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Using a Cultural and RDoC Framework to Conceptualize Anxiety in Asian Americans

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Abstract

Asian Americans are one of the fastest growing minority group in the United States; however, mental health within this population segment, particularly anxiety disorders, remains significantly understudied. Both the heterogeneity within the Asian American population, along with the multidimensional nature of anxiety, contribute to difficulties in understanding anxiety in this population. The present paper will review two sources of heterogeneity within anxiety in Asian Americans: (1) cultural variables and (2) mechanisms or components of anxiety. Specifically, we will examine four cultural variables most commonly found in research related to anxiety in Asian Americans: acculturation, affect valuation, loss of face, and individualism-collectivism. We will also discuss ways to parse anxiety through a Research Domain Criteria (RDoC) framework, specifically focusing on sensitivity to acute and potential threat, constructs within the Negative Valence System. We also present previously unpublished preliminary data to illustrate one way of examining ethnic differences in anxiety using an RDoC framework. Finally, this paper offers recommendations for future work in this area.

Keywords

anxiety; Asian Americans; negative valence constructs

Introduction

The United States is becoming increasingly diverse and understanding differences in mental health within minority groups is critical. Asian Americans are one of the fastest growing ethnic minority group in the U.S. (Hoeffel, Rastogi, Kim, & Shahid, 2012; Stepler & Lopez, 2016); however, their mental health remains significantly understudied relative to other ethnic groups (Vega & Rumbaut, 1991; Sue, Cheng, Saad, & Chu, 2012). Limited research

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in Asian American mental health may be due to the *model minority myth*, a view that Asian Americans are high achieving, well-adjusted individuals, and thus experience minimal mental health problems (Sue, Sue, Sue, & Takeuchi, 1995). More systematic research is therefore needed to identify risk factors and processes implicated in mental problems among Asian Americans.

Basic descriptive data about Asian American mental health is mixed, particularly for rates of anxiety disorders, with studies reporting conflicting prevalence rates of anxiety disorders for Asian Americans (see review by Sue et al., 1995). Several independent, large-scale epidemiological studies report that Asian Americans exhibit lower 12-month and lifetime prevalence rates of anxiety disorders than other ethnic groups in the U.S. (Smith et al., 2006; Asnaani et al., 2010; Takeuchi et al., 2007), suggesting that Asian Americans may be relatively protected from developing anxiety disorders. However, studies with Asian American college students have consistently shown higher levels of anxiety compared to Whites (Okazaki, 2000; Okazaki, Liu, Longworth, & Minn, 2002). Additionally, research has shown evidence of an “immigrant health paradox,” a phenomenon in which U.S. born Asian Americans have higher rates of psychiatric disorders relative to their foreign-born counterparts, despite having higher socioeconomic status (John, Castro, Martin, Duran & Takeuchi, 2012; Lau et al., 2013). Taken together, these findings illustrate the difficulties in drawing firm conclusions about Asian Americans as a group and highlight the importance of identifying more meaningful individual difference factors that contribute to anxiety in Asian Americans to improve early identification strategies and targeted interventions.

The Research Domain Criteria (RDoC) initiative proposed by the National Institute of Mental Health (Insel et al., 2010) outlines a dimensional approach to understanding anxiety disorders among Asian Americans. The RDoC initiative seeks to move beyond studying single categorical diagnoses (or diagnostic classes like ‘anxiety disorders’) and identify transdiagnostic constructs that reflect more basic mechanisms of psychopathology as well as reflect *increased risk* for psychiatric disorders. Examining transdiagnostic constructs related to anxiety can provide objective measures of individual differences in anxiety processes and elucidate potential ethnic differences in anxiety.

In the current review, we seek to review two sources of heterogeneity within anxiety in Asian Americans: (1) cultural variables related to Asian American ethnicities and (2) mechanisms or components of anxiety. Regarding the former, this review will examine four cultural variables relevant to anxiety in Asian Americans that have most frequently been examined in the literature: acculturation, affect valuation, loss of face, and individualism-collectivism. Regarding the latter, this review will use an RDoC framework to parse the heterogeneity within anxiety by focusing on two Negative Valence constructs: sensitivity to acute and potential threat. Given the limited work thus far on ethnic differences in RDoC constructs, we will previously unpublished preliminary data to illustrate one method of parsing anxiety by its mechanisms. Lastly, this review will discuss and propose several recommendations of ways to integrate cultural research into an RDoC framework.

To conduct this review, literature searches were conducted using PubMed, Web of Science, and PsycINFO. Initial search terms included, “Asian,” “Asian American,” “anxiety,”

“acculturation” and “culture.” Subsequent literature searches included substituting “Asian” and “Asian American” with individual Asian ethnicities as well as author searches using the names of authors found in the articles from the initial search.

Heterogeneity of Asian Americans

Institutions such as the National Institutes of Health (NIH, 2016) and the American Psychological Association (APA, 2003) have proposed ethnicity as an important individual differences variable in research and clinical work. Ethnicity is frequently operationalized as the categorical group that an individual belongs to based on cultural background variables such as language, beliefs and other contributors to one’s cultural *identity* (Helms & Talleyrand, 1997). However, this definition fails to fully capture the multi-dimensional nature of ethnicity and, depending on how it is operationalized, can conflate ethnicity with race (a term generally used to classify a person based on their outward appearance [Helms & Talleyrand, 1997; Jensen, 1980; Phinney, 1996]). The overlap with race is problematic as there is little evidence to suggest that observed traits such as skin color or facial features accurately define distinct racial groups (Yee, Fairchild, Weizmann, & Wyatt, 1993). Thus, when race or ethnicity is used in psychological research, the field is often left with highly overlapping, imprecise variables with limited explanatory power.

Importantly, Asian Americans are a heterogeneous group that encompasses many ethnic groups, languages, nativity, and countries of origin. This heterogeneity makes it difficult to draw conclusions about Asian Americans as a unitary group. Instead of studying each subgroup independently (e.g., Korean-Americans, Chinese-Americans, etc.), it may be more fruitful to examine sociocultural variables that can be studied across all (or at least many) subgroups of Asian Americans. This approach also would allow for the study of how ethnic identities, which can be fluid (Tsai & Fuligni, 2012), change as a function of experiences and time. In other words, instead of assuming common cultural values or identities within ethnic groups, it is likely to be more beneficial to directly assess particular cultural variables related to ethnicity that may play a role in anxiety-related phenotypes among Asian Americans. In the next section, we review the literature on four cultural variables related to anxiety among Asian Americans - acculturation, affect valuation, loss of face, and individualism-collectivism. While this is not a comprehensive list of cultural variables that relate to anxiety, they are the ones most frequently investigated in the literature on Asian Americans and anxiety.

Acculturation

Acculturation, the process of adopting the cultural practices of the host society (e.g. language, beliefs, behaviors) and the internalization of cultural values (Schwartz, Unger, Zamboanga, & Szapocznik, 2010), is one factor that may contribute to mixed findings regarding the prevalence of anxiety among Asian Americans. Evidence from epidemiological surveys support the potential relationship between high acculturation to U.S. culture and increased rates of anxiety in Asian Americans. Asian Americans who were born in the U.S. (and are thus more acculturated to U.S. culture) demonstrate a two-fold increase in anxiety prevalence relative to those born outside the U.S. (Breslau & Chang,

2006). Additionally, age of immigration and duration of residence in the U.S. have been shown to lead to increased risk for anxiety (Breslau & Chang, 2006). Furthermore, U.S.-born Asian Americans are more likely than their immigrant parents to have anxiety disorders and other forms of psychopathology (Takeuchi et al., 2007). These data are consistent with the phenomenon known as the “immigrant health paradox,” in which U.S. born Asian Americans demonstrate higher rates of psychiatric disorders relative to their foreign-born counterparts, even when controlling for socioeconomic status (John, Castro, Martin, Duran & Takeuchi, 2012). Additionally, studies that have reported higher rates of anxiety in Asian Americans have largely relied on samples of Asian American college students (e.g., Lau, Fung, Wang, & Kang, 2009), who tend to be more acculturated to the dominant U.S. culture than the general Asian-American adult population.¹ Taken together, studies suggest that acculturation may be an important feature among Asian Americans that leads to higher rates of anxiety.

Although prior research has indicated the potential link between high acculturation and increased anxiety in Asian Americans, it remains unclear why this association exists. Research on ethnic differences in anxiety rarely measures levels of acculturation directly (and if so, typically do so with convenience rather than nationally representative samples), making it difficult to assess the specific effect of acculturation. Similarly, the relationship between acculturation and cultural variables specific to Asian American populations need further examination. For example, differences in cultural values and norms may help explain the relationship between high acculturation to U.S. culture and higher levels of anxiety. Thus, examining potential pathways and mechanisms between acculturation and anxiety may be critical in understanding mental health disparities for Asian Americans.

Loss of Face

One phenomenon unique to many Asian cultures is loss of face (LOF; Zane & Yeh, 2002). LOF has been defined as a loss of social image and social worth (for the self and others) that is garnered based on one’s performance in an interpersonal context. LOF can occur when one acts outside of the expected social norm, or under conditions of perceived criticism, ridicule, and non-cooperation from others. Individuals who have high LOF concerns endorse items such as, “I do not criticize others because this may embarrass them,” and “I hesitate asking for help because I think my request will be an inconvenience to others.” (Zane, 1991).

LOF may be a culturally specific predictor of psychopathology for Asian Americans. Asian individuals (whether Asian-American or Asian) report greater face concern than do White individuals (Zane & Yeh, 2002; Lau et al., 2009; Liao & Bond, 2011). Higher face concern among Chinese Americans in turn has been associated with psychopathology symptoms, even controlling for level of daily stress and social support (Mak & Chen 2006; Mak et al.,

¹There are several possibilities as to why Asian American college students are more acculturated to U.S. culture than the general Asian American population. First, most universities and colleges in the U.S. have entrance requirements (e.g. ACTs/SATs, admissions essays) that necessitate a certain level of proficiency in English, and language is a major component of acculturation (Schwartz et al., 2010). Second, U.S. colleges and universities frequently model Western thought, culture, and tradition (e.g. democratic student government, encouragement of independent thought), which implicitly (or explicitly) encourages acculturation to western culture.

2009). Furthermore, face attunement concerns and attunement competency (e.g., emotion recognition or sensitivity) has been shown to predict social anxiety among Asian American college students (Lau et al., 2009), and face concerns may moderate or mediate the effect of acculturation on anxiety rates.

Additionally, higher face concern is associated with reductions in help seeking behaviors (Yakunina & Weigold, 2011). This is in line with prior reports indicating that Asian Americans underutilize mental health services (Abe-Kim et al., 2007) and often do not seek help until problems become severe (Durvasula & Sue, 1996; Kearney et al., 2005). Asian Americans who hold stronger beliefs in Asian values (such as face concerns) report less positive attitudes about seeking help for mental health problems (Kim & Omizo, 2003). Interestingly, when Leong, Kim, and Gupta (2011) concurrently examined LOF and acculturation, acculturation remained a significant predictor of help seeking attitudes while LOF did not (and this held over and above general attitudes towards mental health). This suggests that effects of LOF may be largely due to acculturation. Thus, LOF may be one mechanism that leads to worse anxiety in Asian Americans which simultaneously prevents this group from help seeking.

Affect Valuation

Affect valuation refers to the theory of emotion that culture shapes the affective states that people value (“ideal affect”) which in turn differs from affective states that people actually experience (Tsai, Knutson, & Fung, 2006). Individuals of Asian descent have been shown to value low-arousal positive affective states, whereas European Americans and those acculturated to American culture value high arousal positive affective states (Tsai et al., 2006). Interestingly, a greater discrepancy between actual and ideal affect has been associated with greater depression symptoms (Tsai et al., 2006) and worse physical health—even independent of actual levels of affect (Scheibe, English, Tsai, & Carstensen, 2013). No study, to our knowledge, has examined whether this discrepancy leads to anxiety as well, although it is likely given the overlap between depression and anxiety (Kendler, Prescott, Myers, & Neale, 2003; Shankman & Klein, 2003). Additionally, it is possible that acculturation processes in Asian Americans may influence their perception of ideal affect, which leads to larger discrepancies between ideal and actual affect and in turn greater distress.

Individualism and Collectivism

Individualism-collectivism refers to cultural values in interpersonal relationships that are often distinct between eastern and western cultures (Triandis, Kashima, Shimada, & Villareal, 1986). Specifically, it has been theorized that collectivist cultures (e.g. Asian countries such as China, Japan, and Korea) broadly prioritize goals of the group whereas individualistic cultures (e.g. western cultures such as the U.S.) prioritize goals of the individual (Leung & Bond, 1984). It has been suggested that collectivist orientation contributes to some maladaptive aspects of perfectionism, which may then lead to internalizing psychopathology (Yoon & Lau, 2008; DiBartolo & Rendón, 2011). Although individualism and collectivism are often used to describe individuals identifying with

western and eastern cultures respectively, these distinct cultural values coexist in individuals and should be measured as two independent aspects of self (Singelis, 1994).

High levels of collectivism have been positively correlated with social anxiety symptoms (Okazaki, 2000; Dinnel & Kleinknecht, 1999; Heinrichs et al., 2006); however, the specific nature of the relationship between collectivism and social anxiety remains unclear. Kleinknecht et al. (1997) reported that although participants from U.S. and Japan both demonstrate a negative relationship between individualism and symptoms of social anxiety, only participants from the U.S. demonstrate a positive relationship between collectivism and social anxiety. In other words, endorsing a collectivistic self-construal is only associated with social anxiety when the participant lives within the context of an individualistic society (U.S.). Additionally, Caldwell-Harris and Aycicegi (2006) found that in an individualistic society, collectivism scores were positively associated with social anxiety, whereas the opposite is true in a collectivistic society, in which individualism is positively correlated with psychopathology. These findings suggest that conflicts between personal values and societal norms, not level of individualism or collectivism alone, may be associated with anxiety and worse clinical symptoms.

Despite it being widely researched, many critiques exist on the construct of collectivism and how it should be studied (Chang, 2015). It is important to note that as Asian Americans acculturate to western culture, they initially tend to employ more collectivist, then *change* to more individualist coping strategies over time (presumably as they become more acculturated, Bailey, 1999). Thus, adopting a more individualistic ideology may be an important mediator as to why acculturation leads to greater anxiety among Asian Americans.

Summary

In sum, there are many different ways to parse the heterogeneity of Asian Americans, one of which is through directly measuring cultural variables relevant to the ethnicity of interest instead of relying on broad self-reported ethnicity categories. Here we focused on four cultural variables: acculturation, loss of face, affection valuation, and individualism-collectivism, all related to Asian American ethnicity and all may play a role in the development (or at least experience) of anxiety among Asian Americans. While this list is not meant to be exhaustive of all the cultural variables that could relate to the experience of anxiety, these constructs have demonstrated promise as individual difference variables that could lead to anxiety in this population. More research is needed on how (or if) they can be integrated together to confer heightened vulnerability for anxiety disorders. For example, loss of face may only relate to the experience of anxiety when an individual also has poor abilities to recognize others' emotions (Lau, Fung, Wang, & Kang, 2009).

The impact of the cultural variables may also vary by gender (Anderson & Mayes, 2010). Additionally, cultural variables such as loss of face, individualism-collectivism, and affect valuation may vary over time as a function (or perhaps as a mediator) of acculturation. Examining potential pathways and mechanisms between acculturation, other cultural factors, and anxiety may be critical in understanding mental health disparities for Asian Americans.

Mechanisms (or Components) of Anxiety

Similar to the heterogeneity among Asian Americans, the concept of ‘anxiety’ is heterogeneous as well. Although the diagnostic and statistical manual (DSM5; American Psychiatric Association) identifies numerous anxiety and related disorders, there is a great deal of heterogeneity within particular anxiety disorders (Watson, 2005). For example, there are over 600,000 symptom combinations that can result in a diagnosis of posttraumatic stress disorder (Galatzer-Levy & Bryant, 2013). Anxiety disorders also frequently co-occur with one another, as well as with other internalizing conditions (Kessler et al., 2005). Furthermore, current anxiety disorders are rigidly defined by DSM5 criteria and symptoms cutoffs, and these categorical definitions of anxiety disorders often fail to capture the full range of heterogeneous anxiety symptomology. Thus, it may be more productive for theoretical models to move beyond studying single categorical diagnoses and instead identify particular sensitivities that reflect more basic mechanisms of anxiety, as this would help with the identification of specific targets and vulnerabilities.

The abovementioned RDoC initiative takes this approach. RDoC is agnostic about DSM diagnostic categories and instead encourages multi-method research that seeks to identify the basic mechanisms that are relevant to *transdiagnostic features* of psychopathology (Insel et al., 2010). To that end, the RDoC Initiative has identified specific constructs that relate to multiple psychopathologies that researchers can measure using multiple units of analysis (e.g., self-report, behavioral responding, psychophysiological reactivity; Cuthbert & Kozak, 2013; Insel et al., 2010). Studying ethnic differences in RDoC constructs or processes related to anxiety, rather than focusing on ethnic differences in broad diagnostic categories, may provide better insight into the nature of anxiety pathology among Asian Americans.

RDoC constructs are subdivided into Negative Valence, Positive Valence, Cognitive, Social Processes, and Arousal and Regulatory Systems (Insel et al., 2010). Mechanisms of anxiety align closely (although not exclusively, Shankman, Katz, & Langenecker, 2015) with Negative Valence Systems outlined in the RDoC matrix. The Negative Valence System is primarily responsible for responses to aversive situations or contexts, such as fear, anxiety, and loss, and the RDoC matrix currently proposes five constructs within the Negative Valence Systems - acute threat, potential threat, sustained threat, loss, and frustrative nonreward. Sensitivity to acute threat (SAT) and potential threat (SPT) are particularly relevant constructs to anxiety-related psychopathologies (Gerra et al., 2000; Condren, O’Neill, Ryan, Barrett, & Thakore, 2002; Grillon et al., 2008; Grillon et al., 2016) and are discussed below.

One of the important aspects about the RDoC initiative is that it encourages the use of multiple measures of the same construct (Cuthbert & Kozak, 2013; although see Lilienfeld, 2014). Biological measures are particularly important as they can provide objective indices of anxious responding independent of one’s subjective awareness of their tendencies. Examples of biological indices used to assess anxious responding include emotional modulated startle, skin-conductance, cortisol, and neuroimaging (Sumner et al., 2016). Of these measures, emotion modulated startle has been of particular focus in the SAT and SPT literature given that the magnitude of the startle reflex is potentiated when an organism is in

an aversive affective state, such as fear (Grillon et al., 2001; Vrana, Spence & Lang, 1988), making it a good measure of anxiety-related processes. One paradigm used to in emotion modulated startle is the No-Threat (N) – Predictable Threat (P) – Unpredictable Threat (U) task (NPU; Schmitz & Grillon, 2012). In this paradigm, participants are safe from aversive stimuli during the N condition. During the P condition, participants are instructed that they will receive a mild electric current (or airpuff to the larynx; Schmitz & Grillon, 2012) only when the threat cue is present (Shankman et al., 2013). During the U condition, participants are instructed that they may receive a mild electric current at any time. The threat conditions (P and U) differ in the predictability of the aversive stimuli, which allows the NPU paradigm to measure both SAT and SPT through examining startle responses to threat cues in the P and U conditions, respectively. Although research has made advancements in identifying potential biomarkers for psychopathologies such as anxiety, the majority of work thus far has largely investigated White samples. Thus, this approach may not entirely characterize anxiety processes in other ethnic groups, as biomarkers for psychopathology may not be universal (Gatzke-Kopp, 2016). Given the importance of accurate identification of anxiety processes, we will review studies that have examined whether Asian Americans exhibit different patterns of SAT and SPT relative to Whites.

Acute Threat

Sensitivity to acute threat refers to an identifiable and imminent aversive stimulus, and elicits a cascade of *phasic* defensive responses (Davis et al., 2010; Insel et al., 2010; Robinson et al., 2012). This response (often labeled ‘fear’) is in contrast to the more *tonic* “anxiety” response discussed in the next section. There are several experimental paradigms that could potentially be used to measure acute threat. For example, classical conditioning paradigms, in which participants learn the association between the threat cue (CS+) and the subsequent aversive stimulus (US; e.g., electric current; Lissek et al., 2015), can be used to elicit fearful responding to acute threat. Classical conditioning paradigms are similar to the P condition of the NPU-threat task except in the latter, the association between the CS+ and the US+ is an ‘instructed’ association from the outset of the task rather than acquired during the course of the experiment.

While classical conditioning and NPU-threat can measure *fearful* responding to acute threat, the cold pressor task (Rolke et al., 2006) can measure *painful* responding to acute threat. In this task, participants are instructed to place and hold their hand in ice water and indicate when their hand first became painful, the duration of which indicates participant pain threshold or sensitivity. In contrast, the Trier Social Stress Test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993) uses social evaluation as an aversive stimulus. During the TSST, participants are required to give a speech to a group of unknown judges who are instructed to maintain neutral facial expressions (e.g., Allen et al., 2014). Although TSST is another measure of SAT, it differs from startle and the cold pressor task in that it assesses socially driven, emotional danger, as compared to tangible, physical threats.

Of the abovementioned acute threat paradigms, strikingly few have been used to examine differences in SAT responding among Asian Americans relative to non-Asian Americans. To our knowledge, only the cold pressor task has been used to demonstrate ethnic differences in

SAT. In these studies, Asians demonstrated higher SAT compared to Whites in both self-report (Lu, Zeltzer, & Tsao, 2013) and behavioral measures from the cold pressor task (Hsieh, Tripp, Ji, & Sullivan, 2010; Rowell et al., 2011). It is possible that different types of threats (physical vs. emotional) may elicit contrasting patterns of ethnic differences, thus future research should focus on examining potential effects of ethnicity on different measures of SAT.

Potential Threat

Potential threat refers to perceived danger that may potentially occur but is distant, ambiguous, or low/uncertain in probability, characterized by a pattern of responses such as enhanced risk assessment, or vigilance (Sanislow et al., 2010). Potential threat elicits a *tonic* defensive response referred to as “anxiety”, which can be differentiated from “fear” at the neural level (Davis et al., 2010). In particular, a key structure involved in response to potential threat is the bed nucleus of the stria terminalis whereas circuitry for acute threat is more likely to involve the central nucleus of the amygdala (Davis et al., 2010). SPT has been associated with numerous anxiety disorders, including panic disorder (Grillon et al., 2008), as well as vulnerability for these disorders (Nelson et al., 2013). Additionally, SPT can be blunted by pharmacological interventions that are used to treat anxiety disorders (e.g. alcohol, benzodiazepines), whereas SAT cannot be (Grillon et al., 2006; Moberg & Curtin, 2009).

Only one study to our knowledge, conducted by our laboratory, has examined ethnic differences in SPT. Nelson et al. (2014) used the NPU task to examine whether self-identified White, Latino, and Asian undergraduate volunteers differed from one another in SAT and SPT. Interestingly, Asians exhibited a smaller startle magnitude at baseline and blunted SPT relative to White and Latino participants. Importantly, this difference was specific to SPT as there were no significant differences in SAT between White and Latino participants.

To extend the findings from Nelson et al. (2014), we sought to replicate the study using previously unpublished data in the present report. Specifically, a clinical sample of individuals ($n = 136$), self-identified as either Asian American ($n = 38$) or White ($n = 98$) were drawn from a larger dataset (Shankman et al., 2013) to test for ethnic group differences in SAT and SPT. All participants completed a semi-structured diagnostic interview (SCID) and the NPU paradigm (see Shankman et al., 2013 for further details). Of the participants, 41% were diagnosed with panic disorder ($n = 56$). Group differences on startle potentiation were conducted using a four-way analysis of covariance (ANCOVA) with condition (N vs. P vs. U) and cue (Cue vs. ISI) entered as within-subjects factors and ethnicity (Asian American vs. White) and panic status (present vs. absent) entered as between-subjects factors.

Results indicated that although the overall task effect of condition x cue interaction was found across all participants, there was no condition x cue x ethnicity interaction, nor was there a condition x cue x ethnicity x panic status interaction (all p 's $> .20$). These results suggest that Asian Americans do not differ from Whites in terms of SAT or SPT, as

indicated by their reactivity to the task (i.e., in their startle potentiation to either P or U conditions). As we previously reported with data from this sample that panic disorder is associated with abnormal SPT and SAT (Shankman et al., 2013), this suggests that the effect of panic disorder on SPT and SAT does not vary by whether the individual is Asian American or White.

The above analyses, also yielded a main effect of ethnicity, $F(136) = 4.43$, $p = .037$, $\eta_p^2 = .03$. Individuals who self-identified as Asian American exhibited lower average startle than Whites across all experimental conditions, $t(134) = -2.49$, $p = .014$, $d = -0.43$. Asian ethnicity remained a significant predictor of average startle when panic diagnosis was controlled for, $\beta = -.196$, $t = -2.30$, $p = .02$, suggesting that independent of anxiety symptomatology, self-identified Asian individuals exhibit lower average startle response as compared to Whites.

The association between ethnicity and overall startle magnitude suggests that Asian Americans and Whites differ in overall basal reactivity of the defensive motivational system (Craske et al., 2009) instead of specific threat sensitivities such as SAT or SPT. Although our prior study (Nelson et al., 2014) demonstrated differences in SPT between Asian American and White college students, this effect was not replicated in the present clinical sample. Further study is therefore needed to elucidate whether ethnic differences exist in SPT as well as any potential moderators in this association. Importantly, future studies should include cultural variables in their assessment of sample characteristics, as these variables may be more sensitive to individual differences in anxiety and related mechanisms.

Discussion and Future Directions

The goal of this paper was to review two sources of heterogeneity that contribute to difficulties in studying anxiety in Asian Americans, specifically cultural variables and mechanisms or components of anxiety. We focused on four cultural variables that have been most frequently examined in the literature: acculturation, affect valuation, loss of face, and individualism-collectivism. We also examined sensitivity to acute and potential threat within the Negative Valence System outlined in the RDoC initiative. Based on this review, instead of relying on heterogeneous categories of ethnicity, it may be more meaningful to examine culturally specific constructs such as acculturation that better capture individual differences across cultural groups. Similarly, it is also important to parse broad anxiety into specific transdiagnostic mechanisms or constructs such as SAT and SPT and examine potential ethnic differences within each mechanism (see Table 1 for a summary of constructs discussed throughout the current review and example of measures).

Although the present review focused on RDoC Negative Valence Systems constructs, other systems and transdiagnostic factors should be examined in research on anxiety among Asian Americans. In particular, social processes may be relevant given the socially driven and highly interpersonal nature of important cultural variables. For example, the RDoC construct of Perception and Understanding of Others (a construct within the Social Processes RDoC domain) is defined as processes involved in understanding the cognitive or emotional states or traits of others. Given that loss of face may only relate to the experience of anxiety when

an individual also has poor abilities to recognize others' emotions (Lau et al., 2009), individual differences in perception and understanding of others may play an important role in anxiety among Asian Americans.

Additionally, other transdiagnostic factors such as intolerance of uncertainty, anxiety sensitivity, and emotion regulation have been shown to reliably relate to anxiety (Gentes & Ruscio, 2011; Naragon-Gainey, 2010; Cisler, Olatunji, Feldner, & Forsyth, 2010). Given their associations to anxiety, these transdiagnostic factors may also be related to RDoC constructs, particularly within the Negative Valence System. For example, some research has proposed that intolerance of uncertainty is a trait-like indicator for sensitivity to potential threat (Nelson & Shankman, 2011). Future research should further examine the relationship between transdiagnostic trait-like personality factors and RDoC constructs, and their effect on the development or maintenance of anxiety in Asian Americans.

More generally, the design of studies that attempt to reframe the “independent” and “dependent” variable in the ways proposed in this present review could take many forms. The simplest form would be to examine the cross-sectional correlation between culturally-specific constructs (e.g., loss of face) and a transdiagnostic mechanism (e.g., SPT) - or multiple mechanisms of anxiety to establish the discriminant validity of the culturally-specific constructs. A more complicated design would be to examine how culturally-specific constructs impact anxiety *over time* as individuals become more acculturated. Regardless of the design, greater care in how ethnicity and anxiety are deconstructed will likely yield novel insights in the field's understanding of anxiety among Asian Americans.

In addition to taking a dimensional approach toward measuring variables of interest, it is also important to consider multiple methodologies (e.g. clinical interview, self-report measures, and psychophysiological methods) when examining the association between ethnicity, cultural variables, and anxiety. These studies would also benefit from utilizing mixed methods approaches (e.g., quantitative and qualitative) to examine the experience of anxiety and acculturation in Asian American individuals. Lastly, a main aim of the RDoC initiative is to identify biomarkers of psychiatric disorders such as anxiety. Given that prevalence rates of anxiety in Asian Americans significantly differ from that of other ethnic groups, it is possible that biomarkers of anxiety may not be ‘universal’ and instead vary by ethnicity (Hitokoto, Glazer, & Kitayama, 2015). As research on ethnic differences in neurophysiological biomarkers for psychopathology is in its infancy (Gatzke-Kopp, 2016), much work in this area is needed.

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Highlights

- Anxiety disorders are understudied in the Asian American population.
- Ethnicity and anxiety are both heterogeneous constructs, leading to difficulties in studying anxiety in Asian Americans.
- Measuring components of ethnicity and studying anxiety through an RDoC framework may improve understanding of anxiety processes in Asian Americans.

Table 1**Examples of Measures for Cultural and Anxiety Constructs**

Construct	Example of Measures to Assess Construct
Acculturation	General Ethnicity Questionnaire (Tsai, Ying, & Lee, 2000)
Loss of Face	Loss of Face Scale (Zane, 2002)
Affect Valuation	Affect Valuation Index (Tsai, Knutson, & Fung, 2006)
Individualism-Collectivism	Self-Construct Scale (Singelis, 1994)
	Culture Orientation Scale (Triandis & Gelfand, 1998)
Sensitivity to Acute Threat	Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer, 1993),
	No-Threat (N) – Predictable Threat (P) – Unpredictable Threat (U) task (NPU; Schmitz & Grillon, 2012)
	Conditioning paradigms (e.g., Lissek et al., 2015)
	Cold Pressor Test (Rolke et al., 2006)
Sensitivity to Potential Threat	NPU task (Schmitz & Grillon, 2012)