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# Social Anxiety and Holistic Cognition: Self-Focused Social Anxiety in the United States and Other-Focused Social Anxiety in Japan

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## Abstract

Previous cultural psychological studies suggest that East Asians tend to think more holistically than Westerners and that these cultural differences in cognition are accounted for, in part, by psychological processes associated with a predominant social orientation of the self as independent in the West and as interdependent in the East. In addition to examining these self-construal variables as predictors of holistic cognition, the current study also examined the role that a self-focused manifestation of social anxiety (*social phobia tendencies*) common in the United States and the role that an other-focused manifestation of social anxiety (*taijin kyofusho*, or TKS tendencies) common in Japan play in holistic cognition. Samples of 142 Japanese and 125 Americans completed an instrument that measures degree of skill in holistic cognition and then completed measures of self-construal, social phobia, and TKS. The current study found that, in unpacking cultural differences in holistic cognition, social phobia tendencies, given their self-focused nature, were associated with decreased levels of holistic cognition while TKS tendencies, given their other-focused nature, were associated with increased levels of holistic cognition. Thus, holistic cognition served as an important basic cognitive feature which distinguishes between the two culturally divergent versions of social anxiety. Furthermore, independent self-construal was found to be more strongly associated with the self-focused component of social anxiety while interdependent self-construal was only associated with the other-focused component of social anxiety.

## Keywords

culture, social anxiety, social phobia, Taijinkyofusho, self-construal

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## Culture and Cognition

Recent cultural psychological research suggests that there is sufficient evidence to assume that there are culturally divergent cognitive processes, especially between East Asians and Westerners (see Nisbett, 2003, for a basic review). One of these differences involves how East Asians tend to think and pay attention to the world relatively more holistically, whereas Westerners tend to think and pay attention to the world relatively more analytically (Nisbett, Peng, Choi, & Norenzayan, 2001), although the cultural differences in analytic thinking are somewhat less reliable (see Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009).

For example, Masuda, Ellsworth et al. (2008) showed that Japanese tended to holistically scan the entire visual field of pictorial stimuli even when they were told to pay attention to a central figure in the pictures. In contrast, Americans were able to concentrate significantly more of their visual attention analytically on the central figure and much less of it on the background of the pictures. Although there is some evidence to suggest that these cultural differences in attentional styles are, to some extent, afforded by differences in the structural aspects of the physical environment in different societies (Miyamoto, Nisbett, & Masuda, 2006), cultural psychologists have generally attributed the origins of these cultural differences in attentional styles to having a dominant social orientation of self (i.e., *self-construal*; Markus & Kitayama, 1991) as *interdependent* with others and the situation in the East and as *independent* from others and the situation in the West (Kitayama, Duffy, & Uchida, 2007; Nisbett, 2003). Furthermore, by experimentally manipulating independent and interdependent self-construals, Kühnen and Oyserman (2002) were able to shift attentional styles of individuals between analytic and holistic, respectively (see also related meta-analysis by Oyserman, Sorensen, Rolf, & Chen, 2009).

## The Role of Social Anxiety in Culturally Divergent Cognitions

Social phobia, which is a dominant clinical manifestation of a social anxiety state in the Western cultural context (Kleinknecht, Dinnel, Kleinknecht, Hiruma, & Harada, 1997), tends to make individuals selectively attend outward to detect negative social cues such as yawning and boredom from the surrounding people (Bar-Haim et al., 2007), and once they conclude that they are failing to make the desired impression, they quickly switch their attention away from social cues and toward monitoring and evaluating themselves. Then, in a vicious cycle, they use the misleading interoceptive information produced by self-monitoring as evidence they are making a negative impression on others and become excessively concerned about how to avoid further embarrassing themselves (Clark & Wells, 1995). This is how cognitive theories of social phobia explain the relationship between self-focused attention and social phobia.

While it is reasonable to assume that internal and external attention compete for cognitive resources and hence to deduce that self-focused attention is necessarily associated with a reduction in holistic cognition, the relationship between social phobia and holistic cognition has yet to be directly tested. Therefore, one of the purposes of the current study is to explicitly examine the relationship between social phobia and holistic cognition.

In contrast to the dominant *self-focused* manifestation of social anxiety as social phobia in the Western cultural context, a dominant manifestation of social anxiety in East Asian cultural contexts such as Japan (Russell, 1989) and Korea (Lee, 1987, as cited in Nakamura, Kitanishi, Miyake, Hashimoto, & Kubota, 2002) tends to be *other-focused* (Nakamura et al., 2002), where instead of having an excessive concern for embarrassing oneself in public, the primary concern for the socially anxious individual is the potential for offending others and causing trouble to others with inappropriate behaviors or self-perceived offensive bodily features. Since the publication of *DSM-III*, this version of social anxiety has been classified as a culture-bound syndrome called

*taijin kyofusho* (TKS), which literally translates to “disorder (*sho*) of fear (*kyoufu*) of interpersonal relations (*taijin*)” (Maeda & Nathan, 1999, p. 525).

Social phobia and TKS are not mutually exclusive since they share similar affective features (i.e., fear) and behavioral features (i.e., avoidance; Nakamura et al., 2002). Where they diverge is in the cognitive features. Specifically, there are additionally two other-focused cognitions that characterize TKS as a culture-bound syndrome. These include (a) other-offending cognitions, which involve thoughts about potentially harming others or giving them unpleasant feelings as a result of one’s perceived “defect in [his/her own] particular body part or physical sensations, such as eyes, body odor, and appearance” (Nakamura, 1997, p. 60), and (b) cognitions about how others are always avoiding the individual for the same reason he or she is concerned about offending them (Nakamura, 1997).

Thus, while social phobia does seem to initially focus the socially phobic individual’s attention to negative social cues before they turn their attention excessively inward to interoceptive cues (Pineles & Mineka, 2005), TKS involves two additional other-focused cognitions that may be affording a greater emphasis on monitoring negative social cues than is the case for social phobia. This greater emphasis on negative social cues may then translate to attending to the environment more holistically in general. Since the relationship between TKS and holistic cognition has also yet to be tested, another purpose of the current study is to explicitly examine the relationship between TKS and holistic cognition, in addition to examining the relationship between social phobia and holistic cognition. For the reasons mentioned above, it is expected that social phobia will be associated with decreased levels of holistic cognition while TKS will be associated with increased levels of holistic cognition. Put another way, holistic cognition is expected to serve as a basic cognitive feature that discriminates between the self-focused component of social anxiety, a salient feature of social phobia, and the other-focused component of social anxiety, a salient feature of TKS.

Finally, since holistic cognition has otherwise been associated with culturally patterned social orientations of self (Kitayama et al., 2007) and since previous studies have found a close association between self-construal variables and social anxiety variables (Norasakkunkit & Kalick, 2002; Okazaki, 1997, 2002a, 2002b), including TKS (Dinnel, Kleinknecht, & Tanaka-Matsumi, 2002; Kleinknecht et al., 1997), another goal of the current study will be to attempt to unpackage cultural differences in holistic cognition with both sets of social anxiety variables (social phobia and TKS) and self-construal variables (independent and interdependent). In doing so, the current study will attempt to clarify the role that self-construal variables play in social phobia and TKS.

## Hypotheses

In the current study, participants from the United States and Japan were recruited, and they performed a task associated with holistic and analytic cognitive skills prior to filling out measures of social phobia, TKS, and self-construal. The hypotheses in the current study were as follows: (1) Social phobia, given its self-focused cognitive feature, will be associated with *decreased* levels of holistic attention; (2) TKS, given its other-focused cognitive feature, will be associated with *increased* levels of holistic cognition; (3) self-construal variables should also play their respective roles in predicting holistic cognition, and (4) both sets of social anxiety and self-construal variables together may fully account for cultural differences in holistic cognition, although this issue is somewhat exploratory.

With respect to clarifying the relationship between self-reported self-construal and the two versions of social anxiety, it was expected that independent self-construal will be more strongly tied to the self-focused component of social anxiety (i.e., statistically “purified” social phobia) than to the other-focused component of social anxiety (i.e., statistically “purified” TKS), while interdependent self-construal was expected to be more strongly tied to the other-focused component of social anxiety than to the self-focused component of social anxiety.

## Method

### Participants

Japanese participants were recruited from Koshien University in Hyogo Japan and Tokyo Woman's Christian University in Tokyo, Japan, while American participants were recruited at Minnesota State University. All participants were student volunteers among students recruited through the psychology department and received either class or extra credit for their participation. Although there were 150 participants recruited in Japan and 127 participants recruited in the United States, after removing extreme outliers on the Frame Line Test (FLT) task according to box plots in SPSS v. 15 (i.e., individuals falling beyond three times the interquartile range within each cultural group), the sample sizes were 142 Japanese (42 males, 97 females, and 3 unidentified gender) and 125 Americans (36 males, 88 females, and 1 unidentified gender). The reason there were several outliers on the FLT task in Japan may have been due to the fact that the FLT task was conducted in a large group setting where several participants later expressed confusion about what was expected of them during the FLT task but hesitated to ask questions at the time. There were no extreme outliers in the social anxiety measures in either culture.

All participants from Japan were native-born Japanese citizens. The sample size for each ethnic group in the American sample was 120 European Americans, 2 Asian Americans, and 3 African Americans. The mean age for Japanese participants was 20 ( $SD = 1.51$ ), and the mean age for American participants was 19.90 ( $SD = 3.72$ ). There was no significant age difference between the Japanese and American samples.

### Materials

The English and Japanese versions of the self-report measures employed in the current study were the same as those employed by Dinnel et al. (2002). These included the TKS Scale, the Social Interaction and Anxiety Scale (SIAS), the Social Phobia Scale (SPS), and the Self-Construal Scale. Participants were asked to complete demographic information at the end of the packet, including gender, age, ethnicity, and nationality.

*TKS Scale.* Originally developed by Kleinknecht et al. (1997), the TKS Scale is a 31-item instrument that measures anxiety related to one's shortcoming that may distress or even harm others (e.g., "I am afraid that I will blush in front of other people and as a result offend them."). Participants rated each item on a 7-point rating scale (1 = *totally false*, 7 = *exactly true*) with high scores indicating a greater tendency to display TKS symptoms. Dinnel et al. (2002) reported the same reliability Cronbach's alpha coefficient of .91 for Japanese and U.S. participants. Reliability analysis of the TKS items in the current study revealed the same Cronbach's alpha coefficient of .95 for both Japanese and U.S. participants.

*SIAS and SPS* were developed at the same time by Mattick and Clarke (1998) as self-report measures that attempted to provide reliable and valid instruments for the assessment of social phobia in particular since previous measures of social anxiety such as the Fear of Negative Evaluation Scale (Leary, 1983; Watson & Friend, 1969) and the Social Avoidance and Distress Scale (Watson & Friend, 1969) captured social anxiety in general but not necessarily *social phobia* tendencies in particular. Since the SPS and SIAS were developed at the same time by the same authors and share the same 5-point scale (0 = *not at all characteristic or true of me*, 4 = *extremely characteristic or true of me*), they are reported together here. Each scale contains 20 items. The SIAS assesses anxiety in social interactions (e.g., "I feel I'll say something embarrassing when talking."), while SPS assesses anxiety in situations of being observed by others (e.g., "I get nervous that people are staring at me as I walk down the street."). Dinnel et al. (2002) reported Cronbach's alpha reliability coefficient of .90 and .91 for Japanese and U.S. participants, respectively, for the SIAS and .94 and .87 for Japanese

and U.S. participants, respectively, for the SPS. Reliability analysis in the current study revealed the same Cronbach's alpha coefficient of .90 for both Japanese and for U.S. participants with respect to the SIAS and .92 and .93 for Japanese and U.S. participants, respectively, with respect to the SPS.

Also, as expected, the correlations between SIAS and SPS was high, as indicated by  $r = .72$ ,  $p < .001$ , and  $r = .86$ ,  $p < .001$ , for Japanese and U.S. participants, respectively. Furthermore, the fact that combining the items from both SIAS and SPS revealed a higher Cronbach's alpha coefficient of .95 for both Japanese and U.S. participants than the Cronbach's alphas of the two scales separately suggests that combining the two scales makes for a more internally consistent measure of a social phobia. Therefore, for the purposes of the current study, the sum score for social phobia tendencies will be constituted by the combined SPS and SIAS items.

*Independent and Interdependent Self-Conceptual Scale.* The current study makes use of an independent-interdependent self-construal attitude scale (Singelis, 1994) that has been used to measure the relationship between self-reported social anxiety and self-construal in previous studies (Dinnel et al., 2002; Norasakkunkit & Kalick, 2002). This 24-item scale attempts to measure the two images of self that are conceptualized as reflecting the emphasis on connectedness and relations often found in non-Western cultures (interdependent; e.g., "How I feel depends on who is around me and what situation I am in.") and the separateness and uniqueness of the individual (independent; e.g., "I enjoy being unique and different from others in many respects.") stressed in the West. Singelis (1994) initially developed 45 items that were later submitted to a confirmatory factor analysis. A two-factor solution with a varimax rotation was imposed a priori according to the theoretical framework suggested by the empirical work on "two selves" (Markus & Kitayama, 1991). Items loading approximately equally on the two factors were dropped, leaving the final 24 items that supported these two distinct dimensions of the scale. Despite some who have conducted exploratory factor analyses on the data and dispute the two-factor structure of this scale (Hardin, Leong, & Bhagwat, 2004), the exploratory factor analyses by Dinnel et al. (2002) revealed that the "most parsimonious explanation of the data was a two-factor structure" (p. 79).

Dinnel et al. (2002) reported Cronbach's alpha reliability coefficient of .60 and .43 for Japanese and U.S. participants, respectively, with respect to the independence factor and .65 and .55 for Japanese and U.S. participants, respectively, with respect to the interdependence factor. Reliability analysis in the current study revealed Cronbach's alpha coefficients of .71 and .73 for Japanese and U.S. participants, respectively, with respect to the independence factor and .71 and .67 for Japanese and U.S. participants, respectively, with respect to the interdependence factor.

*Frame Line Test (FLT).* The FLT is a context-sensitivity test developed by Kitayama, Duffy, Kawamura, and Larsen (2003) to measure whether individuals find it easier to pay attention holistically or analytically. Participants were given a packet in which they were first presented with a square and a vertical line drawn in it for five seconds, and when the page was turned, they are presented with a new square (the response square) that is either larger, smaller, or the same size as the first square but with no line drawn in it. In one condition called the "relative judgment" condition, participants were asked to draw a line within the response square (without looking back at the original square) so that the proportion of the line to the height of response square is identical to the proportion of the line to the height of the original square that they saw on the previous page. In another condition, called the "absolute judgment" condition, participants were asked to ignore the size of the original square and draw a line within the response square so that the line itself was identical in length to the line in the original square. The packet contained five items (five original sheets and five response sheets) for the relative judgment condition and five items for the absolute judgment condition.

Each FLT task measures a distinct cognitive skill. Specifically, the Relative judgment task measures degree of skill in holistic cognition, whereas the Absolute judgment task measures degree of skill in analytic cognition.



**Table 1.** Correlations for Self-Construal Variables, Social Anxiety Variables, and % Error in FLT Relative Judgment (Combined Japan and U.S. Samples)

	1	2	3	4	5	6	7
1. Independent self	—						
2. Interdependent self	.10	—					
3. Social Phobia Scale (SPS)	-.21**	-.06	—				
4. Social Interaction Anxiety Scale (SIA)	-.41**	.08	.76**	—			
5. Combined SIAS and SPS	-.33**	.07	.94**	.93**	—		
6. TKS	-.46**	.07	.45**	.55**	.53**	—	
7. % Error – Relative FLT <sup>a</sup>	.21**	.10	.13*	.06	.10	-.13*	—

a. FLT relative judgment percentage error scores, after partialling out variance shared with FLT absolute judgment percentage error scores. Higher error scores are associated with less accurate FLT relative judgment responses (i.e., reductions in holistic cognition).

\* $p < .05$ . \*\* $p < .001$ .

### Procedure

In the United States, participants were asked to come into a lab in groups and complete the FLT. All participants completed both the relative judgment condition and absolute judgment condition in counterbalanced order across participants. In Japan, participants completed the FLT in one large group during class time where the order of the FLT conditions was counterbalanced by randomly assigning half of the class to start with the relative judgment condition first while the other half started with the absolute judgment condition first. The percentage of the error relative to the correct line length was recorded for each FLT response. Therefore, higher percentage scores indicated less accurate judgment. Put another way, the lower the percentage scores, the more accurate the FLT response.

After reading the instructions for the FLT, the researcher prompted the participants to look at an original square for 5 seconds before asking them to turn the page to the response page to draw the line, and so on for each of the squares. Following all the FLT items, the participants were given a packet containing the self-construal scale, the anxiety measures (SIAS, SAS, and TKS scale), and the demographic page to complete.

### Results

The percentage error in the FLT Relative judgment task (i.e., errors in performance of holistic cognition) was significantly and positively correlated with percentage error in the FLT Absolute judgment task (i.e., errors in performance of analytic cognition), as indicated by  $r = .29, p < .001$ . This suggests that individuals who tended to make errors on one FLT judgment task were prone to making errors on the other FLT judgment task, probably because, in general, those who were prone to making errors in one task were prone to making errors in any similar task, independent of relative differences between task performances. Therefore, any reported correlational finding, including bivariate correlations, involving performance on FLT Relative judgment task partialled out the variance it shares with performance on FLT Absolute judgment task in order to, theoretically, obtain a “purified” performance score on FLT Relative judgment, independent of general proneness to errors on similar tasks (i.e., FLT Absolute judgment).

Table 1 reported correlations collapsed across cultures and Table 2 reported correlations separately for each culture. The striking difference between the two tables is the relationship between holistic cognition (i.e., % Error – Relative Judgment) and social anxiety significant in Table 1 when culture was collapsed but non-significant when this relationship was examined separately by culture

**Table 2.** Correlations for Self-Construal Variables, Social Anxiety Variables, and % Error in FLT Relative Judgment by Culture

	1	2	3	4	5	6	7
1. Independent self	—	.14	-.34**	-.32**	-.34**	-.29**	.20*
2. Interdependent self	.02	—	.06	.07	.07	.14	.16
3. Social Phobia Scale (SPS)	-.40**	.01	—	.86**	.97**	.59**	-.02
4. Social Interaction Anxiety Scale (SIAS)	-.56**	.07	.72**	—	.96**	.48**	.07
5. Combined SIAS and SPS (self-focused social anxiety)	-.52**	.04	.93**	.93**	—	.56**	.02
6. TKS (other-focused social anxiety)	-.45**	.08	.77**	.74**	.81**	—	-.14
7. % Error – Relative FLT <sup>a</sup>	.05	-.04	.01	-.03	-.01	.01	—

a. FLT relative judgment percentage error scores, after partialling out variance shared with FLT absolute judgment percentage error scores. Higher error scores are associated with less accurate FLT relative judgment responses (i.e., reductions in holistic cognition). Correlations from Japanese are below diagonal. Correlations from Americans are above diagonal.

\* $p < .05$ . \*\* $p < .001$ .

**Table 3.** Between-Culture Differences in Social Anxiety Measures and FLT Judgment Between Japanese and U.S. Participants

Measures	Culture	M	SD	t	df	p	$\eta^2$
Combined SIAS and SPS (sum)	JPN	58.85	27.39	-4.21	265	<.001	.06
	U.S.	72.99	27.43				
TKS (sum)	JPN	101.74	33.06	6.49	265	<.001	.14
	U.S.	76.50	30.08				
FLT relative (% error)	JPN	10.23	5.53	-5.77	265	<.001	.11
	U.S.	15.17	8.32				
FLT absolute (% error)	JPN	15.00	14.85	-1.20	265	ns	.01
	U.S.	17.07	11.95				
Independent self-construal (mean)	JPN	4.38	.75	-5.70	265	<.001	.11
	U.S.	4.87	.66				
Interdependent self-construal (mean)	JPN	4.55	.71	-1.50	265	ns	.01
	U.S.	4.68	.69				

in Table 2. This finding suggests that the relationship between holistic cognition and social anxiety was only relevant in explaining between-culture variance (Table 1) but not in explaining within-culture variance (Table 2).

Any cultural differences found were in the expected direction (see Table 3). Specifically, Americans scored higher than Japanese on (1) percentage errors in FLT Relative judgment task, (2) sum of combined SPS and SIAS items (i.e., self-focused social anxiety), and (3) levels of independent self-construal, while Japanese scored higher than Americans on levels of TKS (i.e., other-focused social anxiety). No cultural differences were found on percentage errors in FLT Absolute judgment task or on levels of interdependent self-construal. Also, no gender differences were found on any of the variables other than in levels of interdependent self-construal, where women scored higher than men on interdependent self-construal. Given the lack of gender differences and since examining gender was beyond the scope of this investigation, gender was not included in the regression models.



Results of the hierarchical regression analyses supported the hypothesis about the association between the two versions of social anxiety and holistic cognition, while the expected associations between holistic cognition, self-construal variables, and the two versions of social anxiety were partially supported. The only time holistic cognition was not associated with either version of social anxiety was when culture was controlled for. Therefore, consistent with the correlation results, the relationship between holistic cognition and the two versions of social anxiety were only relevant in the context of explaining between-culture variance and not within-culture variance. This suggests that the cultural differences in the relationship between holistic cognition and the two versions of social anxiety cannot be unpackaged into only individual difference variables examined in the current study.

Starting with Model 1 in Table 4, which only examined individual difference variables as predictors and did not include a between-group variable (i.e., culture) as a predictor, percentage errors in FLT Relative judgment was regressed on percentage errors in FLT Absolute judgment at Step 1, the two versions of social anxiety (i.e., combined SPS-SIAS and TKS) in Step 2, and the self-construal variables (i.e., independent and interdependent) in Step 3. As expected, with respect to the two versions of social anxiety, social phobia tendencies were associated with decreased levels of holistic cognition, while TKS tendencies were associated with increased levels of holistic cognition. Also, as expected, independent self-construal was associated with decreased levels of holistic cognition. Interestingly, interdependent self-construal did not predict holistic cognition. Finally, it should be noted that even when the percentage error in holistic cognition was not “purified” by partialling out the variance it shared with the percentage error in analytic cognition (positive correlation), the results did not change. However, for theoretical reasons, it was important to continue using the “purified” percentage error scores in holistic cognition as the dependent variable, other than when holistic cognition was not the dependent variable (Table 5 and Table 6), in the current study.

In Model 2 of Table 4, culture was added in Step 4 to the same hierarchical regression model as in Model 1 in order to examine whether both sets of social anxiety variables and self-construal variables together can unpackage cultural differences in holistic cognition. As it turned out, culture continued to predict performance on holistic cognition even with the social anxiety and self-construal variables hierarchically entered prior to entering culture into the model. Therefore, cultural differences in holistic cognition continued to remain robust despite attempting to unpackage cultural differences with some relevant individual difference variables that were associated with holistic cognition.

Since cultural differences in holistic cognition could not be fully unpackaged with some relevant individual difference variables in Model 2, Model 3 in Table 4 attempted to examine which sets of variables, social anxiety variables or self-construal variables, explained unique variance in holistic cognition beyond culture. To examine this, culture was hierarchically entered into the model at Step 2 prior to entering social anxiety variables at Step 3 and self-construal variables at Step 4. Results indicated that entering culture at Step 2 rendered the social anxiety variables insignificant in predicting holistic cognition. However, *independent* self-construal remained a significant predictor of holistic cognition even with culture entered in an earlier step. Therefore, only independent self-construal was able to explain unique variance in holistic cognition beyond culture. Consequently, it can be said that not only are self-construal and social anxiety distinct predictors of holistic cognition, but self-construal-related concepts are more likely to capture salient individual difference aspects of holistic cognition beyond culture than social anxiety-related concepts.

For exploratory purposes, percentage error on FLT Absolute judgment (i.e., errors in performance of analytic cognition) was also set as the DV as FLT Relative judgment was entered in Step 1 and the predictor variables were hierarchically entered in the same order as in Model 1.

**Table 4.** Three Models of Hierarchical Multiple Regressions Predicting Reductions in Holistic Cognition (i.e., % Error in FLT Relative Judgment With Variance Shared With % Error in FLT Absolute Judgment Hierarchically Partialled Out)

Model 1				
Variable	Beta	Increment $R^2$	F Change	p
Step 1				
% error in FLT absolute judgment	.29***	.08	24.29	<.001
Step 2				
Combined SIA and SP (self-focused social anxiety)	.23**	.05	7.73	= .001
TKS (other-focused social anxiety)	-.24***			
Step 3				
Independent self-construal	.20*	.04	6.41	= .002
Interdependent self-construal	.07			
Model 2				
Variable	Beta	Increment $R^2$	F Change	p
Step 1				
% error in FLT absolute judgment	.29***	.08	24.29	<.001
Step 2				
Combined SIA and SP (self-focused social anxiety)	.23***	.05	7.73	= .001
TKS (other-focused social anxiety)	-.24***			
Step 3				
Independent self-construal	.20*	.04	6.41	= .002
Interdependent self-construal	.07			
Step 4				
Culture <sup>a</sup>	.23*	.03	8.83	=.003
Model 3				
Variable	Beta	Increment $R^2$	F Change	p
Step 1				
% error in FLT absolute judgment	.29***	.08	24.29	<.001
Step 2				
Culture <sup>a</sup>	.31***	.10	31.60	<.001
Step 3				
Combined SIA and SP (self-focused social anxiety)	.05	.001	.16	ns
TKS (other-focused social anxiety)	-.04			
Step 4				
Independent self-construal	.15*	.02	3.18	<.05
Interdependent self-construal	.06			

Note. Positive betas = association with reductions in holistic cognition; Negative betas = association with greater increases in holistic cognition.

a. Value labels for Culture: 1 = Japan; 2 = United States.

\* $p < .05$ . \*\* $p = .001$ . \*\*\* $p < .001$ .

**Table 5.** Results of Hierarchical Multiple Regression Predicting “Purified” Social Phobia (Combined SIA and SP: Self-Focused Social Anxiety) With Self-Construal Variables, Partialling Out TKS (Other-Focused Social Anxiety), Holistic Cognition, and Culture

Variable	Beta	Increment R <sup>2</sup>	F change	p
Step 1				
TKS (other-focused social anxiety)	.53***	.29	105.77	<.001
Step 2				
Reductions in holistic cognition (i.e., % error in FLT relative judgment)	.18**	.03	11.75	= .001
Step 3				
Culture <sup>a</sup>	.51***	.20	110.85	<.001
Step 4				
Independent self-construal	-.22***	.04	10.53	<.001
Interdependent self-construal	.00			

a. Value labels for culture: 1 = Japan; 2 = United States.

\*\*p = .001. \*\*\*p <.001.

**Table 6.** Results of Hierarchical Multiple Regression Predicting “Purified” TKS (Other-Focused Social Anxiety) With Self-Construal Variables, Partialling Out Social Phobia (Combined SIA and SP: Self-Focused Social Anxiety), Holistic Cognition, and Culture

Variable	Beta	Increment R <sup>2</sup>	F Change	p
Step 1				
Combined SIA and SP (self-focused social anxiety)	.53***	.29	105.77	<.001
Step 2				
Reductions in holistic cognition (i.e., % error in FLT relative judgment)	-.18**	.03	12.03	= .001
Step 3				
Culture <sup>a</sup>	-.53***	.24	142.41	<.001
Step 4				
Independent self-construal	-.10*	.01	3.50	<.05
Interdependent self-construal	.08†			

a. Value labels for culture: 1 = Japan; 2 = United States.

\*p < .05. \*\*p = .001. \*\*\*p < .001. †p < .06.

It turned out that none of the predictor variables (i.e., social anxiety variables or self-construal variables) was associated with performance on analytic cognition.

To clarify the role that self-reported self-construal variables play in the self-focused component of social anxiety (Table 5) and the other-focused component of social anxiety (Table 6) at the individual level, combined SPS-SIAS and TKS were statically “purified” by partialling out the variance each shared with the other as well as with holistic cognition and culture. As expected, independent self-construal was a reliable individual difference variable that was inversely associated with both versions of social anxiety, although the difference in beta weights for independent self-construal across the two hierarchical regression models suggest that it was more strongly tied to the self-focused component of social anxiety than to the other-focused component of social anxiety, which was also expected. Indeed, the test for the difference in the dependent partial correlation (Bruning & Kintz, 1997) between

independent self-construal and “purified” social phobia tendencies or self-focused social anxiety ( $r = -.27$ ) and the partial correlation between independent self-construal and “purified” TKS or other-focused component of social anxiety ( $r = -.11$ ) revealed that independent self-construal was significantly more strongly tied to the self-focused component of social anxiety than with the other-focused component of social anxiety, as indicated by  $t(261) = -3.18, p < .001$ . In contrast, interdependent self-construal was positively associated with only the other-focused component of social anxiety and not associated with the self-focused component of social anxiety at all.

## Discussion

The current study investigated the role of culturally divergent versions of social anxiety and self-construal variables in holistic cognition among Japanese and Americans. The version of social anxiety that is dominant in the North American cultural context is social phobia, in which attention is primarily turned inward as a means of monitoring the self due to an excessive concern about potentially embarrassing oneself in public or failing to make a good impression. In contrast, the version of social anxiety that is common in Japan and other East Asian societies like Korea is TKS, in which attention is primarily turned outward as a means of monitoring social cues for signs that *others* are disturbed or even harmed by one’s perceived defective physical features or potentially offensive behaviors. Therefore, it was hypothesized that social phobia tendencies, given their excessive self-focus, will be associated with decreased levels of holistic cognition. In contrast, it was hypothesized that TKS tendencies, given their excessive other-focus, will be associated with increased levels of holistic cognition. As expected, these hypotheses were fully supported, but only in the context of explaining cross-cultural variance. Specifically, while correlations suggest that social phobia tendencies and TKS tendencies co-occur within the same person, Japanese were found to score higher on TKS tendencies and holistic cognition relative to Americans, while Americans were found to score higher on social phobia tendencies relative to Japanese. Therefore, the dominant manifestation of social anxiety clearly diverged across cultures in the current study. Moreover, holistic cognition seems to serve as a useful basic cognitive feature that discriminates between the two culturally divergent versions of social anxiety.

Contrary to our expectation that the relationship between social anxiety and holistic cognition would hold at the individual level, these results suggest that basic cognition and manifestations of social anxiety co-occur in a way that is only apparent when examining cross-cultural differences but not necessarily when examining individual differences. According to Na et al. (2010), it is not at all uncommon that relationships between variables found at the culture level may not hold at the individual level. In the context of the current study, one can argue that cultural systems that encourage one type of cognitive style also foster some type of social anxiety or vice versa, but because the correlations are resulting from certain features of cultural systems, there is no reason to expect analogous correlations within a cultural group. In any event, since the role of holistic cognition in social anxiety cannot be verified at the individual level, it is still premature to discuss divergent attentional training as one of the treatment implications across social phobia and TKS since treatment generally occurs at the individual level rather than at the systems level.

Moreover, it behooves us to point out that even though basic cognitive preferences across cultures may exert some influence on how social anxiety tends to be manifested across cultures, there are probably many predictors of a cognitive preference within a culture. Thus, social phobia and TKS tendencies may occupy only a very small portion of one’s psychological activities. Hence, it should not be surprising that the portion of variance in holistic cognition that was explained by social phobia and TKS tendencies was relatively small. However, when predicting either the self-focused component of social anxiety or the other-focused component of social anxiety, the relatively large variance explained by “culture” and the unique variance beyond culture

explained by independent self-construal in both cultures should generate further research questions about cultural practices of coping with social anxieties and the mechanisms by which independent self-construal and social anxiety are related.

It should also be noted that although, as expected, the two versions of social anxieties relate to holistic cognition in opposite ways according to the regression models, the zero-order relationship between percentage errors in holistic cognition and social phobia in Table 1 was nonsignificant. This is thought to be due to a suppressor effect in which social phobia is composed of two components: one of these is shared with TKS and is positively related to holistic cognition, whereas the other is unique to social phobia and is negatively related to holistic cognition.

Consistent with cultural psychological studies that have reliably found that East Asians are more holistic than Americans in their cognitive styles (Masuda, Ellsworth et al., 2008; Masuda, Gonzalez, Kwan, & Nisbett, 2008; Masuda & Nisbett, 2001), the current study also found that Japanese made significantly fewer errors in a task related to holistic cognition (i.e., FLT Relative Judgment) relative to Americans. Given that these differences have conventionally been explained in terms of the social orientation of self as predominantly independent in the West and predominantly interdependent in the East (Kitayama et al., 2007; Nisbett, 2003), the current study also included self-reported self-construals as predictors of holistic cognition, in addition to the scores on the two versions of social anxiety. The expected association between holistic cognition and self-construal variables was partially supported. Specifically, levels of independent self-construal, given its self-focus (Markus & Kitayama, 1991), were associated with decreased levels of holistic cognition. This relationship held even at the individual difference level (i.e., after controlling for culture in Model 3 of Table 4). Interestingly, levels of interdependent self-construal were not associated with holistic cognition.

Since self-construal variables and self-reported social anxiety have been associated at the individual difference level in previous studies (e.g., Dinnel et al., 2002, Okazaki, 2002a, 2002b), albeit with interdependent self-construal having a less reliable association with self-reported social anxiety than independent self-construal (Kleinknecht et al., 1997; Norasakkunkit & Kalick, 2002, 2009; Okazaki, 1997, 2000), the current study took advantage of the opportunity to further clarify these relationships. Specifically, social phobia and TKS were statistically purified so that they represented primarily the self-focused component of social anxiety and primarily the other-focused component of social anxiety, respectively. As expected, independent self-construal was reliably associated with both components of social anxiety but more strongly associated with the self-focused component of social anxiety. Interdependent self-construal, on the other hand, was associated with only the other-focused component of social anxiety and not at all with the self-focused component of social anxiety. This finding was also consistent with what was expected as well as with the less reliable association between self-reported interdependence and social anxiety found in previous studies (see Hong & Woody, 2007). These relationships, however, are limited only to the semantic (i.e., attitudinal) aspect of self-construal due to the reliance of a self-report measure that may not fully capture the structural aspects of self-construal (Levine et al., 2003). Therefore, future research should go beyond self-report measures of self-construal to capture self-construal, both independent and interdependent, more thoroughly at the structural level.

The current study was unable to replicate Kitayama et al.'s (2003) finding of a cultural difference in analytic cognition. However, recent studies suggest that cultural differences in holistic cognition have been found more reliably than cultural differences in analytic cognition (see Kitayama et al., 2009), perhaps because analytic thinking is relatively easier to learn due to it being pedagogically easier to teach than holistic thinking (Nisbett, 2003).

Recently, Kim and Markman (2006) suggested that fear of loss of social approval or "fear of isolation" plays a key role in holistic cognition. Specifically, they suggested that because East Asians tend to have a fear of being isolated, they are especially inclined to chronically attend to relationships

among individuals, which “also extend to more general reasoning about relationships among items in the world” (p. 353). Indeed, they found that by manipulating fear of isolation, they were also able to affect holistic cognition directly. However, the way in which holistic cognition is related to social phobia in the current study seems to challenge Kim and Markman’s (2006) contention that cultural differences in holistic cognition are rooted primarily in chronic fear of isolation among East Asians.

On the other hand, Kim and Markman manipulated fear of isolation independent of anxiety states. Thus, despite the use of the word *fear*, fear of isolation may simply represent an other-focused cognition rather than social anxiety, especially since the idea that social anxiety is positively associated with holistic cognition would oppose a litany of studies that suggest quite the opposite (e.g., Hope, Heimberg, & Klein, 1990; Ingram, 1990; Mansell, Clark, & Ehlers, 2003; Mor & Winquist, 2002; Pineles & Mineka, 2005; Pyszczynski, Greenberg, Hamilton, & Nix, 1991; Salovey, 1992)—namely that social anxiety, at least in the North American cultural context, is associated with a greater degree of self-focus attention, as is consistent with the results for social phobia tendencies in the current study being associated with a decrease in the level of holistic cognition rather than increases of it. Since studies that either prime for anxiety states (Pineles & Mineka, 2005) or prime for self-focus attention (Woody, 1996) have found direct influence on one another, anxiety states and self-focus attention are also reciprocally and cyclically related to one another in the North American cultural context (Mor & Winquist, 2002).

Also, perhaps both social phobia and TKS tendencies do require the individual to switch back and forth between external cues and internal cues, even though social phobia tendencies are associated with a relatively greater concentration of attention to internal cues while TKS tendencies are associated with a relatively greater concentration of attention to external cues. Therefore, being raised in a predominantly independent cultural system may translate into being more consistently focused on the self, which may be a precursor to being high on social phobia tendencies if one is vulnerable to social anxiety in general.

A limitation in the current study was that social phobia and TKS were measured as traits rather than manipulating anxiety states. It would be fruitful for future studies to examine the relationship between social anxiety variables and holistic cognition by experimentally manipulating social phobia and TKS states to test if such manipulations may directly and causally affect holistic cognition at the individual level.

In conclusion, the current study supports the idea that self-construal continues to play an important role in culturally divergent cognitive styles. Additionally, the role that the two culturally divergent versions of social anxiety (social phobia tendencies in North America and TKS tendencies in East Asia) play in holistic cognition is something that has not been examined in previous studies. The findings of the current study suggest that the two versions of social anxiety not only diverge across cultures but also diverge in a basic cognitive feature across cultural systems. Namely, social phobia tendencies were associated with decreased levels of holistic cognition, while TKS tendencies were associated with increased levels of holistic cognition when Americans and Japanese were compared. Furthermore, a greater clarity with respect to the association between self-construal variables and the two versions of social anxiety at the individual difference level was revealed. Specifically, independent self-construal was a reliable predictor of self-reported social anxiety, especially the kind that is primarily self-focused while interdependent self-construal was associated with only the other-focused component of social anxiety.

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