelihood estimates as a function of event frequency and culture.  
NOTE: Lower values indicate more optimistic judgments.

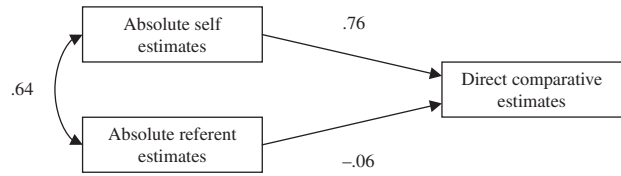


**Figure 3** Average path analysis betas relating participants' absolute self and other estimates to their direct comparative estimates in the U.S. sample.

$p < .01$ , whereas the average beta for the average person was only  $-.06$ ,  $t(121) = -0.30$ ,  $p > .10$ . Furthermore, these betas were also significantly different from each other,  $t(121) = 17.09$ ,  $p < .01$  (see Figure 4). Taken together, this is convincing evidence that differential weighting of the self plays an important role in direct comparisons (and their patterns of unrealistic optimism and pessimism) for both Easterners and Westerners.<sup>5</sup>

### DISCUSSION

Are there cross-cultural differences in unrealistic optimism? The answer depends on whether direct or



**Figure 4** Average path analysis betas relating participants' absolute self and other estimates to their direct comparative estimates in the Japanese sample.

indirect comparisons are made. First, when considering the direct method, there was evidence that both Japanese and U.S. participants were unrealistically optimistic about avoiding infrequent/negative events (e.g., getting struck by lightning) but unrealistically pessimistic about avoiding frequent/negative events (e.g., getting into an auto accident) (see Figure 1). The fact that robust pessimism (and optimism) was found in the U.S. sample and robust optimism (and pessimism) was found in the Japanese sample generally contradicts culturally specific motivations toward self-enhancement versus self-criticism, respectively (e.g., see Heine & Hamamura, 2007). Therefore, a more parsimonious explanation for these results highlights nonmotivational influences. For instance, there was evidence in both samples that absolute self-assessments were more heavily weighted than the absolute assessments about the average person when making direct comparisons (see Figures 3 and 4). Thus, instead of making a full comparison when encountering a direct measure, participants may have been unduly influenced by an appraisal of how likely each event was to happen to the self (not how likely each event was to happen to others). When an event had a high base rate, participants reported that it was more likely to happen to the self than to others (i.e., unrealistic pessimism); when an event had a low base rate, participants reported that it was less likely to happen to the self than to others (i.e., unrealistic optimism) (see also Chambers et al., 2003; Kruger & Burrus, 2004). Moreover, the influence of egocentrism and event frequency on direct comparative optimism appeared to be quite strong (see Figure 1). Indeed, the zero-order correlations between the mean event-level rankings of event frequency and direct comparative judgments were quite strong in both the U.S.,  $r(30) = .79$ ,  $p < .01$ , and Japanese samples,  $r(30) = .86$ ,  $p < .01$ . With such a strong influence of egocentrism, the impact of motivational biases (e.g., self-enhancement in the West vs. self-criticism or modesty in the East) may be overwhelmed or difficult to detect when people make direct comparisons (see also Heine & Hamamura, 2007). This, of course, is not to say that direct comparisons are devoid of motivational influences—only that

the effects of different cultural motivations can be overshadowed by the rather large effects of cognitive biases.

Second, when considering unrealistic optimism/pessimism computed with an indirect index, the Japanese sample tended to be less unrealistically optimistic overall than the U.S. sample (see Figure 2). Whereas U.S. participants' absolute risk judgments were more optimistic for themselves than for the average student for the majority of the events, Japanese participants reported on an absolute basis that they were about as likely as the average student to experience the majority of the events (see Table 2). This finding is generally consistent with divergent cultural motivations. For instance, Heine and Hamamura (2007) have argued that an underlying motivation in all cultures is to be a good person. In Eastern cultures, being a good person may mean not differentiating the self from others (see Ohashi & Yamaguchi, 2004) or striving for self-improvement and the maintenance of face and social harmony (Hamamura et al., 2007; Heine et al., 1999; Heine & Hamamura, 2007; Markus & Kitayama, 1991). In Western cultures, being a good person may involve a differentiation of the self from others in a self-enhancing way or striving for competence and self-esteem (Alicke, 1985; Heine & Hamamura, 2007; Taylor & Brown, 1988; Weinstein & Klein, 1996). Such motivational tendencies may manifest themselves in indirect comparisons because cognitive biases are less relevant in such measures. For instance, differential weighting of self-information is less relevant (if not irrelevant) because respondents are required to judge the self and the comparison group separately. Simply stated, respondents cannot ignore the average student while judging the average student.

#### *Appropriateness of Indirect Versus Direct Methods*

The selection of measurement method (indirect or direct) clearly influences cross-cultural patterns of unrealistic optimism and pessimism. Some researchers have dismissed comparative biases (e.g., unrealistic optimism) that emerge from the direct method because such measurements are flawed and driven more by cognitive processes (e.g., egocentrism) than motivational tendencies (Aucote & Gold, 2005; Covey & Davies, 2004; Gold, 2007; Hamamura et al., 2007; Heine & Hamamura, 2007). It remains controversial, however, as to whether one type of judgment represents the most veridical measure of comparative bias. Although direct comparisons involve various cognitive biases, these kinds of judgments have been shown to be uniquely predictive of behaviors and affective outcomes, above and beyond absolute self-assessments (Blalock, DeVellis, Afifi, & Sandler, 1990; Klein, 2002; Lipkus, Lyna, & Rimer,

2000; McCaul & O'Donnell, 1998; although see van der Velde, van der Pligt, & Hooykaas, 1992). Furthermore, Rose (2008) showed that direct comparisons of risk were more predictive of worry and behavioral intentions to reduce one's risk than indirect comparisons. This result suggests that at least in Western cultures, self-enhancement (and self-criticism) emerging via methods that promote cognitive biases can have important consequences. However, we suspect this finding would replicate in Eastern cultures given that the main reasons that direct (as opposed to indirect) methods are more influential might have to do with ambiguity in the absolute measures that compose the indirect index and because the direct comparison would appear to be the more specific and straightforward way of assessing participants' conclusions about their comparative standing (Rose, 2008; see also Ajzen & Fishbein, 1977; Olson, Goffin, & Haynes, 2007).

#### *Relevance to the Debate on Culture and Self-Enhancement*

As stated previously, there has been much debate as to whether Westerners are more self-enhancing (broadly speaking) than Easterners (see Heine & Hamamura, 2007). Sedikides and colleagues (Sedikides et al., 2003; Sedikides, Gaertner, & Vevea, 2005) have proposed that Easterners are motivated to self-enhance but that they do so in different ways than Westerners (e.g., implicitly or tactically) and only when the attributes are culturally self-relevant or important (see also Brown & Kobayashi, 2002; Kurman, 2001). In contrast, other researchers have shown that Easterners are less self-enhancing than their Western counterparts in a variety of ways (Heine, 2005; Heine et al., 1999, 2001; Heine & Lehman, 1995, 1997; Kanagawa et al., 2001; Kitayama et al., 1997). A recent meta-analysis by Heine and Hamamura (2007) attempted to reconcile these mixed results by showing that self-enhancement is only exhibited in Eastern cultures with certain methods (including direct measures) because of cognitive biases, such as the "everyone is better than their group's average" effect (Klar & Giladi, 1997, 1999). However, for nearly all other measures documenting self-enhancement (including indirect measures), Heine and Hamamura argue that the results support self-enhancement in the West and self-criticism in the East. Portions of our results are consistent with this view.

For instance, our U.S. sample was more unrealistically optimistic overall than the Japanese sample when using the indirectly calculated indices. In addition, when using the direct method, participants in both Japan and the United States were unrealistically optimistic about avoiding many of the rare and dire events—a finding

that we (along with Heine & Hamamura, 2007) have attributed to a cognitive bias. However, our results go beyond the conclusions of Heine and Hamamura (2007). In their meta-analysis, most studies using the direct method to measure comparative judgments showed evidence of unrealistic optimism (and better-than-average effects) among both Easterners and Westerners. The fact that self-enhancing (as opposed to self-critical) perceptions primarily emerged may be due to the types of events and traits that were selected in these studies. Specifically, many of the studies used negative events that were generally infrequent (i.e., had low as opposed to high base rates) and positive traits that were quite common. From the current study, it is clear that self-enhancement does not emerge when judging negative events that are generally frequent (and by extension, positive traits that may be rare). Therefore, this renders the conclusion that direct comparisons elicit self-enhancement per se in both cultures problematic and incomplete. Instead, we have shown that the direct method promotes an egocentric bias, which can lead not only to the appearance of self-enhancing tendencies in both cultures (e.g., unrealistic optimism for infrequent/negative events) but also self-critical tendencies (e.g., unrealistic pessimism for frequent/negative events). Furthermore, although we did not collect data on this point, an extension of this reasoning can be applied to research showing that the better-than-average effect is pancultural. For instance, Sedikides and colleagues (2003) found that Westerners self-enhanced on attributes that were individualistic (e.g., free, unique), whereas Easterners self-enhanced on attributes that were collectivistic (e.g., agreeable, respectful). This was attributed to universal motives to self-enhance for attributes that are culturally desirable or relevant (see also Brown & Kobayashi, 2002; Kurman, 2001). However, these results could also be explained nonmotivationally. For instance, an alternative explanation is that the attributes selected for their studies were not only culturally relevant or desirable but also occurred more commonly in their respective populations. This is important because the direct method was used in these studies, which means that egocentric biases might have led the self-standing to be overweighted relative to the comparison group. Thus, for commonly occurring attributes, the egocentric participants would tend to report that they had “more of” the attribute than did others (see relevant data reported in Endo, 2007a; Hamamura et al., 2007). Future research could test whether both Easterners and Westerners are self-critical about having culturally relevant/desirable attributes that are rare and whether Sedikides and colleagues’ (2003) results can be better accounted for by nonmotivational explanations.

### Conclusions

In conclusion, the current study and other emerging research (Endo, 2007a, 2007b; Hamamura et al., 2007; Heine & Hamamura, 2007) suggest it is important to consider both motivational and nonmotivational influences on cross-cultural patterns of self-enhancement (and self-criticism). In this study, we showed that cognitive biases are highly influential for direct comparisons—resulting in similar patterns of bias that may be both self-enhancing (e.g., unrealistic optimism regarding infrequent/negative events) and self-critical (e.g., unrealistic pessimism regarding frequent/negative events). In contrast, culturally divergent motivations play a prominent role in the absolute ratings that compose indirect comparisons—resulting in different patterns of bias (e.g., tendencies for Westerners to be more self-enhancing than Easterners).

### NOTES

1. In this article, we refer to the differential consideration of the absolute standing of the self versus a comparison group as egocentrism. However, other accounts have also been established that may be empirically indistinguishable in the current study. For instance, focalism accounts suggest that people consider information in the focal or target position differently than information in the nonfocal or referent position in a comparative question (Chambers & Windschitl, 2004). Also, generalized-group accounts suggest there is something different about the way people consider information about single targets versus large referent groups (Chambers & Windschitl, 2004; Klar, Medding, & Sarel, 1996). In the current study, however, we will not focus on the differences between these accounts, as they all make similar predictions for our specific paradigm (i.e., the self is always the target, the self is always compared to a large referent group).

2. In addition to egocentrism, other factors—namely, those described in focalism and generalized-group accounts (see Note 1)—would presumably lead to differential weighting within both cultures. For example, the fact that the self appears within the focal position of our direct comparative questions would lead to greater attention to self-relevant rather than peer-relevant information (Chambers & Windschitl, 2004).

3. A pretest group from the United States ( $N = 125$ ) actually answered two questions related to event frequency. First, these participants rated event frequency in the form of a likelihood question regarding the average student (1 = *extremely unlikely*, 7 = *extremely likely*). This measure was identical to the one answered by participants in our main study. Second, the pretest participants also answered a more direct question about event frequency, which asked how frequently an event happens in the population (1 = *not at all frequently*, 7 = *very frequently*). The means for each event across the “likelihood” and “frequency” formats were highly correlated,  $r(30) = .99$ . Thus, we decided it was sufficient for the main participants in our study to only answer the “likelihood” question, which we deemed an appropriate proxy for event frequency.

4. It is notable that there was an inverse relationship between the severity and event frequency ranks across events within both the U.S.,  $r(30) = -.59$ ,  $p < .01$ , and Japanese samples,  $r(30) = -.54$ ,  $p < .01$ . That is, the most severe events tended to be perceived to occur less frequently.

5. An alternative to the differential weighting explanation—the differential regression account—is ruled out by the already reported finding that indirect comparison values were not significantly related

to event frequency (for more information about the differences between differential weighting and regression accounts, see Chambers & Windschitl, 2004; Moore, 2007; Moore & Small, 2007; Rose & Windschitl, 2008; Windschitl, Rose, Stalkfleet, & Smith, in press).

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