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### Anxiety, self-discrepancy, and regulatory focus theory: acculturation matters

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## **Anxiety, self-discrepancy, and regulatory focus theory: acculturation matters**

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Previous research has found that Asians (vs. Caucasians) exhibit higher levels of ought and undesired self-discrepancies and prevention focus, all of which have been linked with anxiety. We examined these ethnic differences in the context of acculturation. Participants ( $N = 155$ ) completed two sessions scheduled a week apart. In Session 1, participants completed a computer task to measure self-discrepancy and prevention focus. In Session 2, participants' ought self-discrepancies and closeness to an undesired self were primed. Moderation analyses indicated that Asian participants who were highly assimilated to an Asian culture exhibited higher levels of a prevention focus. Acculturation also had significant moderation effects for affect when self-discrepancies were primed. Our results suggest that interventions based on these systems (i.e., self-system therapy) should consider acculturation when treating diverse individuals.

**Keywords:** self-discrepancy; regulatory focus; anxiety; acculturation; ethnicity; culture

As our world becomes increasingly multicultural, a call has gone out to expand our understanding of cultural processes (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Increasing awareness of cultural variables such as acculturation allows research to move beyond studies based only on ethnic classification. However, many of our most basic psychological systems, such as self-discrepancy theory (Higgins, 1987) and regulatory focus theory (Higgins, Shah, & Friedman, 1997), have yet to be fully understood in a multicultural context. Our aim in the current study was to examine how these systems operate in the context of acculturation, and the resulting implications for treatment of anxiety.

Self-discrepancy theory has focused on specific self-guides (Higgins, 1987), which represent hypothetical selves that a person may move toward. The ideal self involves aspirational goals, whereas the ought self involves attributes that the individual feels should be possessed. Increasing amounts of discrepancy between the person's current (actual) self and self-guides have been found to produce negative affect, with discrepancies between actual and ideal producing sadness and discrepancies between actual and ought producing anxiety (Higgins et al., 1997). In addition, it has been hypothesized that people also have an undesired self-guide (Markus & Nurius, 1986), which is seen as a set of qualities the person does not want to become (Oyserman & Markus, 1990). Closeness to an undesired self has been found to predict general

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negative affect over and above the role of discrepancies from ought selves (Carver, Lawrence, & Scheier, 1999).

Regulatory focus theory proposes that there are two regulatory systems (prevention and promotion focus) concerned with meeting basic needs through the pursuit of different goal types (Higgins et al., 1997). For example, security needs (and greater reliance on the ought self-guide) relate to prevention focus whereas accomplishment needs (and greater reliance on the ideal self-guide) relate to promotion focus. In other words, prevention focus centers on avoidance, whereas promotion focus centers on approach. Previous research has linked prevention focus with anxiety and behavioral avoidance, and promotion focus with the emotions of dejection (if the goal is not reached) and approach strategies (Shah, Brazy, & Higgins, 2004).

The above two theories have important implications for the study and treatment of psychopathology in general and anxiety more specifically. First, the distinction between ought and ideal selves suggests that there are fundamental differences between states of anxiety and depression. Strauman (1989) compared clinically depressed individuals with clinically socially phobic individuals and found that socially phobic individuals exhibited higher levels of ought self-discrepancy, whereas clinically depressed individuals exhibited higher levels of ideal self-discrepancy. In addition, Strauman (1989) found that depressed individuals became more dejected than socially phobic individuals when primed with their ideal self-discrepancies, whereas socially phobic individuals became more anxious when primed with ought self-discrepancies. Thus, modifying distance between actual and ideal (or ought) discrepancies may result in effective treatments (i.e., self-system therapy; Strauman et al., 2006). In addition, previous research has found that individuals who are unable to reach their promotion goals effectively are at risk for depression (Scott & O'Hara, 1993; Strauman, 2002), and that a prototypical prevention behavior, avoidance, may maintain or lead to anxiety (Wells et al., 1995). Taken together, these findings highlight the importance of these theories in clinical research and application (cf. Rodebaugh & Donahue, 2007; Strauman, 1989). However, research is needed before clinicians can be sure of the application of these theories to diverse populations.

Literature on self-discrepancy theory, regulatory focus theory, and culture has been minimal and has generally focused on cultural differences in countries outside of the USA. Researchers found that Japanese adolescents have higher levels of ideal self-discrepancies than Swedish and Canadian adolescents (Nishikawa, Norlander, Fransson, & Sundbom, 2007) but that these discrepancies were less distressing for the Japanese than Canadian students (Heine & Lehman, 1999). Cheung (1997) found that ought discrepancies were more likely than ideal discrepancies to predict depression in Chinese adolescents, and that closeness to an undesired self was the most salient predictor of depression. Finally, Hardin and Leong (2005) found that closeness to an undesired self had a direct path to social anxiety in Asian (but not Caucasian) participants.

Research on regulatory focus theory and culture has found that Asian and Asian-American individuals tend to exhibit higher levels of prevention focus and avoidance goals (e.g., Elliot, Chirkov, Kim, & Sheldon, 2001; Hamamura, Meijer, Heine, Kamaya, & Hori, 2009). This finding has been consistent across Chinese (Lalwani, Shrum, & Chiu, 2009; Lee, Aaker, & Gardner, 2000), Asian-American, South

Korean, Russian (Elliot et al., 2001), and Japanese individuals (Hamamura et al., 2009).

The above studies have focused solely on ethnicity as a way of representing cultural differences. Although ethnicity is an important component of culture, researchers have called for movement to models that include constructs that may underlie the effects of ethnicity, such as acculturation (Schwartz et al., 2010). Research has examined self-construal and group memberships' relationship with regulatory focus (Briley & Wyer, 2002; Lee et al., 2000), but to our knowledge there has been no research on the relationship between self-discrepancy, regulatory focus, and acculturation.

Acculturation refers to changes that take place as a result of contact with culturally dissimilar people, groups, and social influences (Gibson, 2001) and is recognized as a multi-faceted construct, that is important for psychological well-being (see Schwartz et al., 2010, for a review). Acculturation has been found to relate to health outcomes such as anxiety (Wang, Schwartz, & Zamboanga, 2010), drug and alcohol use (Allen et al., 2008), and physical activity (Corral & Landrine, 2008). Acculturation has been found to be both a mediator and moderator of ethnicity (Sussman, Truong, & Lim, 2007; Wiking, Johansson, & Sundquist, 2004), and a more accurate predictor than generational status (Bang, Hall, Anderson, & Willingham, 2005). Thus, acculturation has been found to either account for apparent effects of ethnicity, or to alter the meaning of ethnicity as a predictor.

Research has suggested that acculturation is a bi-dimensional construct in which individuals vary in their level of identification with both a host and heritage culture (e.g., Berry, 1980). Dominant immersion is the adoption of the dominant society, whereas ethnic immersion is retention of an ethnic society other than the dominant society. For example, for an individual living in the USA, level of acculturation is thought to consist of two distinct components: (1) dominant acculturation, reflecting immersion in the dominant US culture and (2) ethnic acculturation, reflecting immersion in any other non-US culture.

It seems theoretically plausible that assimilation in a given culture could cause varying levels of self-discrepancy and prevention focus because of the emphasis that the culture puts on each type of self. Thus, in the following study, we examined the relationship between dominant and ethnic acculturation, regulatory focus, and self-discrepancy. We expected that levels of acculturation might better explain cultural differences than ethnicity alone. For example, an Asian individual (residing in the USA) who is highly immersed in Japanese culture may exhibit patterns similar to a native Japanese individual, whereas an Asian individual highly immersed in the culture of the USA may behave similarly to a Caucasian born in the USA. If this contention is true, it may be that ethnicity interacts with acculturation to produce varying levels of self-discrepancies and prevention focus.

In the following study, we focus on ought and undesired self-discrepancy, and prevention focus as they relate to anxiety and negative affect. We hypothesized that (1) Asian participants will exhibit greater ought, undesired self-discrepancy, and prevention focus than Caucasian participants and (2) acculturation will interact with ethnicity to predict self-discrepancy and prevention focus such that Asian participants who are more acculturated to Asian culture will exhibit more ought self-discrepancy and prevention focus in comparison to those who are less acculturated (whereas acculturation will have no effect for Caucasian participants).

We would also expect that individuals who exhibit higher ought self-discrepancies would experience higher levels of anxiety when their own ought self-discrepancies are primed (Higgins, 1987; Shah et al., 2004). However, previous research has found that Asian individuals feel less distress than European-Americans over ought self-discrepancies, and that closeness to an undesired self is the best predictor of distress for Asian individuals (Heine & Lehman, 1999). Thus, it may be that priming Asian individuals with their own ought self-discrepancy would not create high levels of distress, whereas priming closeness to an undesired self would create high levels of negative affect. We would also expect that acculturation may serve as a better predictor of distress than ethnicity: individuals of Asian descent who are less immersed in the culture of the USA and have higher levels of ought self-discrepancies would experience lower levels of distress than individuals who are highly immersed in the culture of the USA. Alternatively, individuals of Asian descent who are close to their undesired self and highly immersed in an ethnic culture may experience higher levels of negative affect.

## Method

### *Participants*

Participants were 155 individuals<sup>1</sup> (53 men and 102 women) who completed a questionnaire packet to receive 15 dollars or credit as part of their coursework at a Midwestern university. Of the 155 individuals, 151 completed both sessions of the study (4 elected to withdraw after participation in the first session). The sample consisted of Caucasians ( $n = 91$ , 59.1%), Asian/Asian-Americans ( $n = 46$ , 29.9%), African-Americans ( $n = 10$ , 6.5%), and participants who identified as Multiracial ( $n = 6$ , .6%); one participant reported her ethnicity was not listed. Of the Asian/Asian-Americans, 11 identified themselves as Asian (23.9%) and 35 identified themselves as primarily Westerners (Asian-Americans, 76.1%). The Caucasian and Asian/Asian-American sample were the only two groups large enough to explore group differences; as a result, for main analyses, only the Asian/Asian-American ( $n = 46$ ) and Caucasian ( $n = 91$ ) samples were used ( $n = 138$ ). For analyses from the second session, the sample consisted of Asian/Asian-American ( $n = 45$ ) and Caucasian ( $n = 88$ ) participants. The median age of participants was 19.82 ( $SD = 1.74$ ), and most participants ( $n = 132$ , 85%) were US citizens. Participants ranged in generational status from first to fifth or more generations with a mean generational status of 3.19 ( $SD = 1.52$ ). Most participants reported English as the primary language spoken in their home ( $n = 121$ , 78%). However, a minority of participants reported Chinese ( $n = 15$ , 9.7%), Korean ( $n = 14$ , 9.1%), and other ( $n = 4$ , 2.6%).

### *Questionnaire measures*

#### *Demographics*

We collected extensive demographic information including gender, student status, religion, ethnicity, citizenship, country, generation, and language history.

Stephenson Multigroup Acculturation Scale (SMAS; Stephenson, 2000) is a 32-item measure of acculturation across multiple ethnic groups. It consists of two

subscales: dominant and ethnic immersion. The dominant immersion subscale represents higher levels of acculturation within the dominant society, whereas the ethnic immersion subscale represents higher levels of acculturation within a non-dominant society. This scale, based on Berry's (1980) model of acculturation, has been shown to have high reliability, factor validity, and convergent validity with other measures of acculturation (Stephenson, 2000). In the current sample, the subscales exhibited very good to excellent internal consistency ( $\alpha > .84$ ).

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 20-item measure employing a 5-point Likert-type scale ranging from 0 (not at all) to 4 (extremely). The items describe anxiety-related reactions to a variety of social situations. Overall, research on the scale suggests good to excellent reliability and good construct and convergent validity (see Heimberg & Turk, 2002, for a review). The reverse-scored items are omitted here because available evidence suggests that these items fail to load on the same factor as the other items (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006) and appear less related to social anxiety and more related to extraversion than is desirable (Rodebaugh, Woods, & Heimberg, 2007). The straightforward items of the SIAS displayed excellent internal consistency ( $\alpha = .92$ ).

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a measure of positive (e.g., excited) and negative (e.g., scared) activated affect. Affect is assessed through 10 items on a 5-point Likert-type scale from 1 (very slightly or not at all) to 5 (extremely). Watson et al. (1988) report good internal consistency, convergent, and discriminant validity. The state (to what extent you feel this way right now, at the present moment) instructions were given for administrations of the measure prior to and after each block of the priming task (please see procedure). In the current study, the negative affect scale was used to measure negative affect experienced when undesired self-discrepancies were primed. The negative affect subscale exhibited very good internal consistency ( $\alpha = .87$ ).

Brief State Anxiety Measure (BSAM; Berg, Shapiro, Chambless, & Ahrens, 1998) is a version of the State-Trait Anxiety Inventory (STAI; Spielberger, 1983) containing 6 of the original 20 items (e.g., strained) rated on a 1 (not at all) to 4 (very much so) Likert-type scale. Berg et al. report that this measure showed good internal consistency and a high correlation with the full 20-item scale ( $r = .93$ ). In the current sample, the BSAM exhibited good internal consistency ( $\alpha = .77$ ). This measure was used to measure state anxiety experienced when ought self-discrepancies were primed.

The State-Trait Anxiety Measure (STAI-A; Bieling, Antony, & Swinson, 1998) is a measure of trait anxiety. We used a shortened version of the original STAI (Spielberger, 1983). Bieling et al. (1998) examined the original STAI, and found that it consisted of two factors, only one of which clearly measured anxiety; we use the items that comprise this single factor here. Bieling et al. (1998) additionally found that these items (i.e., the STAI-A) exhibited excellent convergent validity with other measures of anxiety. In the current study, the STAI exhibited very good internal consistency ( $\alpha = .81$ ).

### *Computer measures*

Ought, ideal, and undesired self-discrepancies (Shah et al., 2004) were measured in a computer task. Participants listed three types of characteristics (six words each) that

they felt they (1) ought to possess (ought), (2) would ideally like to possess (ideal), and (3) do not want to possess (undesired). Participants were asked to rate how closely they have achieved these characteristics on a 0 (not at all like me) to 9 (exactly like me) Likert-type scale. A rating closer to 0 was considered more discrepant for ought/ideal words, and a rating closer to 9 was considered closer to undesired self for undesired words. Total discrepancies were calculated by summing all six ratings for each type of discrepancy. Internal consistency for these totals were acceptable ( $\alpha = .62, .66, .70$ ). Participants also listed the same types of words for a fireman, teacher, and reporter to serve as control words in the reaction time task (see below).

Regulatory Focus Style (Shah et al., 2004) was measured using a lexical decision task based on Shah et al. (2004). The ought/ideal words from the self-discrepancy task were used along with the control words and non-words generated from the ARC non-word generator (Rastle, Harrington, & Coltheart, 2002). In lexical decision tasks, participants determine whether letter strings are words or non-words as quickly as possible. Quicker response time on ought words was operationalized as having a greater prevention focus, whereas quicker response time on ideal words was operationalized as having higher levels of a promotion focus. In accord with Shah et al. (2004), response times were logarithmically transformed to improve normality (Fazio, 1990) and summed. Because, the speed of participants' incorrect responses would have been difficult to interpret in terms of accessibility, only correct responses were used in calculating these response time totals, and trials that were less than 200 ms or above 1500 ms were not used (Bargh, Chaiken, Gvender, & Pratto, 1992).

### ***Procedure***

Participants were invited to take part in a two-session study in which they would answer questionnaires, perform two computer tasks, and participate in a response task. The second session was approximately 1 week after the first session.

### ***Session 1***

Participants gave written informed consent and filled out a variety of measures including measures not listed here; then, they were escorted to a computer room. Participants were given descriptions of ought, ideal, and undesired selves, and instructed to write down six of each type of these words in reference to themselves. Participants followed instructions on the computer that asked them to input each of the previously listed words, rate their level of discrepancy, list the same types of characteristics for others (e.g., fireman), and then participate in the regulatory focus task. The regulatory focus task consisted of four practice trials and two blocks of 36 trials (six ought words, six ideal words, six control ideal words, six control ought words, and 12 non-words) presented in random order.

### ***Session 2***

Before Session 2, participants' listed ought and undesired characteristics were examined, and the two most discrepant of each type of word (two ought and two undesired) were taken for use in a priming task used to activate self-discrepancies

(e.g., Strauman & Higgins, 1987). When participants arrived in the laboratory, they filled out measures of state affect (the BSAM and PANAS) before the task. Participants were told that they would be participating in a response task in which they would be asked questions and had 60 s to answer. The priming task consisted of four blocks: Blocks 1 and 2 were either the participant's two most discrepant ought words or another randomly selected participant's two most discrepant ought words (i.e., control words) presented in random order. Blocks 3 and 4 were either the participant's two most discrepant undesired words or another randomly selected participant's two most discrepant undesired words presented in random order. Control words were used from participants who had not listed any of the same ought/undesired words as the primary participant. In Blocks 1 and 2, participants were asked to answer "Why is it important to be \_\_\_?" with their ought (or the control) word filled in the blank. In Blocks 3 and 4, participants were asked, "Why is it important to not be \_\_\_?" with their undesired (or the control) word filled in the blank. In between, each block participants was asked to fill out the PANAS and BSAM in regard to "how you feel right now." At the end of Block 4, participants completed a final PANAS and BSAM and were debriefed.

## Results

A measure of state anxiety was created for anxiety produced after priming participants' own ought words. This score was computed using the difference between a participant's anxiety score after being primed with own ought words minus anxiety scores when primed with control ought words. The same method was used for computing negative affect from participants' undesired words (using the PANAS).

Table 1 presents full inter-correlations between the three types of self-discrepancy, regulatory focus, acculturation, ethnicity, social anxiety, and trait anxiety. As can be seen in Table 1, ought self-discrepancy was significantly correlated with trait anxiety and ideal/undesired self-discrepancy. Ideal self-discrepancy was significantly, positively correlated with promotion focus, and negatively correlated with trait anxiety. Closeness to an undesired self was negatively correlated with promotion focus, and positively correlated with anxiety.

Against hypothesis, there were no significant differences between Asian and Caucasian participants on ought, ideal, undesired self-discrepancy, or on promotion/prevention focus. There was a significant difference between Asian and Caucasian (participants on dominant acculturation,  $t(134) = -8.97, p < .001$ ). There were no significant ethnic differences for ethnic acculturation, social anxiety, or trait anxiety (see Table 2 for a full list of means and standard deviations).

We were concerned that the lack of ethnic differences might be attributed to power alone. We therefore calculated the power that our sample demonstrated for detecting previously found effects in Hardin and Leong (2005), the available study that most resembled our own (i.e., it compared Asian-American with European-American and included the same self-discrepancies). Hardin and Leong (2005) found the following effect sizes for ethnicity on discrepancies: ideal ( $d = .27$ ), ought ( $d = .54$ ), and undesired ( $d = .48$ ). Using Gpower 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007), we found that with our current sample size we would have the following levels of power for each effect: ideal (.32), ought (.85), and undesired (.76). Thus, our power analysis suggests we had at least adequate power to detect ought



Table 1. Zero-order correlations between ought, ideal, and undesired discrepancies, regulatory focus, acculturation, and anxiety.

	<i>O</i>	<i>I</i>	<i>C</i>	Prev	Prom	DAccult	EAccult	Ethn	STAI	SIAS
<i>O</i>	.62	.34*	.42*	-.12	-.12	-.04	-.05	.00	.28*	.13
<i>I</i>		.67	.41*	-.02	-.19**	-.17**	-.10	-.12	.35*	.42*
<i>C</i>			.70	-.08	-.19**	-.15	.00	-.09	.40*	.33*
Prev					.17**	-.11	-.02	-.02	.03	.06
Prom						-.16	-.06	-.05	-.15	-.15
DAccult							.85	-.30*	.62*	-.10
EAccult								.95	.04	-.04
Ethn									.09	-.03
STAI										.86
SIAS										
										.92

Note: The diagonal value is Cronbach's alpha for standard questionnaires; all variables ( $n = 137$ ) except SIAS, dominant, and ethnic acculturation; SIAS ( $n = 135$ ); DAccult and EAccult ( $n = 131$ ); *O* - ought self-discrepancy; *I* - ideal self-discrepancy; *C* - closeness to an undesired self; Prev - prevention focus; Prom - promotion focus; DAccult - dominant immersion; EAccult - ethnic immersion; Ethn - ethnicity (Asian = 1 or Caucasian = 0); STAI - State-Trait Anxiety Inventory; SIAS - Social Interaction Anxiety Scale; \* $p < .01$ ; \*\* $p < .05$ .

and undesired self-discrepancy, which were the two focuses of the current study. The remaining effect, for ideal self-discrepancy, was of similar size in our sample ( $d = .25$ ) compared with Hardin and Leong ( $d = .27$ ). We conducted a follow-up analysis to determine what sample size would be required for good power (.85) to detect the effects yielded by our sample as statistically significant. For each discrepancy, the effect we observed and the total sample size needed are as follows: ideal ( $d = .25$ ,  $N = 578$ ), ought ( $d = .009$ ,  $N = 89,784$ ), and undesired ( $d = .18$ ,  $N = 1110$ ).

Turning to self-discrepancy and acculturation, in multiple regression, dominant acculturation ( $\beta = -.49$ , part  $r = -.24$ ,  $p = .024$ ) predicted closeness to an undesired self over and above ethnicity ( $\beta = .20$ , part  $r = .15$ ,  $p = .166$ ) and their interaction ( $\beta = -.23$ , part  $r = -.13$ ,  $p = .209$ ). Against hypothesis, dominant acculturation, ethnicity, and their interaction did not significantly predict ought discrepancy (all  $p > .08$ ). Ethnic acculturation, ethnicity, and their interaction did not significantly predict any type of discrepancy (all  $ps > .27$ ).

Turning to regulatory focus and acculturation, as hypothesized, there was a significant interaction between ethnicity and ethnic acculturation ( $\beta = -.31$ , part  $r = -.29$ ,  $p = .010$ ) predicting prevention focus. Further examination of this interaction revealed that ethnic acculturation in Asian participants ( $\beta = -.57$ , part  $r = -.29$ ,  $p = .003$ ) significantly predicted prevention focus. As can be seen from Figure 1, Asian participants who were higher in ethnic acculturation exhibited faster reaction times to their own ought words (i.e., higher levels of a prevention focus). This effect was not significant in Caucasian participants ( $\beta = -.02$ , part  $r = -.02$ ,  $p = .878$ ).

From the priming task, in multiple regression, ought self-discrepancy ( $\beta = .20$ , part  $r = .20$ ,  $p = .013$ ) significantly predicted state anxiety experienced from own ought words over and above ethnicity ( $\beta = -.04$ , part  $r = .03$ ,  $p = .714$ ) and their interaction ( $\beta = .10$ , part  $r = .01$ ,  $p = .884$ ). There was a significant interaction between ought self-discrepancy and dominant acculturation ( $\beta = .23$ , part  $r = .23$ ,  $p = .030$ ) predicting anxiety experienced from own ought words. As can be seen in

Table 2. Mean and standard deviation of ought, ideal, and undesired discrepancies, regulatory focus, acculturation, and anxiety.

	Ought	Ideal	Closeness to undesired self	Prevention focus	Promotion focus	Dominant acculturation	Ethnic acculturation	Trait anxiety	Social interaction anxiety
Total sample	38.62 (6.72)	37.76 (6.47)	17.25 (8.09)	.005 (1.00)	-.025 (1.01)	49.58 (5.83)	41.21 (14.36)	12.35 (3.93)	18.35 (11.20)
Asian ( <i>n</i> = 46)	38.57 (5.99)	36.65 (6.89)	18.23 (16.76)	.032 (.971)	.071 (.831)	44.50 (7.03)	40.47 (10.63)	11.87 (3.84)	18.74 (11.59)
Caucasian ( <i>n</i> = 92)	38.63 (7.09)	38.31 (6.22)	16.76 (8.21)	-.009 (1.03)	-.073 (1.09)	52.11 (2.67)	41.64 (16.16)	12.59 (3.96)	18.14 (11.06)

Note: Each cell reports *M* (SD). Trait anxiety was measured by selected items from the State-Trait Anxiety Inventory, and social interaction anxiety was measured by the straightforward items of the Social Interaction Anxiety Scale (see "Questionnaire measures" and "Computer measures" sections).

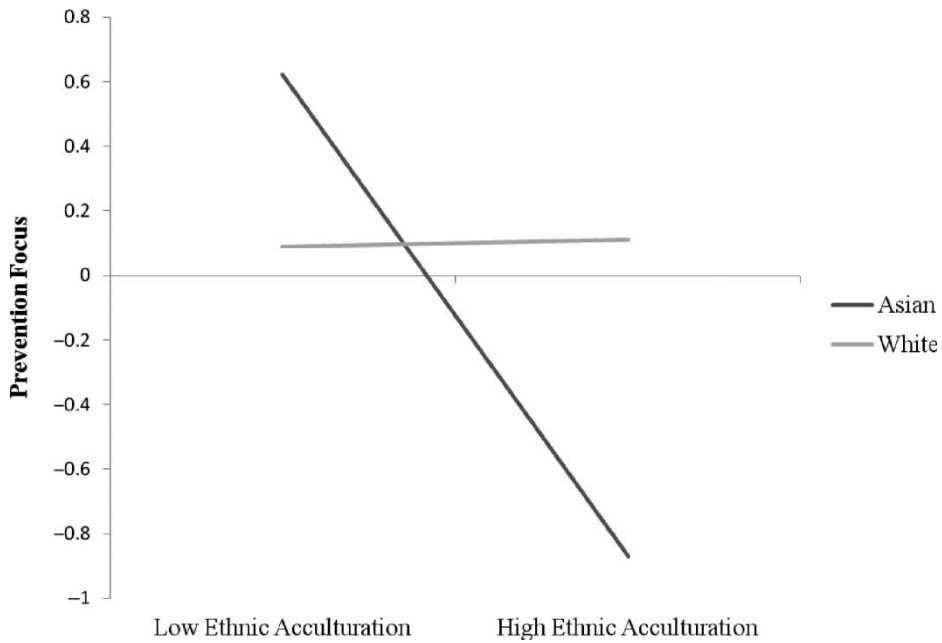


Figure 1. Prevention focus predicted by the interaction between ethnicity and ethnic acculturation.

Note: High and low ethnic acculturation values are one standard deviation above and below the mean of ethnic acculturation. Prevention focus is measured by reaction time. Faster (negative) reaction times indicate higher levels of prevention focus. Ethnic acculturation is measured by the SMAS.

Figure 2, individuals who were lower in dominant acculturation and exhibited higher levels of ought self-discrepancies were less likely to experience elevated anxiety.

Closeness to an undesired self significantly predicted negative affect ( $\beta = .42$ , part  $r = .39$ ,  $p < .001$ ) over and above ethnicity and their interaction. However, neither ethnicity nor the interaction between ethnicity and closeness to an undesired self were significant predictors ( $p > .12$ ). As hypothesized, there was an interaction between ethnic acculturation and closeness to an undesired self ( $\beta = .32$ , part  $r = .26$ ,  $p = .004$ ) predicting negative affect. As can be seen in Figure 3, individuals who were high in ethnic acculturation and closer to their undesired self exhibited higher levels of negative affect, whereas individuals who high in ethnic acculturation and farther from their undesired selves exhibited lower levels of negative affect. There was also a main effect for order ( $\beta = -.19$ , part  $r = -.22$ ,  $p = .022$ ) predicting negative affect, although no predictors interacted with order. Individuals who received their own undesired words first experienced higher levels of negative affect than individuals who received control words first.

## Discussion

Overall, hypotheses were supported when utilizing acculturation (rather than only ethnicity) as a predictor. Against hypothesis, Asian (vs. Caucasian) participants did

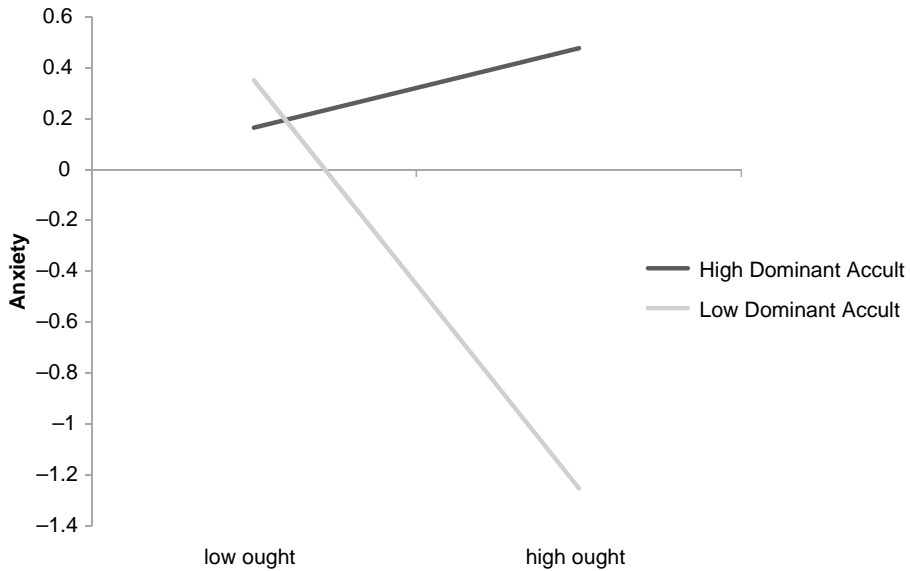


Figure 2. Anxiety predicted by the interaction between dominant acculturation and ought self-discrepancy.

Note: High and low dominant acculturation values are one standard deviation above and below the mean of dominant acculturation. High and low ought self-discrepancy values are one standard deviation above and below the mean of ought self-discrepancy. Anxiety is measured by the BSAM. Dominant acculturation is measured by the SMAS.

not exhibit greater ought or undesired discrepancies or higher levels of prevention focus. In fact, there were minimal ethnic differences. However, a very different picture emerged when acculturation was used as a predictor.

In support of hypothesis, acculturation did moderate ethnicity to predict prevention focus. Analyses indicated that Asian participants who were highly immersed in ethnic culture were more likely to exhibit a prevention focus. This is consistent with previous literature that has found ethnic differences in regulatory focus style (Lalwani, Shrum, & Chiu, 2009; Lee et al., 2000). However, we think it is noteworthy that this difference only emerged when considering acculturation. Relying on ethnicity alone, cultural differences would have been undetected. Our results suggest that Asian individuals who are highly assimilated to their ethnic culture are more likely to use prevention strategies. Thus, Asian individuals from a western background may behave in ways consistent with western culture, whereas individuals who are less familiar with western society may not. This result, taken with research suggesting that high levels of prevention focus can lead to or maintain anxiety (Shah et al., 2004), suggests that individuals who are highly assimilated to ethnic culture and living in the USA may have the highest risk for problematic anxiety.

Turning to the priming task, we did not find differences in levels of distress experienced during the task based on ethnicity alone. However, acculturation moderated the relationship between ought self-discrepancy and anxiety. Individuals who exhibited lower levels of dominant acculturation and higher levels of ought self-discrepancy were less likely to report anxiety over their own ought words. This result

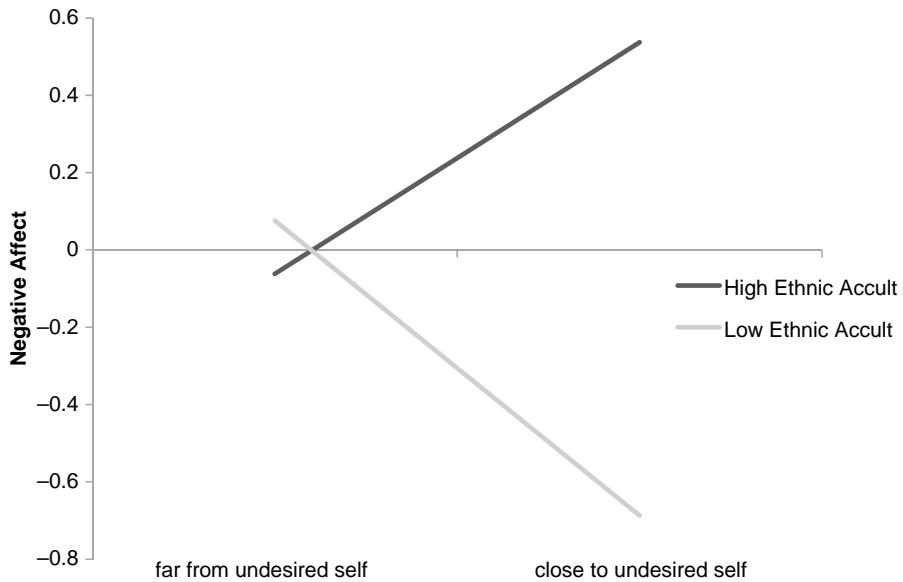


Figure 3. Negative affect predicted by the interaction between ethnic acculturation and closeness to an undesired self.

Note: High and low ethnic acculturation values are one standard deviation above and below the mean of ethnic acculturation. High and low closeness to an undesired self values are one standard deviation above and below the mean of closeness to an undesired self. Ethnic acculturation is measured by the SMAS. Negative affect is measured by the PANAS.

suggests that individuals who have higher levels of ought self-discrepancy may experience lower levels of anxiety over time if they are not acculturated to the dominant culture. This result is consistent with findings that suggest Asian individuals exhibit less distress as a result of processing their (ought) discrepancies than Caucasian individuals (Heine & Lehman, 1999). Our results suggest that the same process may occur for individuals who are currently living in western culture but continue to follow the patterns of their native culture. Notably, we were able to detect this effect using a priming task rather than self-report alone (i.e., as used in Heine & Lehman, 1999). Individuals who were highly immersed in western culture and individuals who had lower levels of immersion in western culture but exhibited less ought self-discrepancy exhibited the same (higher) levels of anxiety during the priming task. It seems plausible that tendencies common in Asian culture (such as dwelling on inadequacies) enable Asian individuals to focus on improving themselves for others' approval and to demonstrate their commitment to their cultural group (Heine & Lehman, 1999). Thus, individuals low in dominant acculturation may be more accepting of ought self-discrepancies because non-western culture emphasizes the acceptability (and perhaps expectation) of such discrepancy. Thus, it may be that individuals who report more distance between their actual and ought self feel less distress because it is expected in Asian culture that individuals will persistently work towards their ought self. Future research should determine if cultural standards do indeed explain such results. If future research supports this conceptualization, it may

be that affect created by ought self-discrepancies differs based on level of acculturation and cultural standards.

We did not find that Asian individuals exhibited higher levels of negative affect when primed with closeness to their undesired self. However, we found that individuals who were highly immersed in ethnic culture and experienced closeness to their undesired self exhibited high levels of negative affect when primed. This result suggests that it is closeness to an undesired self, rather than ought self-discrepancy, that may lead individuals who are highly assimilated to (Asian) ethnic culture to experience distress. Thus, it seems plausible that individuals who are highly assimilated to Asian culture (and not western culture) would experience distress in response to higher levels of closeness to an undesired self (but not in response to higher levels of ought self-discrepancy).

We believe that these results may have implications for treatment of anxiety and negative affect if future research continues to support the results found here as relevant to individuals with clinical levels of anxiety. Clearly, acculturation matters when considering treatment of individuals from diverse cultures (Schwartz et al., 2010). Our results suggest that populations that are highly assimilated to an Asian culture, and have high levels of ought self-discrepancy, may not become distressed over these discrepancies. However, it is likely that closeness to an undesired self may cause negative affect in such individuals. Clinicians could examine levels of ethnic and dominant acculturation and discuss closeness between the actual and undesired self, especially when this closeness causes distress. When treating highly ethnically assimilated individuals, clinicians could consider incorporating closeness to an undesired self into therapies (such as self-system therapy; please see Vieth et al., 2003, for a detailed description) that were developed based on self-discrepancy and regulatory focus theory. In addition, clinicians should consider that individuals who are highly assimilated to Asian culture may be more likely to use prevention strategies while undergoing treatment and that ought self-discrepancy may operate differently (i.e., not cause significant distress) in individuals who are not highly assimilated to western culture.

However, these results should be interpreted within the limitations of the study. We had a somewhat modest sample size of Asian participants of mixed ethnic backgrounds who were combined to create an overall Asian group; this prevented us from testing our hypotheses in different Asian subcultures. Most of our participants were highly educated college students, which may limit the generalizability of our findings. In regard to the priming task, closeness to an undesired self was always primed after priming ought self-discrepancies. Thus, it may be possible that affect experienced when priming closeness to an undesired self could be partially dependent on the previous ought priming blocks. If this research design was conducted in another non-western country, we expect we would find different results. However, these limitations do not diminish the conclusion that acculturation matters when studying these psychological phenomena.

As stated above, we believe it is important to examine cultural variables when testing psychological theories. Overall, our results suggest that acculturation has substantial impact on how constructs identified in self-discrepancy theory and regulatory focus theory affect behavior in individuals from varied backgrounds. Without the use of acculturation as a predictor we would not have found differences between ethnicities. Acculturation was able to explain variance over and above

ethnicity in this study and moderated ethnicity to predict the level of prevention focus. Future research should move away from using ethnicity as a sole variable when examining cultural differences in anxiety, and should incorporate not only acculturation, but also additional cultural variables that measure cultural standards such as ethnic identity, self-construal, and collectivism. Movement toward studying specific cultural variables will help inform research and treatment of anxiety with individuals of diverse backgrounds.

## Note

1. One participant was removed from data analyses because of scores three standard deviations away from the mean. Further examination of this participant's responses revealed an extreme responding pattern on all items, in that every item was responded to as the highest number on the page.

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