Published in final edited form as:

J Obsessive Compuls Relat Disord. 2019 April ; 21: 112–120. doi:10.1016/j.jocrd.2019.03.005.

The role of ethnic identity in OC symptom dimensions among Asian Americans

Terence H.W. Ching^{*}, Monnica T. Williams

University of Connecticut, Department of Psychological Sciences, Storrs, CT, USA

Abstract

Little is known about obsessive-compulsive (OC) symptoms in Asian Americans. Past research has shown elevations in certain symptom dimensions when compared with White Americans, but there have not been any studies on cultural mechanisms for these differences. In this study, we examined whether ethnic identity mediated differences in severity of various OC symptom dimensions between Asian and White Americans. A total of 453 participants (79 Asian American, 374 non-Hispanic White) completed measures of ethnic identity and OC symptoms. Separate bootstrapped mediation analyses were conducted to determine the indirect (i.e., mediation) effect of ethnoracial group membership on different OC symptom dimensions, via ethnic identity. There was significant evidence of mediation across the majority of OC subscales examined. Asian Americans reported stronger ethnic identity than their White counterparts, which in turn predicted more severe contamination obsessions and washing compulsions, harm-related intrusions, checking, neutralizing, as well as symmetry/ordering symptoms. This study is the first to demonstrate an exacerbating function of ethnic identity for OC symptoms among Asian Americans, contrary to some previous evidence of its protective role for overall mental health among ethnoracial minorities. More research is needed to test and validate hypotheses about why ethnic identity mediated group differences in OC symptoms.

Keywords

Obsessive-compulsive disorder; Symptoms; Asian americans; Race; Ethnic identity

1. Introduction

Asian Americans are underrepresented in randomized clinical trials and specialized treatment programs for obsessive-compulsive disorder (OCD). Asians made up 1.6% of participants in 21 trials ($N = 2221$) from 1995 to 2008 (Williams, Powers, Yun, & Foa, 2010), and 2% of OCD patients at Rogers Memorial Hospital between 1999 and 2012 (Williams et al., 2015). Minority patients (including Asians) also required significantly

^{*}Corresponding author. University of Connecticut, Department of Psychological Sciences, 406 Babbidge Road, Unit 1020, Storrs, CT, 06269, USA. terence.ching@uconn.edu (T.H.W. Ching).

Contributors

The first author conducted the literature search and analyses and wrote the first draft of the manuscript. The second author designed the study and collected the data. Both authors contributed to the final version of the manuscript.

Conflicts of interest

The authors declare that there are no conflicts of interest.

longer stays, despite being similar to non-Hispanic Whites in mean pre- and post-treatment OCD severity (Williams et al., 2015). These disparities signal that we might not know enough about OCD in Asian Americans to treat them adequately. Greater numbers of ethnic minority patients require OCD treatment due to changing national demographics (Williams et al., 2015). OCD is also uniquely associated with increased risk of suicidality among Asian patients (Gupta, Avasthi, Grover, & Singh, 2014). Thus, an important public health concern is to uncover culturally relevant mechanisms influencing OC symptoms in Asian Americans.

Research on OCD in Asian countries has supported the validity of symptom dimensions found with Western populations. For example, studies from Asian countries consistently report the same or similar symptom dimensions on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS; Goodman et al., 1989) and its other versions. Matsunaga et al. (2008) found contamination obsessions (48%) and washing (47%) to be the most common symptoms among Japanese OCD patients. Symmetry or exactness concerns (42%) were also common, and were associated with earlier onset and increased treatment resistance. Li, Marques, Hinton, Wang, & Xiao (2009) similarly found symmetry (68%) and contamination concerns (43%) to be the most common symptoms among Chinese OCD patients. Additionally, contamination obsessions (75%) and cleaning (42%) were the most common symptoms among children and adolescents in Singapore (Chai, Chang, Ooi, & Fung, 2013). However, these studies were either descriptive or psychometric in nature; none of them directly examined culturally relevant factors that might affect OC symptom development or maintenance in Asian individuals.

Other research has indicated differences on certain OC symptom dimensions in Asians, compared with individuals with Western origins, even though the broad differentiation of 'obsessions' from 'compulsions' tends to be found cross-culturally (Garnaat & Norton, 2010); not all studies, however, have found this two-factor structure (cf. Amir, Foa, & Coles, 1997; Deacon & Abramowitz, 2005). Woo, Kwon, Lim, & Shin (2010) found elevations in OC symptom severity among Korean college students and OCD patients with medium to large effect sizes, when compared with similar samples in European studies. Korean students reported more severe neutralizing, washing, and obsessing than French students, as well as more severe obsessing and neutralizing than Icelandic and Spanish students, respectively. Korean patients reported more severe obsessing than their German counterparts. Again, there was no discussion of culturally relevant mechanisms for these differences.

Research with U.S. samples has also showed differences between ethnoracial groups. Wheaton, Berman, Fabricant, & Abramowitz (2013) found that Asian Americans endorsed more contamination symptoms and obsessive beliefs than European Americans. Perfectionism and intolerance of uncertainty were also significantly stronger predictors of unacceptable thoughts in Asian Americans, compared with African and Latino Americans. Wu and Wyman (2016) found that Asian Americans reported higher scores than other ethnoracial groups on subscales of several OC symptom measures, with positive correlations between most OC symptom dimensions and distress. These findings cohere with international studies with ethnically diverse Asian samples showing that OC symptoms tend to correlate with poorer quality of life, lower help-seeking, more depressive and anxiety symptoms, and increased helplessness (Lee, Tam, Song, & Neik, 2015; Subramaniam,

Abdin, Vaingankar, & Chong, 2012; Sun, Li, Buys, & Storch, 2015). While supporting a cognitive-behavioral conceptualization of OCD, these studies did not examine cultural factors that might influence processes leading to OC symptoms in Asian Americans.

Ethnic identity refers to “one’s identity or sense of self as a member of an ethnic group (Phinney, 2003, p. 63),” tapping into one’s cognitive, emotional, and behavioral attachment to, and involvement with, one’s ethnic group. Aspects of ethnic identity include feelings of belongingness and pride in one’s ethnic group, knowledge of the group’s cultural history, and exploration and engagement in related traditions and customs (Iwamoto & Liu, 2010; Phinney, 1992). The association between ethnic identity with OC symptoms has only been studied among African Americans. Williams and Jahn (2017) described how young African Americans who have been socialized by their parents to contextualize others’ negative perceptions of them in the foundation of a strong, positive ethnic identity are more likely to exhibit positive psychosocial and behavioral functioning (Elmore & Gaylord-Harden, 2013), and be resilient in adverse conditions (APA Task Force on Resilience and Strength in Black Children and Adolescents, 2008). As such, Williams & Jahn (2017) proposed that ethnic identity might also be protective against OC symptoms among African Americans, due to other evidence of the protective function of ethnic identity against depressive and anxiety symptoms among African Americans (Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003; Williams et al., 2012). Willis & Neblett (2018) subsequently tested this relationship in the context of racial discrimination among African Americans, and found that the Multiculturalist (e.g., emphasizing similarities between Blacks and mainstream society) and Humanist racial identity profiles (e.g., emphasizing similarities among all races) buffered the link between racial discrimination and subsequent OC symptoms, although the Race-Focused profile (e.g., emphasizing the uniqueness of being Black) exacerbated this link. The authors concluded that certain racial identity patterns contribute to lower OC symptom distress, while others can actually worsen such symptoms. However, no published research has explored the role of ethnic identity in OC symptomatology in Asian Americans.

Rather, much of the research has elucidated ethnic identity either as a predictor of overall mental health, or as being implicated in the relationship between race-related stress and depressive and anxiety symptoms in Asian Americans. Several studies have shown that ethnic identity tends to protect Asian Americans’ mental well-being. Shrake and Rhee (2004) found that a stronger, positive ethnic identity mitigated internalizing and externalizing problems for Korean American adolescents; the stronger their sense of belonging to their ethnic group, the less severe their problem behaviors. Iwamoto and Liu (2010) also found in Asian college students that their sense of belonging to, and affirmation of, their ethnic group was positively related to subjective psychological well-being, perhaps due to accepting, trusting relationships with members of their ethnic community. In a longitudinal study of Asian and Latino American adolescents, Rogers-Sirin and Gupta (2012) found that increasing ethnic identity was associated with lower levels of specific depressive symptoms (e.g., social withdrawal) for both Latino and Asian adolescents over time, while ethnic identity was associated with lower levels of somatic symptoms only for Asian adolescents. Thus, ethnic identity was more pervasively protective for Asian adolescents. Choi, Lewis, Harwood, Mendenhall, & Browne Hunt (2017) further found that positive ethnic identity dampened the impact of racial microaggressions on depressive

symptoms in Asian American college students. Additionally, Brittian et al. (2013) found that ethnic centrality (or, the personal significance of one's ethnic identity), magnified the negative association between self-affirmation of one's ethnic identity and anxiety and depressive symptoms in Asian Americans.

On the other hand, a few studies have shown that ethnic identity can actually exacerbate psychopathological symptoms for Asian Americans. Hovey, Kim, & Seligman (2006) found that greater cultural value maintenance among Korean American students was associated with decreased self-esteem and increased depression and state and trait anxiety. The authors explained this finding as due to an 'ethnic bind,' or a distressing dissonance between traditional Korean and modern American values. Tummala-Narra et al. (2018) investigated the roles of ethnic identity and perceived racism in mental health outcomes and help-seeking attitudes among Asian American college students. Experiencing racism was associated with greater anxiety and depressive symptoms, and certain dimensions of ethnic identity (i.e., commitment to, and exploration of, one's ethnic group) were associated with negative mental health outcomes and unfavorable help-seeking attitudes. Further, Asian Americans with higher ethnic identity reported lower positive affect when imagining multiple incidents, compared to a single incident, of racial discrimination (Yoo & Lee, 2008). Additionally, Yip, Gee, & Takeuchi (2008) found that while ethnic identity buffered against the effects of racial discrimination on psychological distress for middle-aged U.S.-born Asians in the National Latino and Asian American Study (NLAAS), it exacerbated the link between discrimination and distress for younger- and older-adult U.S.-born Asians.

In summary, depending on the sample and methodology, Asians tend to be elevated on various OC symptoms (most consistently, contamination concerns), compared with individuals of European descent. There is, however, insufficient knowledge about cultural mechanisms for these elevations. The literature is also mixed in terms of the protective or exacerbating function of ethnic identity for Asian American mental health, and no studies have explored the role of ethnic identity in OC symptoms in Asian Americans. Given Willis and Neblett (2018) finding that a Race-Focused racial identity profile (which closely resembles the most commonly studied conceptualization of ethnic identity (Phinney, 1992)) worsened the relationship between racial discrimination and OC symptoms, one could similarly hypothesize that ethnic identity would exacerbate OC symptom severity in Asian Americans. The results would be informative in regards to the role of ethnic identity in OC symptoms among Asian Americans.

In the present study, we hypothesized that Asian American participants would endorse significantly more severe scores on at least contamination concerns than White participants, given consistent observations with this symptom dimension in previous studies. Furthermore, in order to examine ethnic identity as an underlying mechanism for differences in OC symptoms between Asian and White Americans, we situated ethnic identity as a mediator of the relationships between ethnoracial group membership (i.e., Asian vs. White Americans) and various OC symptom dimensions, as measured on two established self-report OC measures. We opted to use two OC symptom measures here because of the inherent replicability of findings afforded with the overlap on certain symptom dimensions (e.g., contamination concerns, harm/checking) (see 2.2. Measures subsection). We

hypothesized a significant indirect effect for all of the OC symptom dimensions assessed, with ethnoracial group status hypothesized to positively predict ethnic identity (i.e., Asian Americans endorsing stronger ethnic identity), which in turn was hypothesized to positively predict the respective OC symptom dimensions (i.e., more severe symptoms).

2. Method

2.1. Participants

This study planned to recruit substantial numbers from both college students and community members, but response in the latter turned out to be low. A total of 432 college students (44.7% male, 55.3% female; mean age = 19.03 years, $SD = 2.13$) from a large university in Virginia (recruited via the undergraduate psychology participant pool), and 21 individuals from the community (recruited via flyers) (66.7% male, 33.3% female; mean age = 22.33 years, $SD = 5.02$), participated for course credit and gift cards, respectively. The sample comprised 79 Asian Americans (38% male, 62% female; mean age = 18.94 years, $SD = 1.39$) and 374 non-Hispanic Whites (47.3% male, 52.7% female; mean age = 19.24 years, $SD = 2.60$). Participants in the Asian American subsample filled in their ethnicity for the opening question of the 12-item Multigroup Ethnic Identification Measure (MEIM-12; Roberts et al., 1999) as such: 55.7% Asian; 15.2% Chinese; 10.1% Korean; 3.8% Indian; 2.5% Filipino; 2.5% Vietnamese; 1.3% Thai; and 8.9% multiracial (with at least one Asian parent). In the Asian American subsample, 82.3% were born in the United States, while 17.7% were born outside of the United States, having lived an average of 9.21 years ($SD = 3.34$) in the United States. (In this study, we refer to all participants in this subsample as 'Asian Americans' for simplicity.)

2.2. Measures

2.2.1. Multigroup Ethnic Identification Measure (MEIM-12; Roberts et al., 1999)—The MEIM-12 was used to assess degree of ethnic group identification, with each of 12 items being rated on a four-point scale from 1 (strongly disagree) to 4 (strongly agree). The MEIM-12 parses ethnic identity into two subscales. The Ethnic Identity Search subscale (MEIM-12-Search; five items) taps into primarily developmental and cognitive components of ethnic identity (e.g., "I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs"). The Affirmation, Belonging, and Commitment subscale (MEIM-12-Affirmation; seven items) taps into a primarily affective component (e.g., "I have a strong sense of belonging to my own ethnic group"). The conventional scoring approach is to calculate the mean of item scores for the full scale (i.e., range from 1 to 4), with higher means indicating stronger, more positive ethnic identity overall. The MEIM-12 has shown good reliability and validity across a wide range of ethnoracial groups and ages. Roberts et al. (1999) found Cronbach's alphas above .80 across adolescents of different ethnoracial groups (cf. Ponterotto et al., 2003), in addition to positive correlations between the MEIM-12 and measures of coping ability and self-esteem, and negative correlations with measures of loneliness and depression, across groups. Other studies also indicate measurement equivalence in adults of different ethnoracial groups (e.g., Avery, Tonidandel, Thomas, Johnson, & Mack, 2007; Williams, Duque, Chapman, Wetterneck, &

DeLapp, 2018). In the present sample, Cronbach's alphas for Asian and White Americans were 0.91 and 0.85, respectively.

2.2.2. Padua Inventory-Washington State Revision (PI-WSR; Burns, Keortge, Formea, & Sternberger, 1996)—The PI-WSR was used to assess severity of different OC symptom dimensions. Each item was rated on a five-point scale from 0 (not at all) to 4 (very much). There are a total of 39 items forming five subscales: Obsessional Thoughts about Harm to Self/Others (PI-WSR-Harm Thoughts; seven items); Obsessional Impulses to Harm Self/Others (PI-WSR-Harm Impulses; nine items); Contamination Obsessions and Washing Compulsions (PI-WSR-Contamination; 10 items); Checking Compulsions (PI-WSR-Checking; 10 items); and Dressing/Grooming Compulsions (PI-WSR-Dressing; three items). The PI-WSR-DG subscale taps into symmetry/ordering concerns, albeit in the limited context of dressing and grooming (e.g., “I feel obliged to follow a particular order in dressing, undressing, and washing myself”). Item scores for each subscale are added up to give the respective subscale totals, with higher subscale totals indicating more severe symptoms in that domain. While the original version (i.e., the 60-item Padua Inventory (PI); Sanavio, 1988) may elicit elevated scores in certain ethnoracial groups (e.g., Black and Hispanic Americans; Williams, Turkheimer, Schmidt, & Oltmanns, 2005), the PI-WSR has shown good reliability, validity, and a stable five-factor structure across studies in different global cultures (e.g., Jónsdóttir & Smári, 2000; Yorulmaz et al., 2007). In the present sample, Cronbach's alphas for the five PI-WSR subscales ranged from 0.74 to 0.89 for Asian Americans, and from 0.75 to 0.89 for White Americans.

2.2.3. Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al., 2002)—The OCI-R was the other measure used in the present study to assess severity of different OC symptom dimensions (i.e., contamination, harm, ordering, and hoarding concerns, as well as obsessing and neutralizing symptoms). Each item is rated on a five-point scale from 0 (not at all) to 4 (extremely). There are 18 items forming six subscales of three items each: Washing (OCI-R-Washing); Checking (OCI-R-Checking); Ordering (OCI-R-Ordering); Obsessing (OCI-R-Obsessing); Hoarding (OCI-R-Hoarding); and Neutralizing (OCI-R-Neutralizing). Item scores for each subscale are added up to give the respective subscale totals, with higher subscale totals indicating greater severity in that symptom dimension. The OCI-R has demonstrated good reliability, validity, and a stable six-factor structure in several studies with clinical (e.g., Huppert et al., 2007) and non-clinical populations (e.g., Hajcak, Huppert, Simons, & Foa, 2004), even specifically with individuals from Asian cultures (e.g., Peng, Yang, Miao, Jing, & Chan, 2011). In the present sample, Cronbach's alphas for the six OCI-R subscales ranged from 0.71 to 0.85 for Asian Americans, and from 0.72 to 0.88 for White Americans.

2.3. Procedure

After obtaining informed consent by signing the university institutional review board (IRB)-approved consent form, participants individually completed a questionnaire packet containing measures of interest in paper-and-pencil format under the supervision of a trained research assistant. The research assistant was present in the same laboratory room for the entire duration, ensured completion of the packet, and provided clarification, whenever

necessary. Packets were subsequently entered into a custom database by expert staff at the University of Virginia's Center for Survey Research.

2.4. Data analysis

First, we computed descriptive statistics of scores on the MEIM-12 and PI-WSR and OCI-R subscales between Asian and White Americans and with the entire sample, and conducted between-group comparisons of these scores between Asian and White Americans using independent samples *t*-tests. Next, we analyzed bivariate correlations among all study variables in Asian and White Americans separately. Finally, in separate bootstrapped mediation analyses (10,000 resamples) using the PROCESS v3.0 macro for SPSS (Hayes, 2017), we entered ethnoracial group membership (Asian Americans coded as 1, White Americans coded as 0) as the predictor, ethnic identity scores on the MEIM-12 as the mediator, and severity of different OC symptom dimensions on the PI-WSR and OCI-R subscales as outcome variables. We did not include any covariates in our mediation analyses. Statistical significance of the indirect (i.e., mediation) effect at the $\alpha = 0.05$ level is typically indicated by the absence of zero in the 95% bias-corrected confidence interval (CI) for the respective unstandardized regression coefficient. However, to control for possible Type I error with the number of mediation analyses conducted here, we additionally implemented Simes (1986) procedure for Bonferroni correction to α for *p*-values of all indirect and direct effects. This modified Bonferroni correction procedure has been shown to approximate familywise error rate to $\alpha = .05$, while retaining sufficient power for multiple analyses (Sakar & Chang, 1997).

3. Results

Descriptive statistics (i.e., means and standard deviations) of the different measures for Asian and White Americans, as well as the entire sample, are shown in Table 1. Compared with White Americans, Asian Americans in our sample endorsed significantly higher scores in terms of ethnic identity on the MEIM-12, harm intrusions, contamination concerns, and checking on the PI-WSR, as well as washing, ordering, and neutralizing rituals on the OCI-R. These findings are consistent with trends for the MEIM-12 (see Roberts et al., 1999), as well as prior evidence of elevations on OC symptoms (most consistently, contamination concerns) in Asian Americans. The sample means for the OC measures are also somewhat consistent with previously reported norms in similar populations (see Burns et al., 1996; Foa et al., 2002).

Table 2 displays bivariate correlations among all study variables for Asian and White Americans separately. Although the magnitudes of correlations between the MEIM-12 and OC subscales ranged similarly between Asian ($r_s = -0.04$ – 0.18) and White Americans ($r_s = 0.04$ – 0.18), these correlations were all non-significant for Asian Americans, while largely significant for White Americans; this is attributable to the difference in subsample sizes. On the other hand, the majority of the correlations among OC subscale scores were, unsurprisingly, generally significant and moderate to high in magnitude in both Asian ($r_s = 0.23$ – 0.88) and White Americans ($r_s = 0.11$ – 0.89), in part due to overlap in certain OC symptom dimensions (e.g., contamination concerns, harm/checking) on the two OC

measures employed here. These findings do not raise typical issues of redundancy due to multicollinearity, especially given the a-priori rationale to examine different OC symptom dimensions.

Results of separate mediation analyses (with Simes (1986) modified Bonferroni correction) showed significant evidence of mediation for seven out of the 11 OC subscales, which we categorized into three symptom dimensions for discussion. This categorization was based on commonly observed clustering of symptoms both in clinical practice and the literature (i.e., contamination obsessions and washing compulsions, harm thoughts and checking and neutralizing symptoms, as well as dressing/grooming rituals and ordering symptoms, respectively). The other four subscales that did not show a mediation effect—PI-WSR-Harm Impulses, OCI-R Checking, OCI-R-Obsessing, and OCI-R-Hoarding – also did not evince a significant direct effect of ethnoracial group membership, all p s > .05.

The first set of results indicated that ethnoracial group membership was indirectly related to contamination concerns and washing compulsions (i.e., on the PI-WSR-Contamination (Fig. 1A) and OCI-R-Washing (Fig. 1B) subscales) through its relationship with ethnic identity. As shown in Fig. 1A and B, Asian Americans reported significantly stronger ethnic identity than White Americans, and stronger ethnic identity was significantly related to more severe contamination-related symptoms on both subscales. The 95% CIs indicated that the indirect effect was entirely above zero in both analyses, and the respective p -values were both below the corrected threshold for α . Moreover, Asian Americans reported significantly more severe contamination-related symptoms on both subscales (i.e., direct effect) after modified Bonferroni correction, even after taking into account ethnoracial group membership's indirect effect through ethnic identity.

The next set of results similarly indicated that ethnoracial group membership was indirectly and completely related to harm-related intrusive thoughts and checking and neutralizing compulsions (i.e., on the PI-WSR-Harm Thoughts (Fig. 2A), PI-WSR-Checking (Fig. 2B), and OCI-R-Neutralizing (Fig. 2C) subscales) through ethnic identity. As shown in Fig. 2A–C, Asian Americans reported significantly stronger ethnic identity than White Americans, and stronger ethnic identity was significantly related to greater endorsement of symptoms on the aforementioned subscales. The indirect effect was consistently above zero in all three analyses, and the respective p -values were all below the corrected threshold for α .

The last set of results showed that ethnoracial group membership was indirectly and completely related to symmetry/ordering symptoms (i.e., on the PI-WSR-Dressing (Fig. 3A) and OCI-R-Ordering (Fig. 3B) subscales) via ethnic identity. As shown in Fig. 3A and B, Asian Americans reported significantly stronger ethnic identity than White Americans, and stronger ethnic identity was significantly related to more severe symmetry/ordering symptoms on both subscales. The indirect effect was above zero in both analyses, and both p -values were below the corrected threshold for α . Importantly, all of the findings above were replicated when the data were reanalyzed with scores on both subscales of the MEIM-12 (i.e., MEIM-12-Search and MEIM-12-Affirmation) entered as separate mediators (not reported here).

4. Discussion

In this study, we sought to determine whether ethnic identity, as a cultural mechanism, contributes to differences in various OC symptom dimensions on two measures in Asian Americans, compared with non-Hispanic White Americans. As partially hypothesized, we found evidence of a mediation effect across the majority of OC subscales assessed.

Our first set of findings with bootstrapped mediation analyses showed that ethnoracial group membership exerted a significant indirect effect on contamination-related obsessions and washing compulsions on both measures through ethnic identity, with Asian Americans endorsing stronger ethnic identity, which in turn predicted greater endorsement of contamination-related symptoms. These findings cohere with previous research showing similar elevations in other ethnoracial minority groups. In studies by Williams and colleagues, African Americans reported elevated concerns about cleanliness and higher reports of washing behaviors compared to White Americans (Williams, Elstein, Buckner, Abelson, & Himle, 2012; Williams & Turkheimer, 2007; Williams et al., 2005). The authors explained these elevations as consistent with a ‘stereotype compensation’ hypothesis, which was defined as African Americans attempting to counteract (i.e., compensate for) persistent historical, racist, Jim Crow-era stereotypes (e.g., that African Americans are ‘dirty’ and can contaminate White Americans on contact, which resulted in racial segregation) by increasing their washing behaviors (Williams, Turkheimer, Magee, & Guterbock, 2008). In a similar way, Asian Americans could be endorsing greater contamination concerns than White Americans (and more so when more strongly identified as Asian; i.e., having a stronger ethnic identity) in order to combat persisting historical, racist stereotypes perpetuated by, for example, the Chinese Exclusion Act in the United States (e.g., Asians eating unsanitary and bizarre foods; Lee, 2015). We speculate that having a stronger ethnic identity (e.g., possessing increased awareness and knowledge of ways in which one’s ethnic group has historically been subjected to racial prejudice and mistreatment) could catalyze and exacerbate contamination symptoms in Asian Americans, as demonstrated in our findings. This hypothesis is worthy of further investigation, perhaps by priming aforementioned stereotypes and testing if compensatory washing behaviors are induced as a result (for a similar methodology with African Americans, see Olatunji, Tomarken, & Zhao, 2014). An additional finding was that Asian Americans in our sample reported significantly more severe contamination concerns even after controlling for the indirect effect of ethnic identity, consistent with previous studies showing how contamination concerns tend to be the most prevalent OC symptoms in participants of Asian heritage. Hence, it is also possible that Asian Americans have culturally higher standards for cleanliness than White Americans in a way not adequately captured by ethnic identity, although more research needs to be done to clarify this. For example, future studies can assess for standards of cleanliness (e.g., with a novel self-report measure) to be included as an additional mediator.

We also found that ethnic identity significantly and completely mediated Asian Americans’ increased endorsement of harm-related intrusions and checking and neutralizing compulsions, compared with their White counterparts. While the literature has consistently shown such symptoms to be common among individuals of Asian descent (e.g., Matsunaga et al., 2008; Reddy et al., 2000), this study is the first to examine a culturally relevant

mechanism for their elevations in this group. It is easy to imagine how the distress associated with intrusive thoughts about harm occurring to the self or loved ones either intentionally or by accident can be amplified when one has a strong sense of belonging and attachment to the people in one's ethnoracial group, which tends to be an important Asian cultural value. In other words, Asian Americans who have a strong ethnic identity – hence a strong sense of belonging and attachment to loved ones in their ethnic group—might be more distressed by intrusive thoughts about harm occurring to these individuals. Because such thoughts tend to be addressed by a variety of compulsions that include checking and neutralizing, it was no surprise that we uncovered a mediation effect with such behavioral symptoms as well. In a similar vein, studies have shown how obsessive thoughts about harm in OCD is especially distressing when the target is a loved one (e.g., postpartum obsessions about harm to one's infant child; McGuinness, Blissett, & Jones, 2011).

Furthermore, we found significant evidence of mediation for symmetry/ordering concerns, in which Asian Americans reported greater severity on both measures, as completely mediated by stronger ethnic identity. It is worth noting that while the PI-WSR only assesses such concerns in the limited context of dressing and grooming, the OCI-R directly taps into this symptom dimension in a broader way with a wider variety of symmetry/ordering concerns. These findings are consistent with literature showing high prevalence of such symptoms, at least in East Asians with OCD. Past studies (e.g., Li et al., 2009; Matsunaga et al., 2008) have attributed elevations on symmetry/ordering concerns in Asians to the cultural emphasis on Confucian values of harmony, cohesion, and balance. However, while there might be some overlap between these cultural values and the construct of ethnic identity, ethnic identity, as assessed on the MEIM-12, does not necessarily capture the finer details of the former as well as other more direct measures (e.g., Asian Values Scale (AVS; Kim, Atkinson, & Yang, 1999)). That said, having a stronger ethnic identity might still exert an influence on the importance of symmetry/ordering through the abstract attitudinal emphasis on achieving certainty (i.e., from the MEIM-12, "I have a clear sense of my ethnic background and what it means for me"). As such, future research could extend this finding by examining other constructs that might function as additional underlying mechanisms. Other researchers have introduced the possibility of examining certain obsessive beliefs, such as perfectionism and intolerance of uncertainty, in conferring a greater vulnerability to symmetry/ordering concerns in Asian Americans, compared with White Americans (e.g., Wu & Wyman, 2016). Future studies could even examine how internalization of the 'model minority' stereotype – or, how Asians, as the 'model minority,' can and should achieve unrealistically high standards in academic, professional, and other contexts (Chao, Chiu, Chan, Mendoza-Denton, & Kwok, 2013; see also; Ching, Lee, Chen, So, & Williams, 2018) – could drive both perfectionism/intolerance of uncertainty *and* symmetry/ordering symptoms, especially when considered together with ethnic identity.

The fact that in our study ethnic identity consistently predicted more (instead of less) severe OC symptoms across the majority of subscales examined contrasts with some research on the protective role of ethnic identity for mental health, both in Asian Americans and other ethnoracial groups. For example, a few studies on ethnic identity in African Americans have shown that it buffers against sociocultural stressors (e.g., race-related stress) that would otherwise be detrimental to mental and physical wellness (Neblett & Carter, 2012; Neblett,

Banks, Cooper, & Smalls-Glover, 2013; Sawyer, Williams, Chasson, Davis, & Chapman, 2015; for a meta-analysis, see; Smith & Silva, 2011). On the other hand, other research has shown that certain aspects of ethnic identity (e.g., ethnic identity exploration) may actually exacerbate psychopathology in the face of race-related stress in certain ethnoracial minority populations (e.g., Latino/Hispanic Americans; French & Chavez, 2010; Torres & DeCarlo Santiago, 2017; Torres & Ong, 2010). The present study thus supports the latter position, and shows that ethnic identity may not be universally protective across various forms of psychopathology, including OC symptoms in Asian Americans. It might also be interesting to speculate about unexamined contextual factors that, in other studies, have effected a more nuanced impact of ethnic identity on mental health in Asian Americans. For example, Juang, Nguyen, & Lin (2006) found that ethnic identity was associated with fewer symptoms of depression and increased connectedness to parents in Asian Americans only for those in an ethnically concentrated context, as opposed to an ethnically dispersed, mainly White context. Therefore, an environment in which there is intragroup cohesion and the ethnic group enjoys a valued status (Tajfel & Turner, 1986) can have an influence on the impact of ethnic identity on mental health in Asian Americans. In Stein, Kiang, Supple, & Gonzalezs (2014) study, ethnic identity buffered and exacerbated different mental health outcomes (i.e., depressive symptoms and self-esteem) in a subset of Asian American adolescents experiencing high levels of economic stress in the home. This again suggested how context can complicate the role of ethnic identity in mental well-being of Asian Americans. Additionally, other studies have indicated how factors such as differences in developmental age periods (Yip et al., 2008) and heterogeneity in ethnicities (Ai, Nicdao, Appel, & Lee, 2015), in interaction with ethnic identity, can differentially influence its impact on mental health outcomes in Asian Americans. As such, incorporating these contextual and demographic considerations into future research can help refine the pervasive impact of ethnic identity on different OCD symptoms in Asian Americans that was observed in this study. Specifically, on the basis of findings from these aforementioned studies, future research should examine the moderating influences of ethnoracial makeup of participants' living environment, socioeconomic status and financial stress in the home, as well as participants' age and ethnicity (e.g., Chinese, Japanese, Vietnamese, etc.), on the mediation pathways investigated in the present study.

There were a few limitations in the present study that can be addressed in future research. First, ethnic identity is a dynamic construct, and the data were collected in a cross-sectional manner with a non-clinical sample, making it impossible to determine causal relations between ethnic identity and OC symptoms or to generalize findings to OCD patients (cf. Abramowitz et al., 2014). Replication with an OCD patient sample in a longitudinal manner paralleling ethnic identity development is needed. Future longitudinal research could even consider generational status among Asian Americans, which may have an influence on ethnic identity development. Relatedly, the ethnic identity literature has predominantly been conducted with ethnoracial minority populations (Avery et al., 2007); it is still not known whether and/or how well the construct applies to non-Hispanic White populations. Next, Asian Americans represent a markedly heterogeneous population, with great diversity in cultural practices and, possibly, differences in acculturation that likely contribute to variability in the development, presentation, and disclosure of psychopathology, including

OC symptoms. Owing to the small subsample of Asian Americans recruited for the present study ($n = 79$), this heterogeneity might have been obscured. A larger sample would allow for increased heterogeneity and representativeness in regards to Asian subgroups in the United States. Further, gender has been implicated in how OC symptoms can be expressed, particularly in Asian individuals. Cherian et al. (2014) found that South Asian women with OCD, compared with their male counterparts, endorsed more contamination fears, one of the symptom dimensions discussed here. Again, due to small subsample of Asian Americans in our study, we were unable to conduct meaningful analyses as differentiated by gender. That said, comparisons of PI-WSR and OCI-R subscale scores between males and females in our Asian American subsample did not yield any significant differences (not reported). Nonetheless, future studies should consider and control for gender in their analyses of moderators and/or mediators of processes leading to elevations in certain symptom dimensions in Asian individuals with OCD. Finally, exclusive reliance on self-report measures might have inflated associations among variables; future studies using multimethod assessment techniques would be ideal.

In conclusion, Asian Americans in our study endorsed stronger ethnic identity than their White counterparts, which in turn predicted more severe OC symptoms across three broad categories. This study is the first to examine ethnic identity as a cultural mechanism for different OC symptom dimensions among Asian Americans, although much more research is needed to test and validate hypotheses (e.g., ‘stereotype compensation’) about why ethnic identity mediated group differences in these symptoms.

Role of funding sources

This study was funded in part by the National Institute of Health NRSA Pre-Doctoral Training Grant 1 F31 MH70175–01A1 (PI: second author).

References

- Abramowitz JS, Fabricant LE, Taylor S, Deacon BJ, McKay D, & Storch EA (2014). The relevance of analogue studies for understanding obsessions and compulsions. *Clinical Psychology Review*, 34, 206–217. 10.1016/j.cpr.2014.01.004. [PubMed: 24561743]
- Ai AL, Nicdao EG, Appel HB, & Lee DHJ (2015). Ethnic identity and major depression in Asian American subgroups nationwide: Differential findings in relation to subcultural contexts. *Journal of Clinical Psychology*, 71, 1225–1244. 10.1002/jclp.22214. [PubMed: 26335455]
- American Psychological Association Task Force on Resilience and Strength in Black Children and Adolescents (2008). *Resilience in African American children and adolescents: A vision for optimal development*. Washington, DC: Author Retrieved from <http://www.apa.org.ezproxy.lib.uconn.edu/pi/families/resources/resiliencercpt.pdf>.
- Amir N, Foa EB, & Coles ME (1997). Factor structure of the Yale–Brown obsessive compulsive scale. *Psychological Assessment*, 9, 312–316. 10.1037/1040-3590.9.3.312.
- Avery DR, Tonidandel S, Thomas KM, Johnson CD, & Mack DA (2007). Assessing the Multigroup Ethnic Identity Measure for measurement equivalence across racial and ethnic groups. *Educational and Psychological Measurement*, 67, 877–888. 10.1177/0013164406299105.
- Brittian AS, Umaña-Taylor AJ, Lee RM, Zamboanga BL, Kim SY, Weisskirch RS, et al. (2013). The moderating role of centrality on associations between ethnic identity affirmation and ethnic minority college students’ mental health. *Journal of American College Health*, 61, 133–140. 10.1080/07448481.2013.773904. [PubMed: 25158010]

- Burns GL, Keortge SG, Formea GM, & Sternberger LG (1996). Revision of the Padua Inventory of obsessive compulsive disorder symptoms: Distinctions between worry, obsessions, and compulsions. *Behaviour Research and Therapy*, 34, 163–173. 10.1016/0005-7967(95)00035-6. [PubMed: 8741724]
- Chai SB, Chang WC, Ooi YP, & Fung D (2013). Validity of the children's Yale-Brown obsessive compulsive scale in Singaporean children. *Advances in Mental Health*, 12, 54–62. 10.5172/jamh.2013.12.1.54.
- Chao MM, Chiu CY, Chan W, Mendoza-Denton R, & Kwok C (2013). The model minority as a shared reality and its implication for interracial perceptions. *Asian American Journal of Psychology*, 4, 84–92. 10.1037/a0028769.
- Cherian AV, Narayanaswamy JC, Viswanath B, Guru N, George CM, Bada Math S, et al. (2014). Gender differences in obsessive-compulsive disorder: Findings from a large Indian sample. *Asian Journal of Psychiatry*, 9, 17–21. 10.1016/j.ajp.2013.12.012. [PubMed: 24813030]
- Ching THW, Lee SY, Chen J, So RP, & Williams MT (2018). A model of intersectional stress and trauma in Asian American sexual and gender minorities. *Psychology of Violence*, 8, 657–668. 10.1037/vio0000204.
- Choi S, Lewis JA, Harwood S, Mendenhall R, & Browne Hunt M (2017). Is ethnic identity a buffer? Exploring the relations between racial microaggressions and depressive symptoms among Asian-American individuals. *Journal of Ethnic & Cultural Diversity in Social Work*, 26, 18–29. 10.1080/15313204.2016.1263815.
- Deacon BJ, & Abramowitz JS (2005). The Yale-Brown Obsessive Compulsive Scale: Factor analysis, construct validity, and suggestions for refinement. *Journal of Anxiety Disorders*, 19, 573–585. 10.1016/j.janxdis.2004.04.009. [PubMed: 15749574]
- Elmore C, & Gaylord-Harden N (2013). The influence of supportive parenting and racial socialization messages on African American youth behavioral outcomes. *Journal of Child and Family Studies*, 22, 63–75. 10.1007/s10826-012-9653-6.
- Foa EB, Huppert JD, Leiberg S, Langner R, Kichic R, Hajcak G, et al. (2002). The Obsessive-Compulsive Inventory: Development and validation of a short version. *Psychological Assessment*, 14, 485–496. 10.1037/1040-3590.14.4.485. [PubMed: 12501574]
- French SE, & Chavez NR (2010). The relationship of ethnicity-related stressors and Latino ethnic identity to well-being. *Hispanic Journal of Behavioral Sciences*, 32, 410–428. 10.1177/0739986310374716.
- Garnaat SL, & Norton PJ (2010). Factor structure and measurement invariance of the Yale-Brown Obsessive Compulsive Scale across four racial/ethnic groups. *Journal of Anxiety Disorders*, 24, 723–728. 10.1016/j.janxdis.2010.05.004. [PubMed: 20541907]
- Goodman W, Price L, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, et al. (1989). The Yale-Brown obsessive compulsive scale, I: Development, use, and reliability. *Archives of General Psychiatry*, 46, 1006–1011. 10.1001/archpsyc.1989.01810110048007. [PubMed: 2684084]
- Gupta G, Avasthi A, Grover S, & Singh SM (2014). Factors associated with suicidal ideations and suicidal attempts in patients with obsessive compulsive disorder. *Asian Journal of Psychiatry*, 12, 140–146. 10.1016/j.ajp.2014.09.004. [PubMed: 25446904]
- Hajcak G, Huppert JD, Simons RF, & Foa EB (2004). Psychometric properties of the OCI-R in a college sample. *Behaviour Research and Therapy*, 42, 115–123. 10.1016/j.brat.2003.08.002. [PubMed: 14992204]
- Hayes AF (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression Approach* (2nd ed.). New York: Guilford Press.
- Hovey JD, Kim SE, & Seligman LD (2006). The influences of cultural values, ethnic identity, and language use on the mental health of Korean American college students. *Journal of Psychology*, 140, 499–511. 10.3200/JRLP.140.5.499-511. [PubMed: 17066754]
- Huppert JD, Walther MR, Hajcak G, Yadin E, Foa EB, Simpson HB, et al. (2007). The OCI-R: Validation of the subscales in a clinical sample. *Journal of Anxiety Disorders*, 21, 394–406. 10.1016/j.janxdis.2006.05.006. [PubMed: 16814981]

- Iwamoto DK, & Liu WM (2010). The impact of racial identity, ethnic identity, Asian values, and race-related stress on Asian Americans and Asian international college students' psychological well-being. *Journal of Counseling Psychology*, 57, 79–91. 10.1037/a001739. [PubMed: 20396592]
- Jónsdóttir SD, & Smári J (2000). Measuring obsessions without worry: Convergent and discriminant validity of the Revised Padua Inventory in an Icelandic student population. *Scandinavian Journal of Behaviour Therapy*, 29, 49–56. 10.1080/028457100750066397.
- Juang LP, Nguyen HH, & Lin Y (2006). The ethnic identity, other-group attitudes, and psychosocial functioning of Asian American emerging adults from two contexts. *Journal of Adolescent Research*, 21, 542–568. 10.1177/0743558406291691.
- Kim BSK, Atkinson DR, & Yang PH (1999). The Asian Values Scale: Development, factor analysis, validation, and reliability. *Journal of Counseling Psychology*, 46, 342–352. 10.1037/0022-0167.46.3.342.
- Lee HR (2015, 6 10). The untold story of Chinese restaurants in America. Retrieved from <https://journalistsresource.org/studies/government/immigration/untold-story-chinese-restaurants-america>.
- Lee SL, Tam CL, Song BK, & Neik TTX (2015). The mediating role of depressive symptom severity in the relationship between obsessive-compulsive disorder and quality of life. *Asian Social Science*, 11, 97–102. 10.5539/ass.v11n1p97.
- Li Y, Marques L, Hinton DE, Wang Y, & Xiao Z-P (2009). Symptom dimensions in Chinese patients with obsessive-compulsive disorder. *CNS Neuroscience and Therapeutics*, 15, 276–282. 10.1111/j.1755-5949.2009.00099.x. [PubMed: 19691547]
- Matsunaga H, Maebayashi K, Hayashida K, Okino K, Matsui T, Iketani T, et al. (2008). Symptom structure in Japanese patients with obsessive-compulsive disorder. *American Journal of Psychiatry*, 165, 251–253. 10.1176/appi.ajp.2007.07020340. [PubMed: 18006873]
- McGuinness M, Blissett J, & Jones C (2011). OCD in the perinatal period: Is postpartum OCD (ppOCD) a distinct subtype? A review of the literature. *Behavioural and Cognitive Psychotherapy*, 39, 285–310. 10.1017/S1352465810000718. [PubMed: 21208486]
- Neblett EW, Banks KH, Cooper SM, & Smalls-Glover C (2013). Racial identity mediates the association between ethnic-racial socialization and depressive symptoms. *Cultural Diversity and Ethnic Minority Psychology*, 19, 200–207. 10.1037/a0032205. [PubMed: 23647330]
- Neblett EW, & Carter SE (2012). The protective role of racial identity and Afrocentric worldview in the association between racial discrimination and blood pressure. *Psychosomatic Medicine*, 74, 509–516. 10.1097/PSY.0b013e3182583a50. [PubMed: 22685241]
- Olatunji BO, Tomarken A, & Zhao M (2014). Effects of exposure to stereotype cues on contamination aversion and avoidance in African Americans. *Journal of Social and Clinical Psychology*, 33, 229–249. 10.1521/jscp.2014.33.3.229.
- Peng Z-W, Yang W-H, Miao G-D, Jing J, & Chan RCK (2011). The Chinese version of the Obsessive-Compulsive Inventory-Revised scale: Replication and extension to non-clinical and clinical individuals with OCD symptoms. *BMC Psychiatry*, 11, 129. 10.1186/1471-244X-11-129. [PubMed: 21824413]
- Phinney JS (1992). The Multigroup ethnic identity measure: A new scale for use with adolescents and young adults from diverse groups. *Journal of Adolescent Research*, 7, 156–176. 10.1177/074355489272003.
- Phinney JS (2003). Ethnic identity and acculturation In Chun KM, Organista PB, & Marin G (Eds.). *Acculturation: Advances in theory, measurement, and applied research* (pp. 63–81). Washington, DC: American Psychological Association.
- Ponterotto JG, Gretchen D, Utsey SO, Stracuzzi T, & Saya R Jr. (2003). The Multigroup ethnic identity measure (MEIM): Psychometric review and further validity testing. *Educational and Psychological Measurement*, 63, 502–515. 10.1177/0013164402251046.
- Reddy YC, Srinath S, Prakash HM, Girimaji SC, Sheshadri SP, Khanna S, et al. (2000). Comorbidity in juvenile obsessive-compulsive disorder: A report from India. *Canadian Journal of Psychiatry*, 45, 274–278. 10.1177/070674370004500307. [PubMed: 10779885]
- Roberts R, Phinney J, Masse L, Chen Y, Roberts C, & Romero A (1999). The structure of ethnic identity in young adolescents from diverse ethnocultural groups. *The Journal of Early Adolescence*, 19, 301–322. 10.1177/0272431699019003001.

- Rogers-Sirin L, & Gupta T (2012). Cultural identity and mental health: Differing trajectories among Asian and Latino youth. *Journal of Counseling Psychology*, 59, 555–566. 10.1037/a0029329. [PubMed: 22822789]
- Sakar SK, & Chang C-K (1997). The Simes method for multiple hypothesis testing with positively dependent test statistics. *Journal of the American Statistical Association*, 92, 1601–1608. 10.2307/2965431.
- Sanavio E (1988). Obsessions and compulsions: The Padua inventory. *Behaviour Research and Therapy*, 26, 169–177. 10.1016/0005-7967(88)90116-7. [PubMed: 3365207]
- Sawyer BA, Williams MT, Chasson GS, Davis DM, & Chapman LK (2015). The impact of childhood family functioning on anxious, depressive, and obsessive-compulsive symptoms in adulthood among African Americans. *Journal of Obsessive- Compulsive and Related Disorders*, 4, 8–13. 10.1016/j.jocrd.2014.10.004.
- Sellers RM, Caldwell CH, Schmeelk-Cone KH, & Zimmerman MA (2003). Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. *Journal of Health and Social Behavior*, 44, 302–317. 10.2307/1519781. [PubMed: 14582310]
- Shrake EK, & Rhee S (2004). Ethnic identity as a predictor of problem behaviors among Korean American adolescents. *Adolescence*, 39, 601–622. [PubMed: 15673233]
- Simes RJ (1986). An improved Bonferroni procedure for multiple tests of significance. *Biometrika*, 73, 751–754. 10.1093/biomet/73.3.751.
- Smith TB, & Silva L (2011). Ethnic identity and personal well-being of people of color: A meta-analysis. *Journal of Counseling Psychology*, 58, 42–60. 10.1037/a0021528. [PubMed: 21171745]
- Stein GL, Kiang L, Supple AJ, & Gonzalez LM (2014). Ethnic identity as a protective factor in the lives of Asian American adolescents. *Asian American Journal of Psychology*, 5, 206–213. 10.1037/a0034811.
- Subramaniam M, Abidin E, Vaingankar JA, & Chong SA (2012). Obsessive-compulsive disorder: Prevalence, correlates, help-seeking and quality of life in a multiracial Asian population. *Social Psychiatry and Psychiatric Epidemiology*, 47, 2035–2043. 10.1007/s00127-012-0507-8. [PubMed: 22526825]
- Sun J, Li Z-J, Buys N, & Storch EA (2015). Correlates of comorbid depression, anxiety and helplessness with obsessive-compulsive disorder in Chinese adolescents. *Journal of Affective Disorders*, 174, 31–37. 10.1016/j.jad.2014.11.004. [PubMed: 25479051]
- Tajfel H, & Turner JC (1986). The social identity theory of intergroup behavior In Worchel S, & Austin W (Eds.). *Psychology of intergroup relations* (pp. 7–24). Chicago: Nelson-Hall.
- Torres SA, & DeCarlo Santiago C (2017). Culture and educational stress and internalizing symptoms among Latino adolescents: The role of ethnic identity. *Journal of Educational and Psychological Consultation*, 27, 344–366. 10.1080/10474412.2017.1301819.
- Torres L, & Ong AD (2010). A daily diary investigation of Latino ethnic identity, discrimination, and depression. *Cultural Diversity and Ethnic Minority Psychology*, 16, 561–568. 10.1037/a0020652. [PubMed: 21058819]
- Tummala-Narra P, Li Z, Chang J, Yang EJ, Jiang J, Sagherian M, et al. (2018). Developmental and contextual correlates of mental health and help-seeking among Asian American college students. *American Journal of Orthopsychiatry*, 88, 636–649. 10.1037/ort0000317. [PubMed: 29389152]
- Wheaton MG, Berman NC, Fabricant LE, & Abramowitz JS (2013). Differences in obsessive-compulsive symptoms and obsessive beliefs: A comparison between African Americans, Asian Americans, Latino Americans, and European Americans. *Cognitive Behaviour Therapy*, 42, 9–20. 10.1080/16506073.2012.701663. [PubMed: 23134374]
- Williams MT, Chapman LK, Wong J, & Turkheimer E (2012). The role of ethnic identity in symptoms of anxiety and depression in African Americans. *Psychiatry Research*, 199, 31–36. 10.1016/j.psychres.2012.03.049. [PubMed: 22513043]
- Williams MT, Duque G, Chapman LK, Wetterneck CT, & DeLapp RCT (2018). Ethnic identity and regional differences in mental health in a national sample of African American young adults. *Journal of Racial and Ethnic Health Disparities*, 5, 312–321. 10.1007/s40615-017-0372-y. [PubMed: 28488251]

- Williams MT, Elstein J, Buckner E, Abelson J, & Himle J (2012). Symptom Dimensions in two samples of African Americans with obsessive-compulsive disorder. *Journal of Obsessive-Compulsive & Related Disorders*, 1, 145–152. 10.1016/j.jocrd.2012.03.004. [PubMed: 22708117]
- Williams MT, & Jahn ME (2017). Obsessive-compulsive disorder in African American children and adolescents: Risks, resiliency, and barriers to treatment. *American Journal of Orthopsychiatry*, 87, 291–303. 10.1037/ort0000188. [PubMed: 27243576]
- Williams MT, Powers M, Yun Y-G, & Foa E (2010). Minority participation in randomized controlled trials for obsessive-compulsive disorder. *Journal of Anxiety Disorders*, 24, 171–177. 10.1016/j.janxdis.2009.11.004. [PubMed: 20143498]
- Williams MT, Sawyer B, Leonard RC, Ellsworth M, Simms J, & Riemann BC (2015). Minority participation in a major residential and intensive outpatient program for obsessive-compulsive disorder. *Journal of Obsessive-Compulsive and Related Disorders*, 5, 67–75. 10.1016/j.jocrd.2015.02.004.
- Williams MT, & Turkheimer E (2007). Identification and explanation of racial differences on contamination measures. *Behaviour Research and Therapy*, 45, 3041–3050. 10.1016/j.brat.2007.08.013. [PubMed: 17935695]
- Williams MT, Turkheimer E, Magee E, & Guterbock T (2008). The effects of race and racial priming on self-report of contamination anxiety. *Personality and Individual Differences*, 44, 744–755. 10.1016/j.paid.2007.10.009.
- Williams MT, Turkheimer E, Schmidt KM, & Oltmanns TF (2005). Ethnic identification biases responses to the Padua Inventory for obsessive-compulsive disorder. *Assessment*, 12, 174–185. 10.1177/1073191105275620. [PubMed: 15914719]
- Willis HA, & Neblett EW Jr. (2018). OC symptoms in African American young adults: The associations between racial discrimination, racial identity, and obsessive-compulsive symptoms. *Journal of Obsessive-Compulsive and Related Disorders*, 19, 105–115. 10.1016/j.jocrd.2018.09.002.
- Woo C-W, Kwon S-M, Lim Y-J, & Shin M-S (2010). The Obsessive-Compulsive Inventory-Revised (OCI-R): Psychometric properties of the Korean version and the order, gender, and cultural effects. *Journal of Behavior Therapy and Experimental Psychiatry*, 41, 220–227. 10.1016/j.jbtep.2010.01.006. [PubMed: 20163784]
- Wu KD, & Wyman SV (2016). Examination of racial differences in assessment of OCD symptoms and obsessive beliefs. *Journal of Obsessive-Compulsive and Related Disorders*, 10, 10–18. 10.1016/j.jocrd.2016.04.008.
- Yip T, Gee GC, & Takeuchi DT (2008). Racial discrimination and psychological distress: The impact of ethnic identity and age among immigrant and United Statesborn Asian adults. *Developmental Psychology*, 44, 787–800. 10.1037/0012-1649.44.3.787. [PubMed: 18473644]
- Yoo HC, & Lee RM (2008). Does ethnic identity buffer or exacerbate the effects of frequent racial discrimination on situational well-being of Asian Americans? *Journal of Counseling Psychology*, 55, 63–74. 10.1037/0022-0167.55.1.63.
- Yorulmaz O, Karancı AN, Dirik G, Ba tu B, Kısa C, Göka E, et al. (2007). Padua inventory-Washington state university revision: Psychometric properties of the Turkish version. *Turkish Psychological Articles*, 10, 75–85.

A.

B.

Fig. 1.

Results of mediation analyses with ethnoracial group as the predictor, ethnic identity as the mediator, and PI-WSR-Contamination (A) and OCI-R-Washing (B) subscale scores as the outcome variable. For ethnoracial group, Asian Americans were coded as 1, White Americans were coded as 0. PI-WSR = Padua Inventory-Washington State Revision; OCI-R = Obsessive-Compulsive Inventory-Revised. Unstandardized regression coefficients are shown throughout. * $p < .05$; ** $p < .01$; *** $p < .001$.

A.

B.

C.

Fig. 2.

Results of mediation analyses with ethnoracial group as the predictor, ethnic identity as the mediator, and PI-WSR-Harm Thoughts (A), PI-WSR-Checking (B), and OCI-R-Neutralizing (C) subscale scores as the outcome variable. For ethnoracial group, Asian Americans were coded as 1, White Americans were coded as 0. PI-WSR = Padua Inventory-Washington State Revision; OCI-R = Obsessive-Compulsive Inventory-Revised. Unstandardized regression coefficients are shown throughout. * $p < .05$; ** $p < .01$; *** $p < .001$.

A.

B.

Fig. 3.

Results of mediation analyses with ethnoracial group as the predictor, ethnic identity as the mediator, and PI-WSR-Dressing (A) and OCI-R-Ordering (B) subscale scores as the outcome variable. For ethnoracial group, Asian Americans were coded as 1, White Americans were coded as 0. PI-WSR = Padua Inventory-Washington State Revision; OCI-R = Obsessive-Compulsive Inventory-Revised. Unstandardized regression coefficients are shown throughout. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 1

Descriptive statistics and between-group comparisons of all measures.

	Entire Sample (<i>N</i> = 453)			Asians (<i>n</i> = 79)			Whites (<i>n</i> = 374)			<i>t</i>
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>		
MEIM-12	1.77	.53		2.09	0.60		1.70	0.49		5.29***
PI-WSR-Harm Thoughts	2.64	3.36		3.72	4.06		2.41	3.15		2.71**
PI-WSR-Harm Impulses	2.33	3.33		2.71	3.65		2.25	3.26		1.12
PI-WSR-Contamination	6.96	6.32		10.63	7.70		6.19	5.71		4.86***
PI-WSR-Checking	7.02	6.38		8.94	7.01		6.62	6.18		2.96**
PI-WSR-Dressing	2.16	2.61		2.41	2.53		2.11	2.63		0.90
OCI-R-Washing	1.57	1.93		2.37	2.44		1.40	1.77		3.35**
OCI-R-Checking	1.32	2.04		1.62	2.31		1.26	1.98		1.43
OCI-R-Ordering	3.88	2.93		4.53	3.06		3.74	2.89		2.19*
OCI-R-Obsessing	2.24	2.49		2.33	2.55		2.22	2.48		0.35
OCI-R-Hoarding	3.00	2.88		3.41	3.12		2.91	2.83		1.39
OCI-R-Neutralizing	1.00	1.80		1.42	1.97		0.91	1.75		2.10*

Note. MEIM-12 = Multigroup Ethnic Identity Measure, 12-item revision; PI-WSR = Padua Inventory-Washington State Revision; OCI-R = Obsessive-Compulsive Inventory-Revised; *M* = mean; *SD* = standard deviation; *t* = *t*-value of independent-samples *t*-test of scores between Asian and White Americans. Scores for the MEIM-12 for each participant were computed as the average of scores for all items in the full scale (see subsection 2.2.1.).

* $p < .05$;

** $p < .01$,

*** $p < .001$.

Table 2

Bivariate correlations among measures for Asian (n = 79) and White Americans (n = 374).

	MEIM-12	PI-WSR-Harm Thoughts	PI-WSR-Harm Impulses	PI-WSR-Contamination	PI-WSR-Checking	PI-WSR-Dressing	OCL-R-Washing	OCL-R-Checking	OCL-R-Ordering	OCL-R-Obsessing	OCL-R-Hoarding	OCL-R-Neutralizing
MEIM-12												
PI-WSR-Harm Thoughts	.17**											
PI-WSR-Harm Impulses	.04	.27***										
PI-WSR-Contamination	.17**	.49***	.14**									
PI-WSR-Checking	.13*	.63***	.32***	.50***								
PI-WSR-Dressing	.13*	.44***	.13*	.41***	.49***							
OCL-R-Washing	.18***	.46***	.17**	.89***	.48***	.36***						
OCL-R-Checking	.11*	.54***	.15**	.43***	.84***	.41***	.40***					
OCL-R-Ordering	.18***	.38***	.10	.50***	.47***	.58***	.47***	.47***				
OCL-R-Obsessing	.05	.46***	.49***	.32***	.45***	.28***	.31***	.31***	.21***			
OCL-R-Hoarding	.11*	.50***	.26***	.24***	.46***	.24***	.22***	.35***	.24***	.33***		
OCL-R-Neutralizing	.16**	.45***	.25***	.28***	.56***	.45***	.24***	.49***	.37***	.35***	.34***	

Note. Correlations for Asian Americans are above the diagonal (bolded), while those for White Americans are not bolded. MEIM-12 = Multigroup Ethnic Identity Measure, 12-item revision; PI-WSR = Padua Inventory-Washington State Revision; OCL-R = Obsessive-Compulsive Inventory-Revised;

* p < .05;

** p < .01;

*** p < .001.