Journal of Obsessive-Compulsive and Related Disorders 3 (2014) 115–123

Contents lists available at ScienceDirect

Journal of Obsessive-Compulsive and Related Disorders

journal homepage: www.elsevier.com/locate/jocrd

The experience of OCD-related intrusive thoughts in African and European Americans: Testing the generalizability of cognitive models of obsessive compulsive disorder

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ARTICLE INFO

Article history:
Received 3 September 2013
Received in revised form
4 March 2014
Accepted 6 March 2014
Available online 20 March 2014

Keywords:
Obsessive-compulsive disorder
Race
African Americans
Cognitive models
Intrusive thoughts

ABSTRACT

Cognitive theories of obsessive-compulsive disorder (OCD) emphasize the role of maladaptive appraisals and control strategies in distinguishing normal from clinically significant intrusive thoughts. Since the majority of studies testing these models utilize predominantly European American samples, the racial and ethnic generalizability of these theories is largely unknown. In the current study, African Americans ($n=40$) and European Americans ($n=54$) were interviewed about their experiences of unwanted intrusive thoughts (e.g., frequency, interference, importance, and difficulty dismissing the intrusion), as well as their appraisals and the control strategies employed to manage distress associated with their most distressing intrusive thought. Participants also completed a self-report measure of OC symptoms. Results indicated that African American and European American participants reported similar experiences of OCD-related intrusions, appraisals, and control strategies; however, the groups showed different patterns of *relations* between intrusion appraisals, control strategies, and self-reported OC symptoms. These findings suggest that race-associated factors may play a role in the comparative experience of OCD-related phenomena between African American and European American individuals. Theoretical and clinical implications are discussed within cognitive models of OCD.

1. Introduction

Most healthy individuals report experiencing some obsessive-compulsive (OC) symptoms, including intrusive thoughts (i.e., unwanted, bothersome thoughts, images, and impulses; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984) and compulsions (i.e., repetitive behavior or mental acts performed with the goal of preventing or reducing distress; Muris, Merckelbach, & Clavan, 1997); however, these symptoms can develop into an extremely distressing and time-consuming burden in instances in which individuals develop obsessive-compulsive disorder (OCD). Researchers have been investigating the factors that differentiate normal experiences (e.g., unexpected thoughts) and maladaptive OC symptoms (e.g., repetitive obsessions). Cognitive theories of OCD are based on the proposition that maladaptive appraisals and control strategies employed in response to intrusive thoughts are associated with greater frequency, distress, and interference related to intrusive thoughts (Rachman, 2002, 1998; Salkovskis, 1985). Indeed, cross-sectional and longitudinal data suggest that certain maladaptive beliefs and appraisals are associated with increased OC symptoms (e.g., heightened responsibility, perfectionism, and intolerance of uncertainty; Abramowitz, Khandker, Nelson, Deacon, & Rygwall, 2006; Abramowitz, Nelson, Rygwall, & Khandker, 2007; Coles & Horng, 2006; Coles, Pietrefesa, Schofield, & Cook, 2008; Obsessive Compulsive Cognitions Working Group, 1997). Several control strategies, such as suppression and neutralization, have also been shown to increase the frequency of intrusive thoughts (Najmi, Riemann, & Wegner, 2009; Purdon, 2004; Purdon & Clark, 2002; Tolin, Abramowitz, Przeworski, & Foa, 2002).

One limitation of most prior work examining cognitive models of OCD is a lack of diversity in the samples used, thereby limiting generalizability. Despite the availability of some data from outside the United States (e.g., Fontenelle, Mendlowicz, Marques, & Versiani, 2004; Sica, Novara, & Sanavio, 2002; Yorulmaz, Gençöz, & Woody, 2010), the bulk of data have come from samples of European Americans (Williams, Powers, Yun, & Foa, 2010). The dearth of research on OCD in African Americans is part of

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http://dx.doi.org/10.1016/j.jocrd.2014.03.003
2211-3649/

a pervasive difficulty recruiting African Americans for psychology research (Williams et al., 2010; Williams, Proetto, Casiano, & Franklin, 2012; Williams, Beckmann-Mendez, & Turkheimer, 2013). This poses a problem for those who wish to evaluate models of OCD and their application to all individuals suffering with OCD, as 37% of the US population is non-European American (US Department of Commerce, 2011); and the proportion of minorities is projected to grow substantially over the next 30 years (US Department of Commerce, 2011).

Maladaptive appraisals and control strategies are thought to develop as a result of both hereditary and environmental factors (Taylor, 2011), including the culture in which one is raised. Thus, it is possible that differences in cultural values (e.g., regarding mental health) may lead to differences in the experience of intrusive thoughts between African American and European American individuals: particularly in how they appraise and attempt to control these thoughts. For example, African Americans may appraise certain intrusive thoughts more negatively because of cultural norms that emphasize strengths and striving for perfection. African Americans' more frequently close-knit social groups could also lead them to respond to intrusive thoughts by reaching out to family members, friends, and spiritual leaders for support and reassurance instead of, or in addition to, employing private compulsions (Williams, Turkheimer, Magee, & Guterbock, 2008; Williams, Davis, Thibodeau, & Bach, 2013). Available data from African Americans suggests that as a group they are affected by OCD at similar rates as European Americans (Himle et al., 2008; Kessler, Berglund, Demler, Jin, & Walters, 2005); however the rate of treatment seeking among African Americans is *substantially* lower (Foa et al., 1995) than among European Americans, with notable underutilization of specialized treatments for OCD in particular (Himle et al., 2008). Group differences in perceptions of the need for treatment and stigma are likely to play a role (Coles, Heimberg, & Weiss, 2013; Williams, Domanico, Marques, Leblanc, & Turkheimer, 2012). In addition, African Americans and European Americans may also differ in their interpretations of their intrusive thoughts (Wheaton, Berman, Fabricant, & Abramowitz, 2013) suggesting that cognitive models of OCD may warrant revisions for this group or that alternative models might be worth considering.

While race and culture are not explicitly part of cognitive models of OCD, the assumption of equivalency across races and cultures should be addressed (Okazaki & Sue, 1995). There is evidence that measures of OC symptoms have similar psychometric properties in African American and European American samples (Washington, Norton, & Temple, 2008; Williams et al., 2013; although, also see Williams, Turkheimer, Schmidt, & Oltmanns, 2005). Using such measures, prior work has shown that African Americans report heightened concerns about contamination compared to European Americans (Williams & Turkheimer, 2007; Williams, Abramowitz, & Olatunji, 2012). In addition, turning to the role of cognitions, a recent study comparing African Americans and European Americans found that despite similar levels of OCD-related beliefs (Obsessive Compulsive Cognitions Working Group, 1997) between the groups, the relations between beliefs and OC symptoms were weaker for African Americans than for European Americans (Wheaton, Berman, Fabricant, & Abramowitz, 2013).

Expanding our knowledge of potential cross-cultural differences regarding the experience of intrusive thoughts will advance both theory and practice. To reach this end, we sought to replicate and extend prior work on OC symptoms in African Americans, while making several improvements upon prior methods. For example, the existing literature with African American samples has frequently relied exclusively on self-report measures of intrusions. In addition, prior work has compared findings from African American samples to previously published results with primarily European American samples thereby introducing confounding variables between the two groups (e.g., different recruitment methods, different geographic locations, etc.). Finally, prior studies have focused on African Americans' appraisals of contamination-related intrusive thoughts, which are only a part of the heterogeneous OC symptom profile (for review see Bloch, Landeros-Weisenberger, Rosario, Pittenger, & Leckman, 2008; Williams, Elstein, Buckner, Abelson, & Himle, 2012). Thus, although differences between African Americans and European Americans in their appraisals and responses to their OCD-related intrusive thoughts may be expected, further study is worthwhile to substantiate these claims.

In the present study, we examined the extent to which African Americans' experiences of intrusive thoughts differ from those of European Americans. To address some of the aforementioned limitations of previous investigations, we interviewed African American and European American participants regarding their experiences with, appraisals of, and reactions to intrusive thoughts and their relation with OC symptoms. First, we hypothesized that the two groups would have similar levels of overall OC symptoms and that similar proportions would exceeded a threshold indicating probable clinically significant OC symptoms (Himle et al., 2008). Second, we hypothesized that African American participants would report greater levels of contamination obsessions and washing compulsions than European American participants, similar to previous research (e.g., Williams & Turkheimer, 2007; Williams, Proetto, Casiano, & Franklin, 2012). Third, we hypothesized that more African Americans than European Americans would report experiencing contamination-related intrusive thoughts. Finally, we hypothesized that maladaptive appraisals would be less strongly associated with OC symptoms in African Americans compared to European Americans (Wheaton et al., 2013). Given the lack of previous studies comparing control strategies utilized by African Americans and European Americans, we treated these analyses as exploratory.

2. Methods

2.1. Participants

Participants were a subset of individuals who participated in an international study of intrusive thoughts (Radomsky et al., in press). Ninety-six individuals from the two sites in the United States (Binghamton University in Binghamton, NY and the University of North Carolina at Chapel Hill in Chapel Hill, NC) who self-identified as African American (AA) or European American (EA) were included in the current study. Participants who self-identified as biracial were not included. Before collapsing data from the two sites we compared their demographic composition using $\alpha = .05$ to denote statistical significance with a Bonferroni adjustment for multiple comparisons ($\alpha = .05/4 = .013$) and found no evidence of significant site differences for gender, race, or years of education. We did however find that the participants at the two sites differed significantly in age (Binghamton: $M = 19.92$, $SD = 1.71$; Chapel Hill: $M = 18.79$, $SD = 1.04$; $t(92) = -3.58$, $p = .001$). However, given that the magnitude of this difference was small and arguably not practically meaningful, we combined the two groups for further analyses.

All participants were university students at the time of their participation in the project and were compensated with course research participation credit. There were no inclusion/exclusion criteria (e.g., respondents were not required to endorse intrusive thoughts in order to participate), however targeted advertising was conducted in order to obtain adequate representation of African Americans. Of those meeting study criteria, 56 individuals identified their race as EA and 40 individuals identified their race as AA. Two participants were determined to be outliers in age (> 3 *SD* above the mean) and were excluded from the EA group. Thus our final sample included 94 individuals: 40 individuals who identified themselves as AA and 54 who identified themselves as EA. The AA and EA groups were not found to differ significantly in age (AA: $M = 19.25$, $SD = 1.19$; EA: $M = 19.67$, $SD = 1.82$; $t(92) = 1.26$, $p = .21$), years of education (AA: $M = 13.96$, $SD = .96$; EA: $M = 14.07$, $SD = 1.26$; $t(92) = .47$, $p = .64$), or gender (AA: 17.5% male; EA: 33.3% male; χ^2 (1 *df*, $n = 94$) $= 2.95$, $p = .09$).

Among the 94 participants included in the current study, the majority identified their nationality as American; however, in the EA group, one participant identified as being Australian and in the AA group, two participants identified as

Haitian, one as Nigerian, one as Ugandan, one as Jamaican, one as Bahamian, one as Ghanaian, and one as Trinidadian. On average, individuals in both groups had lived in the United States their whole lives or since early childhood (AA: $M=18.03$ years, $SD=3.47$; EA: $M=19.10$ years, $SD=3.44$; $t(92)=1.49$, $p=.14$). Independent samples t tests did not reveal any significant differences between individuals who identified as American versus non-American in age ($t(92)=-.35$, $p=.73$), gender (Fisher's exact test $p=.11$), years of education ($t(92)=-1.16$, $p=.25$), or self-reported OC symptoms ($t(92)=.40$, $p=.69$).

2.2. Measures

The *International Intrusive Thoughts Interview Schedule Version* 6 (IITIS; Radomsky et al., in press) is a 101-item structured interview that assesses six domains of intrusive thoughts commonly associated with OCD (i.e., contamination, harm/injury/aggression, doubt, religious/immoral, sexual, victimization) and an 'other' domain to capture idiosyncratic intrusive thoughts. For each domain endorsed by the participant, the interviewer inquires about the phenomenology of the individual's intrusive thoughts including: frequency of experiencing these intrusive thoughts (scored by the interviewer on a 6-point scale from 0=*Never* to 5=*Frequently/Daily*), the interference caused by them (from 0=*None* to 5=*Extreme*), the importance ascribed to them (from 0=*Not important* to 5=*Extremely important*), and the difficulty experienced in dismissing them (from 0=*Not difficult* to 5=*Extremely difficult*). Next, the interviewer asks a series of questions about the individual's appraisals of and responses to his or her most distressing intrusive thought (if no intrusions are reported this section is omitted). First, nine questions regarding OCD-related appraisals of one's most distressing intrusive thoughts (e.g., overestimated threat, intolerance of distress, intolerance of uncertainty, thought–action fusion) are administered and scored with a 6-point scale (from 0=*Not at all* to 5=*Absolutely*). Next, ten questions regarding control strategies used in response to one's most distressing intrusive thoughts are administered and scored with a 6-point scale (from 0=*Never* to 5=*Frequently*). Nine of these 10 items reflect OCD-related maladaptive control strategies (e.g., thought stopping, reassurance seeking, neutralization, distraction), and the final item assesses how often the participant 'did nothing' in response to his or her intrusive thought. The IITIS was developed for use in an international study with the aim of providing a metric of intrusive thoughts that would transcend cultures (Clark & Radomsky, in press). A previous study examining an international sample found that the internal consistency was adequate for the questions regarding phenomenology, appraisals, and control strategies (all $\alpha>.67$; Radomsky et al., in press). Further, the IITIS has demonstrated convergent validity with established measures of OC symptoms (Clark et al., in press). Specifically, phenomenology of intrusions across content domains (frequency, interference, importance, distress) as measured by the IITIS is correlated with self-reported OC symptoms (r's $>.27$). In the current sample, IITIS measured intrusion phenomenology was also correlated with self-reported OC symptoms in the AA (r's $>.38$) and EA (r's $>.34$) groups. Internal consistency in the current sample is reported below.

The *Obsessive-Compulsive Inventory-Revised* (OCI-R; Foa et al., 2002) is an 18 item self-report measure of OC symptoms. The scale uses a 0–4 point scale to assess six domains of symptoms (i.e., washing, obsessing, hoarding, ordering, checking, and neutralizing). This scale has demonstrated good retest reliability over a two-week period ($r=.74$–$.91$), and demonstrates good convergent validity. In the current study, internal consistency was strong in the total group ($\alpha=.90$) and within the AA ($\alpha=.91$) and EA ($\alpha=.89$) groups.

2.3. Procedure

Participants were recruited via their respective university's research participant pool. After providing an overview of the study and collecting written informed consent from participants, interviewers administered the IITIS individually. All interviewers were either doctoral-level clinical psychologists or graduate students in clinical psychology doctoral programs. In addition, they were required to conduct practice interviews and develop an understanding of the nature and content of both clinical and nonclinical intrusions reported in the existing literature before conducting interviews. All interviewers were European American. After completing the IITIS, participants then completed the self-report measure on paper. Finally, participants were fully debriefed.

2.4. Statistical analysis

Cut-off scores from the OCI-R were used to indicate the likelihood of clinically significant OC symptoms. First, we used a cut-off score of 21 for all participants (c.f., Foa et al., 2002). Next, we used a cutoff of 36 for the AA group given recent work suggesting this is a more appropriate threshold for identifying probable OCD in African Americans (Williams, Davis, Thibodeau, & Bach, 2013).

To compare the phenomenology of intrusive thoughts, we examined the number of domains endorsed, the proportion of each group that endorsed each domain, and the average item score of their frequency, interference, importance, and difficulty dismissing ratings across all intrusive thought domains from the IITIS. The proportion of each group endorsing the "other" domain was examined, but this domain was excluded from computed variables. Consistent with the standard use of the IITIS (Clark et al., in press; Radomsky et al., in press), an appraisal scale score was created by computing the average across the nine appraisal items for the most distressing intrusive thought identified in the IITIS. Internal consistency was adequate in the full sample ($\alpha=.70$) and within the AA ($\alpha=.61$) and the EA groups ($\alpha=.76$) to justify analysis of this scale. In calculating the mean control strategy scores for each group, we excluded the 'did nothing' item. The average item score across the remaining nine maladaptive items was computed as an overall control strategy scale score. Internal consistency was adequate in the full sample ($\alpha=.74$) and within the AA ($\alpha=.72$) and the EA groups ($\alpha=.75$) to justify analysis of this scale. Further, we computed average item scores to create an avoidant control strategy subscale (5 items; e.g., 'try to avoid any situations, objects, or other things that would trigger the intrusive thought') and a confrontational control strategy subscale (4 items; e.g., 'think certain thoughts or phrases to neutralize the distressing thought'). Internal consistency was generally adequate in the full sample (avoidant: $\alpha=.75$; confrontational: $\alpha=.60$) and within the AA (avoidant: $\alpha=.74$; confrontational: $\alpha=.71$) and the EA groups (avoidant: $\alpha=.74$; confrontational: $\alpha=.52$) to justify analyses of these scales (Clark & Watson, 1995); however, the internal consistency for the confrontational control strategies scale was low in the EA group. Based on this low internal consistency and interest in specific appraisal and control strategies endorsed by each group, we also examined the individual appraisal and control strategy items.

We utilized independent samples t tests and χ^2 to examine differences between the AA and EA groups. We utilized Pearson correlations to examine relations between appraisals, control strategies, and OC symptoms. Given the large number of comparisons, we used Bonferroni adjustments within each family of tests (i.e., OC symptoms, phenomenology of intrusions, appraisals, control strategies) to control for family-wise error. We utilized Z tests of independent and dependent correlations to compare the relative strengths of correlations between our groups and within our groups, respectively. We did not apply an alpha correction when examining Z tests, as they are highly conservative tests (Meng, Rosenthal, & Rubin, 1992).

3. Results

3.1. Between-group comparisons of OC symptoms, appraisals, and control strategies

Group comparisons of OC symptoms, as well as phenomenology, appraisals, and control of intrusive thoughts can be found in Table 1. Levels of self-reported OC symptoms (OCI-R scores) in both groups were similar to published scores from prior student samples (Foa et al., 2002) and did not differ significantly for the OCI-R total or any of the subscales. Of the six OCI-R subscales, the contamination/washing symptoms subscale was the only subscale to approach significance. Specifically, there was a non-significant trend toward the AA group ($M=2.43$, $SD=3.42$) reporting greater contamination/washing symptoms than the EA group ($M=1.43$, $SD=1.59$; $t(92)=-1.89$, $p=.06$). Finally, the proportion of individuals whose self-reported OC symptoms exceeded the diagnostic thresholds also did not differ significantly between the groups.

Significant group differences were not found in the number or type of endorsed intrusive thought domains. Doubting intrusions were less common in the AA group ($n=29$, 72.5%) compared to the EA group ($n=48$, 88.9%; χ^2 (1 df, $n=94$)$=4.17$, $p=.04$, $r_{es}=.21$), however the significance of this finding did not survive alpha correction ($\alpha=.05/12=.004$). Finally, there were no significant differences between the groups in the frequency, interference, importance, or difficulty dismissing intrusive thoughts, and all effect sizes were small in magnitude. Intrusive thoughts related to doubt were most commonly reported as the most distressing intrusive thoughts for both groups (AA: $n=10$, 27.8%; EA: $n=21$, 40.4%) with thoughts involving being a victim of violence (AA: $n=7$, 19.4%; EA: $n=13$, 25.0%) and religious/immoral content (AA: $n=8$, 22.2%; EA: $n=5$, 9.6%) also being common. Less common most distressing intrusions were related to contamination (AA: $n=3$, 8.3%; EA: $n=1$, 1.9%), harm (AA: $n=2$, 5.6%; EA: $n=3$, 5.8%), and sex (AA: $n=1$, 2.8%; EA: $n=2$, 3.8%). The remaining most distressing intrusive thoughts were the idiosyncratic intrusive thoughts categorized as 'other' (AA: $n=5$, 13.9%; EA: $n=7$, 13.5%).

Our analyses also failed to show significant group differences in overall levels of appraisals and control strategies for individuals' most distressing intrusive thought. Similarly, there were no significant group differences in how frequently participants used avoidant and confrontational strategies for their most distressing intrusion.

Given that different intrusive thought content might influence appraisals and control strategies independent of an individual's culture, we did an exploratory follow up analysis comparing the individuals from the AA and EA groups who endorsed similar intrusive thoughts as their most distressing. Specifically, we divided the intrusive thoughts into those that were repugnant (i.e., harm, sex, religious/immoral; AA: $n=11$, EA: $n=10$) and those that were reactive to the environment (i.e., doubt, contamination; AA: $n=13$, EA: $n=22$). We excluded individuals who endorsed intrusive thoughts of being a victim of violence or 'other' as their most distressing. We visually examined the endorsement of each appraisal (see Fig. 1) and each control strategy (see Fig. 2). Across both types of intrusive thoughts, the pattern of appraisal and control strategy endorsement was similar in both the AA and EA groups; however, we did note that individuals in the AA group had heightened appraisals of intolerance of anxiety in response to reactive intrusive thoughts and endorsed using self-reassurance as a control strategy in response to triggered intrusive thoughts more often than individuals in the EA group.

Given the relatively small sample size, we sought to examine the possibility that the lack of significant group differences was due to low power. Therefore, we estimated the sample size that would be necessary to detect the observed differences between our groups (G*Power 3.1; Faul, Erdfelder, Lang, & Buchner, 2007) given $\alpha=.05$ and power of.80. All effects were in the small range and would require much larger samples to detect. Thus, it was unlikely that low power contributed to the lack of significant findings.

3.2. Relations between OC symptoms, appraisals, and control strategies between groups

Table 2 presents correlations between OC symptoms, appraisals, and control strategies for the AA and EA groups. As can be seen, appraisals were significantly related to self-reported OC symptoms in the EA group ($r=.61$), but not in the AA group ($r=.25$). Given the apparent large difference between these two correlations, we conducted a Z-test of independent correlations to evaluate whether the magnitude of the correlations differed significantly. These findings showed a significant difference in magnitudes between these relations ($Z=-2.01$, $p=.04$). Therefore, we followed-up by examining the correlations of each of the individual appraisal items on the IITIS with self-reported OC symptoms. Generally, these relations were stronger in the EA group. Z tests of independent correlations identified trends toward significance for the differences between the groups in the strength of relations between OC symptoms and intolerance of anxiety, intrusive thought unacceptability, and thought–action fusion appraisals.

Table 1
OC symptoms and intrusive thoughts by race.

	African Americans *M* (*SD*) or %	European Americans *M* (*SD*) or %	*df*	*t* or χ^2	*p*	r_{es}	*n* Needed[c]
OC symptoms							
OCI-R Total	18.18 (14.55)	15.80 (11.01)	92	−.90[a]	.37	.09	964
OCI-R Washing	2.43 (3.42)	1.43 (1.59)	92	−1.89[a]	.06	.19	212
OCI-R Checking	2.78 (3.02)	3.43 (3.11)	92	1.02[a]	.31	.11	643
OCI-R Ordering	4.05 (3.87)	2.93 (3.15)	92	−1.55[a]	.12	.16	301
OCI-R Obsessing	3.40 (3.26)	3.37 (3.02)	92	−.05[a]	.96	.01	78,483
OCI-R Hoarding	3.58 (3.05)	3.31 (2.77)	92	−.43[a]	.67	.04	4,900
OCI-R Neutralizing	1.95 (3.10)	1.33 (1.80)	92	−1.21[a]	.23	.13	459
OCI-R ≥ 21	32.5%	25.9%	1	.49[b]	.49	.07	1,596
OCI-R ≥ 21/36[d]	12.5%	25.9%	1	2.57[b]	.11	.17	266
Phenomenology of intrusions							
Total number of intrusive thought domains	3.05 (1.71)	3.33 (1.78)	92	.78[a]	.44	.08	1,221
Presence of intrusive thoughts by domain							
Dirt	32.5%	35.2%	1	.07[b]	.79	.03	8,716
Harm	52.5%	40.7%	1	1.28[b]	.26	.12	540
Doubt	72.5%	88.9%	1	4.17[b]	.04	.21	173
Religious/immoral	57.5%	55.6%	1	.04[b]	.85	.02	19,617
Sexual	25.0%	24.1%	1	.01[b]	.92	.01	78,483
Victim of violence	52.5%	64.8%	1	1.45[b]	.23	.12	540
Other	50.0%	48.1%	1	.32[b]	.86	.06	2,175
Frequency of intrusive thoughts	1.40 (.94)	1.55 (.88)	92	.81[a]	.42	.08	1,221
Interference due to intrusive thoughts	.98 (.82)	1.04 (.79)	92	.37[a]	.71	.04	4,900
Importance of intrusive thoughts	1.42 (1.11)	1.42 (.88)	92	−.20[a]	.98	.02	19,617
Difficulty dismissing intrusive thoughts	1.02 (.89)	1.08 (.84)	92	.34[a]	.74	.04	4,900
Appraisals of intrusions							
IITIS appraisal scale	2.63 (1.00)	2.31 (.95)	86	−1.55	.12	.16	301
Control Strategies of intrusions							
IITIS total control strategies	2.48 (.96)	2.21 (.92)	86	−1.35	.18	.14	395
IITIS avoidant control strategies	2.67 (1.24)	2.25 (1.14)	86	−1.64	.11	.17	266
IITIS confrontational control strategies	2.26 (1.23)	2.16 (1.00)	86	−.39	.70	.04	4,900

[a] *t*.
[b] χ^2.
[c] Estimated *N* needed to detect significant effects $\alpha=.05$ and power=.80.
[d] OCI-R race specific cutoff.

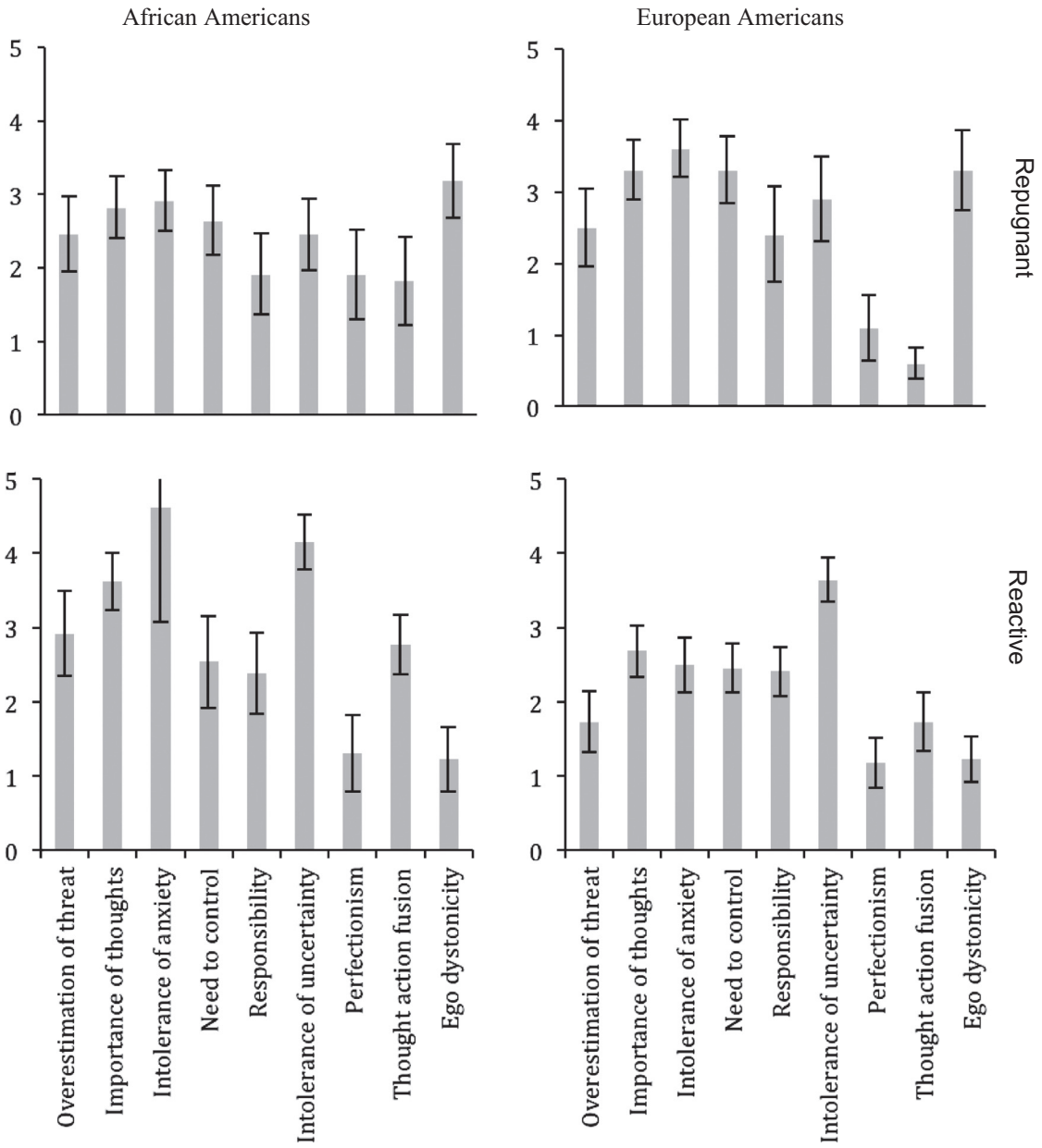

Fig. 1. Appraisals endorsed by most distressing intrusive thought content and race. Error bars represent standard error of the mean.

Total control strategies were significantly related to self-reported OC symptoms in the AA group (r=.65), but not the EA group (r=.36). Z tests of independent correlations revealed a trend toward significance in the difference in magnitude of these relations (Z=1.77, p=.08). We followed-up by examining the correlations of the avoidant and confrontational subscales with self-reported OCD symptoms. Z tests of independent correlations identified a trend toward significance in the difference between the groups in the strength of relations between avoidant control strategies and OCD symptoms, but not confrontational control strategies and OCD symptoms.

Table 3 presents correlations between subscales of OC symptoms, appraisals and control strategies for the AA and EA groups. Z tests of independent correlations revealed that appraisals were more strongly associated with obsessing symptoms in the EA group versus the AA group. Turning to control strategies, the AA group had significantly stronger relations between avoidant control strategies and checking symptoms compared to the EA group. There was also a trend toward significance for the difference in relations between avoidant control strategies and hoarding symptoms and confrontational control strategies and neutralizing symptoms, with the AA group having stronger relations than the EA group.

3.3. Relations between OC symptoms, appraisals, and control strategies within groups

As it appeared that OC symptoms were more strongly associated with control strategies (r=.65) compared to appraisals (r=.25) within the AA group, we conducted a Z test of dependent correlations to evaluate the difference in magnitudes of these relations. These findings showed a significant difference in the magnitude of these relations (Z=−2.60, p=.01). In contrast, OC symptoms were more strongly associated with appraisals (r=.61) compared to control strategies within the EA group (r=.36; Z=2.55, p=.01).

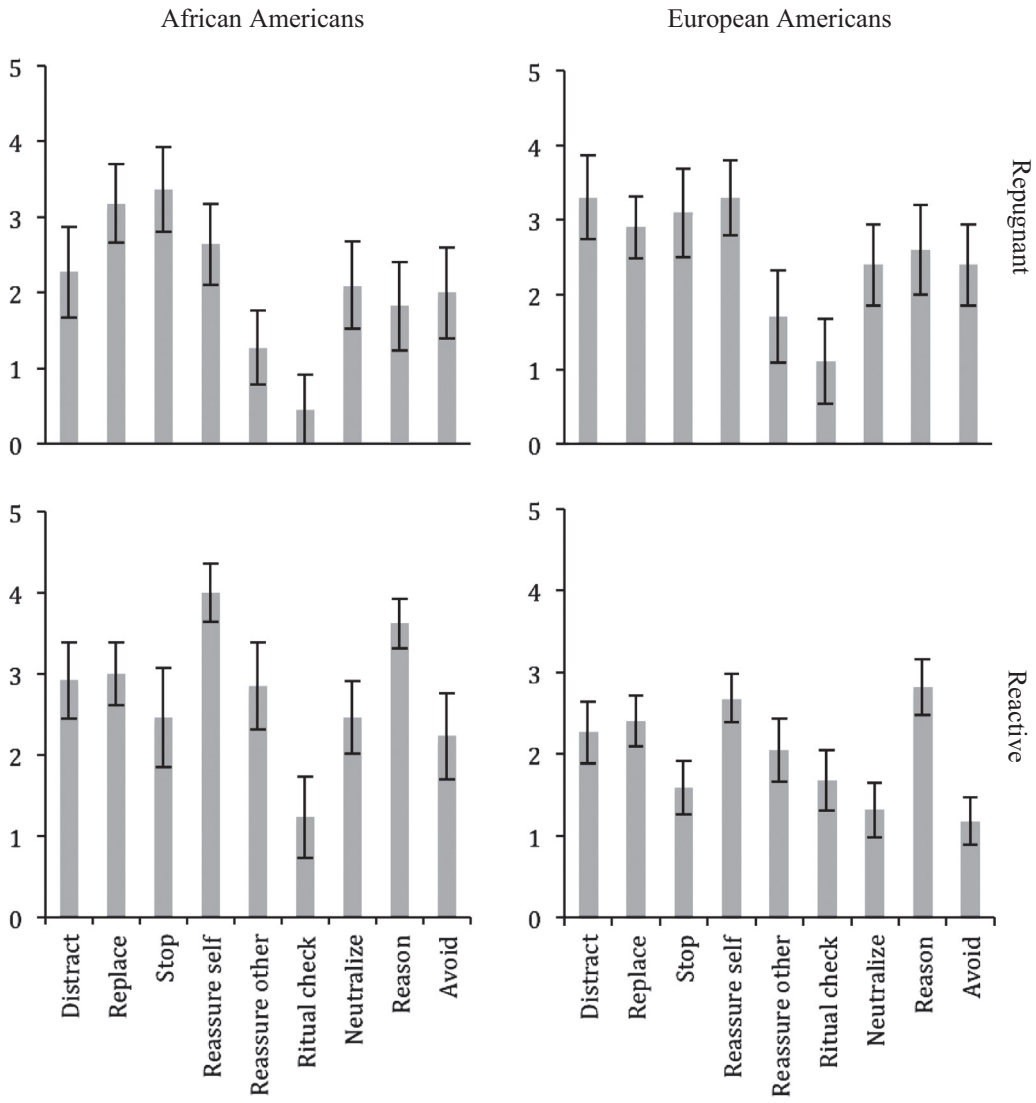

Fig. 2. Control strategies endorsed by most distressing intrusive thought content and Race. Error bars represent standard error of the mean.

4. Discussion

The vast majority of research and theoretical work on OCD is based largely on European American participants. Thus, current models of this problem might be culturally biased and less applicable to members of other racial/ethnic groups where there is evidence that OC symptoms are experienced somewhat differently than among European Americans. In the current study we specifically addressed the need for a better understanding of OC symptoms in African Americans. Consistent with expectations, African Americans and European Americans reported similar frequencies of OC-related intrusive thoughts and reported similar experiences with these intrusive thoughts (i.e., interference, importance, difficulty dismissing). Further, the groups did not differ in their appraisals of their most distressing intrusive thoughts or the control strategies they employed in response to these thoughts. These groups also did not differ significantly in their self-reported levels of OC symptoms. Thus, our findings are consistent with previous literature suggesting similar prevalence of OCD in African Americans and European Americans (Himle et al., 2008).

On the other hand, differences emerged in the strength of relations between appraisals, control strategies, and OC symptoms. European Americans' OC symptoms were significantly more strongly related to their appraisals of their intrusive thoughts as compared to African Americans'. These findings are in line with our hypotheses and are consistent with previous research

Table 2
Correlations between OC symptoms (OCI-R total), appraisals, and control strategies by race.

	African Americans	European Americans	*Z*	*p*
IITIS appraisal scale	.25	.61*	−2.01	.04
Overestimation of threat	.08	.13	−.22	.82
Importance of thoughts	.39	.33	.45	.64
Intolerance of anxiety	−.02	.39	−1.74	.08
Need to control	.21	.36	−.73	.46
Responsibility	.18	.41*	−1.13	.26
Intolerance of uncertainty	.15	.36	−1.00	.32
Perfectionism	.28	.38	−.50	.62
Thought–action fusion	.16	.47*	−1.55	.12
Unacceptability	−.03	.43*	−1.91	.06
IITIS total control strategies	.65*	.36	1.77	.08
IITIS avoidant control strategies	.56*	.22	1.82	.06
IITIS confrontational control strategies	.44	.43*	−.16	.44

* $p < .05/13 = .003$.

Table 3
Correlations between OC symptom subscales (OCI-R), appraisals, and control strategies by race.

	Appraisals strategies				Avoidant control strategies				Confrontational control strategies			
	AA	EA	*Z*	*p*	AA	EA	*Z*	*p*	AA	EA	*Z*	*p*
Washing	.17	.46*	1.45	.15	.48*	.26	1.14	.25	.41	.29	.61	.54
Checking	.35	.49*	.76	.45	.66*	−.05	3.30	< .01	.37	.43*	.32	.75
Ordering	.33	.55*	1.22	.22	.41	.36	.26	.79	.39	.45*	.32	.75
Obsessing	.21	.60*	2.13	.03	.37	.34	.15	.88	.02	.34	1.48	.14
Hoarding	.01	.14	.58	.56	.40	−.03	1.75	.08	.24	.08	.73	.46
Neutralizing	.00	.34	1.57	.12	.19	.06	.59	.56	.49*	.17	1.62	.11

* $p < .05/6 = .008$.

documenting a weaker relation between OC-related beliefs and OC symptoms in African American samples compared to European American samples (Wheaton et al., 2013). We found trends suggesting that European Americans may have stronger relations between intolerance of anxiety and unacceptability of intrusive thoughts appraisals and their OC symptoms compared to African Americans. Further, European Americans' appraisals were more strongly related to their obsessing symptoms than African Americans. We also found that African Americans' OC symptoms were more strongly related to their utilization of maladaptive control strategies in response to intrusive thoughts than were European Americans' OC symptoms, although this difference did not reach statistical significance. In particular, African Americans' control strategies were more strongly related to their checking symptoms. As far as we know, this is the first study to document this difference.

Further study of the role of appraisals and control strategies is needed, particularly in diverse samples. These initial findings suggest that there may be differences in the ways African American and European Americans appraise and attempt to control their intrusive thoughts and how these relate to OCD symptoms; however, these findings could also be the result of differential item functioning in African American and European American groups (cf. Williams et al., 2005) or reluctance to endorse appraisals that might be perceived as abnormal (Hatch, Friedman, & Paradis, 1997; Williams, Chambless, & Steketee, 1998). Further, apparent differences in the prevalence of certain thought content being rated as most distressing across groups could also contribute to the pattern of findings. Exploratory analyses examining more specific pathways (i.e., intrusive thought content × race interactions predicting appraisals and control strategies) suggested smaller differences between the race groups, although some findings bear further study (e.g., intolerance of anxiety in African Americans in response to reactive intrusive thoughts and self-reassurance in response to reactive intrusive thoughts). It may be the case that cognitive theories of OCD need to be revised for race moderation, or some other variable that is a covariate of race (Okazaki & Sue, 1995). As this is one of the first studies to find such a difference, studies aimed at replication and extension of these finding would be welcome.

Overall, these results are among the first to suggest a more complex relation between race and phenomena related to OCD. Our findings suggest that African Americans may be more apt to respond to intrusive thoughts by resisting them (i.e., using control strategies), whereas European Americans might emphasize their appraisals of intrusive thoughts. This could be due to differential responding to items associated with race; however, the failure to find significant group differences in levels of appraisals or control strategies suggests little difference between African Americans and European Americans with regards to their willingness to endorse these items. It is worth noting that previous studies have documented heightened reports of contamination and washing symptoms in African American samples (Williams & Turkheimer, 2007; Williams, Proetto, Casiano, & Franklin, 2012) and similar differences were also observed herein with an alpha level of $p = .05$, but the differences did not survive alpha correction. This difference has been attributed to cultural differences in norms regarding cleanliness and washing (Williams et al., 2008). There was also a trend suggesting a potential group difference in doubting intrusions, with a greater proportion of European Americans reporting doubting during the interview. Thus, differences in how African Americans and European Americans respond to their intrusions might be related to the types of obsessions that predominate within each group. There is evidence that contamination obsessions are associated with less cognitive appraisal relative to doubting obsessions (e.g., Abramowitz et al., 2006).

Our data suggest that African Americans and European Americans differ with respect to how the strategies they use in response to their intrusive thoughts relate to their experience of OC symptoms. As previous studies have found similar patterns in diverse student samples (Wheaton et al., 2013), this should be examined in clinical samples. If this difference generalizes to clinical samples it may indicate that existing treatments developed primarily with European American samples need to be adapted for the treatment of African Americans with OCD (Friedman et al., 2003; Hatch et al., 1997; Williams et al., 1998). For example, cognitive approaches may not address topics that are relevant to the maintenance of African Americans' OCD symptoms or may lead to premature drop out in individuals who are less comfortable endorsing maladaptive appraisals of intrusive thoughts. Thus, African Americans may be better served by a more behavioral focus to treatment; addressing the actions they take in response to their intrusive thoughts and how these maintain OCD symptoms and interference in their functioning. The little evidence that exists suggests that behavioral treatment is effective for African Americans (Hatch et al., 1997; Williams et al., 1998; Williams, Proetto, Casiano, & Franklin, 2012). As OCD is among the most debilitating mental and physical illnesses worldwide (Lopez & Murray, 1998), more attention needs to be paid to addressing this gap so that African Americans are not unnecessarily burdened.

The findings of this study must be considered in the context of a number of limitations. First, one should be cautious drawing broad conclusions about differences between African Americans and European Americans with a diagnosis of OCD from the current sample. The interaction of cultural differences with other risk factors or correlates of OCD may lead to differences not detected in our unselected sample. Second, given that all of our participants were college students, they may have had fewer differences in their socio-cultural environments than other community members (Okazaki & Sue, 1995). If differences in cultural understanding and knowledge of mental health (Coles et al., 2013; Williams, Proetto, Casiano, & Franklin, 2012) do affect reactions to intrusive thoughts, then studies with community samples may find larger

effects than those observed here. Regarding the relations between OCD symptoms and appraisals and control strategies, we cannot rule out the possibility that differences in the strength of relations are due to differences between the groups in their most distressing intrusive thought. This adds the possibility of a third variable being responsible for these differences. Unfortunately, we did not have enough power to look for this interaction in this sample, although exploratory visual analyses did reveal some interesting results for future study. Given evidence that some measures of OC-related constructs appear to have differential function in African Americans and European Americans (Williams et al., 2005), future studies utilizing the IITIS should further evaluate the psychometrics of this measure in these populations.

Overall, this study represents an initial look at the similarities and differences between African Americans and European Americans prior to the point of diagnosis and treatment seeking for symptoms of OCD. Our findings suggest that both groups are likely to have similar experiences of and reactions to intrusive thoughts. However, the relation between their appraisals and control strategies and their symptoms of OCD appear to differ, which might have implications for cognitive models of OCD both theoretically and in their clinical application. These findings indicate that more research utilizing diverse samples is needed to inform our understanding of the role of cognitions in the development and maintenance of OCD. If the current findings are replicated it may suggest that appraisals either play less of a role in OCD in African Americans than European Americans or that there are other types of appraisals at work in African Americans. Further, additional research on potential racial differences in how various control strategies relate to symptom levels may be beneficial, including studies that examine other racial and cultural groups (e.g., Hispanic, Asian American). Finally, in conclusion, given the large numbers of African Americans with untreated OCD, more attention should be given to African Americans' OC symptoms, how to treat them, and how to enable individuals suffering with them to access treatment.

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