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Identity Distress among Youth Exposed to Natural Disasters: Associations with Level of Exposure, Posttraumatic Stress, and Internalizing Problems

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Abstract

Identity distress involves intense or prolonged upset or worry about personal identity issues including long-term goals, career choice, friendships, sexual orientation and behavior, religion, values and beliefs, and group loyalties. Research suggests that trauma exposure and subsequent PTSD symptoms may negatively impact identity development and psychological adjustment. However, little is known about their specific associations with identity distress and internalizing problems among disaster-exposed adolescents. The purpose of this study was to examine these relationships in a sample of 325 adolescents (60% female; 89% African American) who experienced a major natural disaster and its aftermath. The results indicated that identity distress was positively associated with age, hurricane exposure, PTSD symptoms, and internalizing problems. Linear regression analyses also showed that identity distress was uniquely associated with internalizing symptoms and that there was an indirect effect of hurricane exposure on identity distress via PTSD symptoms. Finally, PTSD symptoms moderated the link between identity distress and internalizing symptoms, with a significant positive slope found for youth with more PTSD symptoms. Findings were generally consistent with previous work and predictions, and add

to the extant knowledge about identity distress by providing data on the linkages between disaster exposure, posttraumatic stress and internalizing problems in adolescents.

Adolescence is a developmental period that involves a number of drastic and rapid changes in an individual's biology, personality, and social interactions (Casey, Jones, & Hare, 2008; Erikson, 1950; 1968). Erikson (1950; 1968) proposed that one important challenge adolescents must face is that of identity formation, which involves an internal struggle to develop a sense of personal identity. Distinct from, but related to normal identity development, identity distress involves intense or prolonged upset or worry about one or more personal identity issues including long-term goals, career choice, friendships, sexual orientation and behavior, religion, values and beliefs, and group loyalties (Berman, Montgomery, & Kurtines, 2004). Though most adolescents experience some mild identity distress, recent data suggest that high levels of identity distress may place an individual at greater risk for poor psychological adjustment (Berman, Montgomery, & Kurtines, 2004; Berman, Weems, & Petkus, 2009; Berman, Montgomery, & Kurtines, 2004). For example, research shows that identity distress is associated with internalizing and externalizing problems in both youth and adult samples (Berman et al., 2009; Hernandez, Montgomery, & Kurtines, 2006; Wiley et al., 2011). Moreover, research has demonstrated that identity distress is a unique construct that can distinguished from other emotional problems (see Berman et al., 2009; Wiley et al., 2011).

Though a number of factors may negatively impact identity development, exposure to a traumatic event (e.g., natural disaster) may be of particular interest considering the potential disruption of youths' psychosocial system (e.g., individual, family, society) and trauma-related psychological distress (e.g., posttraumatic stress disorder symptoms, anxiety, depression; Dugan, 2007; Eth & Pynoos, 1985; Pérez-Sales, 2010; Weems & Overstreet, 2008). Some scholars have suggested that trauma exposure may promote a premature ending to identity formation and thus precipitate more identity concerns than would be developmentally expected (Dugan, 2007; Eth & Pynoos, 1985; Pérez-Sales, 2010). Initial evidence for this line of theorizing comes from studies demonstrating greater identity problems among adolescents exposed to violence and sexual abuse (Bailey, Moran, & Pederson, 2007; Idemudia & Makhubela; 2011). These research findings specifically point towards trauma survivors as having greater difficulty in identity formation and experiencing more trauma-related emotional and behavioral problems (e.g., posttraumatic stress disorder [PTSD] symptoms).

Recently, Wiley et al. (2011) extended this line of work by examining the association between disaster exposure, PTSD symptoms, and identity distress in 401 adults (ages 18–65 years) exposed to Hurricane Katrina (one to seven months post-Katrina). Interestingly, the results of their study showed that identity-related distress was not associated with hurricane exposure, but instead was uniquely associated with PTSD symptoms. One possible reason for these findings was that exposure effects on identity-related distress may have been indirect via the experience of post-disaster emotional and behavioral reactions rather than the specific events individuals faced during and after the storm (see Hayes, 2009 for discussion on differences in mediation and indirect effects). That is, disaster exposure may

be positively associated with PTSD symptoms, which in turn are positively associated with identity distress (see Figure 1). Past research has shown support for a similar indirect model between disaster exposure, PTSD symptoms, and aggression among two independent samples of youth who were also exposed to Hurricane Katrina (Marsee, 2008; Scott et al., 2013). Just as interesting was the fact that Wiley et al. (2011) found that PTSD symptoms moderated the link between age and identity distress. Specifically, the only significant negative relationship between age and identity distress was for those adults reporting fewer PTSD symptoms. This finding suggests that PTSD symptoms may interfere with normative developmental declines in identity distress, and may raise identity concerns for adults who (theoretically) should have resolved identity confusion earlier in life (Erikson 1950; 1968).

To date, no research has examined the association between disaster exposure and identity distress among adolescents exposed to a natural disaster or its aftermath. This is surprising given that disaster exposure may interrupt youths' normal development through long-term displacement from homes and schools, separation from friends and family, or even by exposing them directly (or indirectly) to the injury or death of family and friends (see Pfefferbaum et al., 2013 for a review; Wiley et al., 2011). Theoretically, given that for adolescents the uncertainty and stress accompanying a natural disaster comes during an already challenging time in development, it is reasonable to postulate that exposure to a natural disaster and the experience of PTSD symptoms would negatively affect identity development. That is, youth who experience a natural disaster may exhibit more identity distress with increased levels of PTSD symptoms, as has been shown with other post-disaster reactions in youth (Furr, Comer, Edmunds, & Kendall, 2010; Hensley & Varela, 2008; LaGreca, Silverman, Vernberg, & Prinstein, 1996; Marsee, 2008; Roberts, Mitchell, Witman, & Taffaro, 2010; Scott, Lapré, Marsee, & Weems, 2013; Vernberg, LaGreca, Silverman, & Prinstein, 1996; Weems et al., 2010; 2013). In addition, youth who experience PTSD symptoms may have a more difficult time coping with existing issues such as identity concerns, and thus experience more internalizing problems such as anxiety and depression (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001).

Therefore, the goal of this study was to expand on Wiley et al.'s (2011) research by further examining identity distress symptoms in an adolescent sample that experienced a natural disaster (i.e., Hurricane Katrina). Specifically, we sought to examine the prevalence of identity distress in disaster-exposed adolescents and explore the nature of the associations amongst identity distress, hurricane exposure levels, PTSD symptoms, and internalizing symptoms. Given the high prevalence rates of mild to severe levels of identity distress and associations between identity distress and psychological problems in adolescents and disaster-exposed adults (Berman et al., 2009; Wiley et al., 2011), we predicted that identity distress symptoms would be highly prevalent in this sample, and a positive association would be found between identity distress, PTSD symptoms, and internalizing symptoms. In addition, we wanted to test whether there was a unique and distinct association between identity distress and internalizing symptoms. Theoretically, one would expect that identity distress during adolescence would be associated with increased internalizing symptoms (e.g., anxiety and depression), even in the face of disaster and the experience of PTSD symptoms (Berman et al., 2004; Berman et al., 2009; Erikson, 1950; 1968). Thus, we

predicted that identity distress would be associated with youths' internalizing symptoms, even after controlling for age, gender, hurricane exposure, and PTSD symptoms.

An additional aim of this study was to examine the indirect effect of disaster exposure on identity distress via PTSD symptoms. Previous studies examining the association between disaster exposure and other post-disaster reactions in youth (e.g., aggression; Marsee, 2008; Scott et al., in press) suggest these links may be primarily a function of the PTSD symptoms youth experience. As shown in Figure 1, we hypothesized that there would be an indirect relationship between disaster exposure and identity distress (i.e., disaster exposure would be positively associated with PTSD symptoms and in turn PTSD symptoms would be positively associated with identity distress). Finally, we wanted to examine the moderating role of PTSD symptoms on the association between identity distress and internalizing problems in disaster-exposed youth. Though one would expect identity distress to be positively related with internalizing symptoms during adolescence (Erikson, 1950; 1968; Wiley et al. 2011), theoretically, the experience of PTSD symptoms may interfere with normal identity development and strengthen the link between identity distress and internalizing problems in youth. We thus hypothesized that PTSD symptoms would moderate the relationship between identity distress and internalizing symptoms. That is, the linear association between identity distress and internalizing symptoms would be much stronger for those disaster-exposed youth who reported experiencing PTSD symptoms.

Method

Participants

This study utilized data from a sample of 325 youth (9th – 11th graders) who completed a screening assessment for a test anxiety intervention program from Fall 2008 to Fall 2009. The sample was comprised of 188 females and 123 males (14 youth did not report gender) who reported an age range from 13 to 18 years (*Mean* = 15.05 years, *SD* = 1.05; two youth did not report age). In addition, youth were predominately of minority ethnic status, reporting their ethnicity as 89.8% African American, 7.5% Mixed/Other, 1.6% Asian, .9% Euro-American, and .3% Hispanic.

All youth attended schools located in New Orleans neighborhoods that received massive damage, almost total flooding, and continued to have a significant proportion of the community in disrepair three to four years following Hurricane Katrina. On average, youth reported 6.3 of 16 possible hurricane exposure events, with the most commonly reported disaster-related experiences being *hard to see friends because of moving* (77.8%), *thought someone might die* (67.1%), *thought someone might be hurt badly* (66.8%), *home damaged or badly destroyed* (65.8%), *moved to a new place* (68%), *saw someone get hurt during the storm* (38.5%), and *windows or doors broke in the place you stayed* (34.8%).

Measures

Identity Distress Survey (IDS; Berman et al., 2004)—The IDS is a 10-item survey that measures distress specifically related to identity problems that remain unresolved. Youth were asked to rate on a 5-point scale (1 = *not at all*, 2 = *mild*, 3 = *moderate*, 4 =

severe, and 5 = *very severely*) the degree of distress they were experiencing for seven types of identity issues (i.e., long-term goals, career choice, friendships, sexual orientation, religion, values and beliefs, and group loyalties). An identity distress composite score was calculated by averaging the specific identity score for all seven items and total mean scores ranged from 1 (no distress) to 5 (very severe distress). Past research has shown this index of identity distress has good reliability and validity estimates among both community samples of adolescents (ages 15–18 years) and disaster-exposed adults (Berman et al., 2004; Wiley et al., 2011). Internal consistency of the composite score for this study was also good ($\alpha = .85$).

Revised Child Anxiety and Depression Scale (RCADS; Chorpita, et al., 2000)—

A 38-item modified version of the RCADS was used in the present study in an effort to reduce participant burden. The excluded items from the original 47-item version were six items related to Obsessive-Compulsive Disorder and three items that were redundant with items on the test anxiety measure given as part of the larger study on the test anxiety intervention program. The RCADS was developed to assess anxiety and depression symptoms in children and adolescents (age 8–18 years) as based on DSM-IV (APA, 1994) criteria. Youth in this study were asked to rate how often they experience anxiety and depressive symptoms using a 4-point Likert-type scale: 0 = *never*, 1 = *sometimes*, 2 = *often*, and 3 = *always*. A total summed score of all 38 items was used as an index of overall internalizing symptoms (anxiety and depression). Past research with the full version of the RCADS has demonstrated its validity with community and clinical samples of youth (ages 6–17 years; Chorpita et al., 2000; Chorpita, Moffitt, & Gray, 2005). Furthermore, two recent studies using this 38-item modified version with disaster-exposed children and adolescents (ages 6–17 years) have reported good reliability estimates (Weems et al., 2010; 2013). The total internalizing symptom scale score used in this study also demonstrated good internal consistency ($\alpha = .83$).

Posttraumatic Stress Reaction Index for Children (PTSD-RI Checklist;

Frederick, Pynoos, & Nadar, 1992)—The PTSD-RI is one of the most widely used instruments to assess posttraumatic stress reactions and thus allows easy comparison among studies. As with previous research (Hensley & Varela, 2008; LaGreca, et al., 1996; Vernberg et al., 1996) the answer choices for all 20 items were modified for ease of administration, with the original five options being converted to three options: 0 = *none of the time*, 2 = *some of the time*, and 4 = *most of the time*. Total PTSD-RI scores thus range from 0 to 80. Previous research with disaster-exposed youth (ages 7–18 years) has reported good reliability and validity estimates (LaGreca, et al., 1996; Steinberg, Brymer, Decker, & Pynoos, 2004; Vernberg et al., 1996; Weems et al., 2010, 2013). The internal consistency estimate for the present sample was good and in line with previous work ($\alpha = .87$).

Hurricane Exposure Survey (La Greca et al., 1998)—Disaster exposure was assessed via a 16-item survey of hurricane exposure and post-hurricane events that was based on the work of La Greca and colleagues (La Greca et al., 1998; Vernberg et al., 1996). Respondents indicated yes (1) or no (0) to whether they were exposed to each event, and these items were summed to make an exposure events score (i.e., number of hurricane-related exposure events youth experienced during and after Hurricane Katrina). A total

hurricane exposure events score was used in this study and demonstrated good internal consistency ($\alpha = .83$).

Procedures

Data was collected as part of the school's counseling curriculum during the 2008–2009 academic year (36–41 months post-Katrina). Informed consent for the use of the data in research was also obtained from the parent (> 90% response rate) and oral assent was obtained from the child (> 90%; children were not required to complete the questionnaires or to participate in the study). The data reported in this study was drawn from screening data from a test anxiety intervention carried out in the local schools. The Institutional Review Board (IRB) at the University of New Orleans reviewed the procedures and exempted approval was obtained for the use of the de-identified data. Youth completed the measures in a group classroom setting and were assisted by trained staff when needed. Missing data was handled using pairwise or analysis-wise deletion of cases as suggested by Tabachnick and Fidell (2001).

Results

Preliminary examination of the study variables indicated that the majority of youth in this sample reported some identity distress. More specifically, 94.5% reported from mild to very severe levels of identity distress in at least one or more of the identity domains; 62.8% had an overall mean identity distress composite score (across all domains) of mild to very severe distress ($M = 2.46$, $SD = 1.01$). A one-sample chi-square analysis was used to test whether the percentage of adolescents reporting at least mild to very severe identity distress for one or more of the identity domains in this study was significantly higher than previously reported in Wiley et al.'s (2011) adult sample (i.e., 81.8%). The results of this analysis indicated that indeed, there was a significant difference in the number of adolescents reporting at least mild distress, $\chi^2(325) = 35.00$, $p < .001$. Further exploration of identity distress symptoms by each specific identity domain is shown in Table 1, and indicated that greater than 50% of youth reported identity distress symptoms in terms of long term goals, career choice, friendships, values and beliefs, and group loyalties (mean identity distress ranged from 1.83 for sexual orientation/behavior to 3.10 for long term goals).

Additional tests of both gender and ethnic group differences in overall identity distress symptoms and symptoms within each identity domain showed that females reported more identity distress symptoms related to values and beliefs than boys, $M_{girls} = 2.41$, $SD = 1.42$ vs. $M_{boys} = 2.09$, $SD = 1.28$; $t(305) = -2.00$, $p < .05$, but no significant gender or ethnic group differences were found in overall identity distress symptoms. As shown in Table 2, identity distress symptoms were also positively associated with age ($r = .12$, $p < .05$), hurricane exposure ($r = .12$, $p < .05$), PTSD symptoms ($r = .18$, $p < .01$), and internalizing symptoms ($r = .23$, $p < .01$). Furthermore, identity distress symptoms were only significantly associated with the three types of hurricane exposure events: *thought you might die* ($r = .14$, $p < .05$), *moving to a new place* ($r = .18$, $p < .01$), and *living away from parents for a week or more* ($r = .14$, $p < .01$).

A hierarchical linear regression analysis with internalizing symptoms as the criterion variable was performed next in order to determine whether identity distress symptoms were uniquely associated with internalizing symptoms beyond both hurricane exposure and PTSD symptoms. Age and gender were entered in Step 1, hurricane exposure and PTSD symptoms in Step 2, and identity distress in Step 3. Results are presented in Table 3 and revealed a significant model at Step 1, $F(2, 297) = 13.70, p < .001, R^2 = .084$, adjusted $R^2 = .078$, Step 2, $F(3, 295) = 53.05, p < .001, R^2 = .418$, adjusted $R^2 = .410$, and Step 3, $F(4, 294) = 44.92, p < .001, R^2 = .433$, adjusted $R^2 = .423$ with a significant change in R^2 from Step 2 to Step 3 ($R^2 = .015, F = 7.633, p < .01$). As expected, identity distress symptoms were positively associated with internalizing symptoms ($\beta = .12, p = .01$, respectively) in Step 3 and suggested that identity distress symptoms accounted for unique variance beyond age, gender, hurricane exposure, and PTSD symptoms.

The indirect effect of hurricane exposure on identity distress symptoms via PTSD symptoms was examined using the bootstrapping method (see Hayes, 2009 and MacKinnon, Lockwood, & Williams, 2004 for in-depth review), which unlike the Sobel test does not require a normal sampling distribution of the indirect effect and does not rely on standard errors to draw inferences about the significance of the indirect effect. Instead, the bootstrapping method produces percentile-based confidence intervals, which can then be adjusted to derive bias-corrected confidence intervals (95% in this case) for the indirect effect. If zero does not fall within the bias-corrected confidence interval then one can conclude that with 95% confidence that the indirect effect is not zero and conceptually is equivalent to the indirect effect being significantly different from zero (Hayes, 2009). The bootstrapping method used in this study was conducted using a macro for SPSS 20.0 (Hayes, 2013) and is freely available online at <http://afhayes.com/introduction-to-mediation-moderation-and-conditional-process-analysis.html>. The model illustrated in Figure 1 was resampled at $n = 1000$ and yielded a 95% bias-corrected confidence interval of .005 to .047, suggesting the indirect effect from hurricane exposure to identity distress symptoms via PTSD symptoms was not zero.

Finally, to test whether PTSD symptoms moderated the relationship between identity distress symptoms and youths' internalizing symptoms the software program Interaction (Soper, 2012) was used. Internalizing symptoms were entered as the criterion variable and identity distress symptoms, PTSD symptoms, and the interaction terms were entered in the regression equation as centered continuous predictors (Jaccard and Turrissi, 2003). As predicted, results indicated a significant interaction between identity distress symptoms and PTSD symptoms ($\beta = .01, p < .05$), shown in Figure 2. Post-hoc decomposition of the interaction term using the simple slope technique (Aiken & West, 1991) indicated a significant slope for those adolescents with PTSD symptoms +1 SD above the mean ($\beta = .23, p < .001$), but not for those adolescents with PTSD symptoms -1 SD below the mean ($\beta = .03, p = .63$).

Discussion

Previous research suggests identity distress as a unique construct, distinct from identity development in youth (Berman et al., 2004; 2008; 2009) and the findings of this study build

upon previous literature in a number of ways. First, this study provides initial data on the prevalence of identity distress in a disaster-exposed sample of adolescents, and revealed that it was higher for this population than for disaster-exposed adults (e.g., any identity distress 94.5% in this sample versus 81.8% in Wiley et al., 2011). Indeed, nearly all youth reported mild to very severe levels of identity distress in at least one identity domain and the mean identity distress rating fell between mild and moderate levels (on all but sexual orientation and behavior) suggesting that, on average, identity issues seems to be a salient concern for adolescents exposed to a natural disaster (Berman et al., 2009; Erikson, 1950; 1968; Hernandez et al., 2006). Comparison at the severe end of the spectrum shows that over 25% of the sample reported very severe levels of identity distress within the domains of long term goals and career choices. The domains of friendships, religion, values and beliefs, and group loyalties were all rated very severe by more than 10% of the sample and highlights the wide range of issues over which adolescents may experience severe levels of identity-related distress.

This study also makes an incremental contribution to the disaster literature on youth by demonstrating that disaster exposure and PTSD symptoms were associated with identity distress. These results are consistent with Wiley et al.'s (2011) findings with disaster-exposed adults and provides more support for a growing body of work, which suggests trauma exposure and post-disaster emotional reactions impair youth functioning across several domains (e.g., Furr, et al., 2010; Hensley & Varela, 2008; La Greca et al., 1996; Marsee, 2008; Roberts et al., 2010; Scott et al., in press; Vernberg et al., 1996). Furthermore, identity distress was also related to internalizing symptoms, even when accounting for level of hurricane exposure and PTSD symptoms. This finding adds further evidence to the idea that the internalizing symptoms adolescents may experience post-disaster are not solely due to youths' traumatic exposure or PTSD symptoms, but that identity distress has a unique negative association with adolescents' emotional and behavioral functioning (Berman et al., 2009). Therefore, it is important for mental health professionals who are helping adolescents cope with trauma exposure to assess and treat identity issues in conjunction with PTSD symptoms.

The results of this study also illustrate different ways that PTSD symptoms and internalizing symptoms may be associated with identity distress in adolescents post-disaster. First, the findings provide initial support for an indirect path model (see Figure 1) in which the association between disaster exposure and identity distress is through PTSD symptoms. This finding is consistent with previous studies that have shown an indirect association between disaster exposure and post-disaster problems through PTSD symptoms (e.g., aggression; Marsee, 2008; Scott et al., in press). Furthermore, the results suggest that it is not disaster exposure disrupting normal identity development per se, but one's emotional reaction to the event. However, given the retrospective nature of the study (youth experienced events over three years prior to participation) it would be beneficial for future research to test this model at a time closer to event exposure. Yet, given Wiley et al.'s (2011) results from shortly after Hurricane Katrina with adults, one would expect to find similar results with adolescents.

A second role of PTSD symptoms may be as a moderator of the link between identity distress and internalizing symptoms. More specifically, the association between identity

distress and internalizing symptoms became much stronger when youth reported more PTSD symptoms and was not related when youth reported less PTSD symptoms. As with the influence PTSD symptoms have on the relationship between age and identity distress in adults (Wiley et al., 2011), it appears that PTSD symptoms during adolescence disrupt normal identity development and may undermine youths' ability to cope with other stressors that are present (Compas et al., 2001). In addition, the latter finding is also interesting and quite surprising given that previous research has found a fairly consistent positive association between identity distress and internalizing symptoms in both community and at-risk adolescent samples. However, these findings should be replicated in other trauma-exposed samples before firm conclusions are drawn. In addition, the cross-sectional nature of this study limits our ability to identify the directionality of the relationship or the causal link between the study variables, but these results do allow us to infer that other factors may play a significant role in the relationship between identity distress and youths' emotional and behavioral functioning.

The results in this study were similar to Hernandez et al.'s (2006) study among at-risk adolescents in that age was positively associated with identity distress symptoms. This may suggest that late adolescence is the pinnacle of identity distress; however, Berman et al. (2009) did not find a significant association between age and identity distress in their adolescent sample. One possible reason is that the age range of their sample was more restricted and confined to late adolescence (age 15–18 years), which may be a time when identity distress has reached a plateau. Alternatively, it is also possible that youth in both this study and the Hernandez et al. (2006) study were exposed to multiple types of traumas during their life, and that the cumulative or multiplicative effects of trauma exposure may have resulted in more identity distress for older youth. For example, following from Erikson's epigenetic theory of development (Erikson 1950; 1968), one would expect that exposure to traumatic events (e.g., sexual abuse, living in a "deprived family or neighborhood"; Hernandez et al., 2006, p. 29) earlier in development (e.g., industry vs. inferiority) may hinder youths' ability to achieve successfully later developmental milestones, or that trauma exposure may interact with youths' genetic predispositions, thus leading to greater distress over time for the more salient issues of identity formation during adolescence. Indeed, research has shown a dose-response relationship between trauma exposure and individual's psychological problems in that exposure to multiple traumatic events puts one at a greater risk for experiencing physical, emotional, and behavioral problems (e.g., Burke, Hellman, Scott, Weems, & Carrion, 2011; Graham-Bermann & Seng, 2005). Given that youth in the present study (or in the Hernandez et al. [2006] or Berman et al. [2009] studies) were not asked to report on other traumatic experiences, future research will need to measure trauma history of youth and examine whether there are cumulative or multiplicative effects of trauma exposure on identity distress during adolescence.

Finally, the results of this study and previous work on identity distress point to possible avenues for intervention. Though the primary target of interventions involving trauma-exposed youth is to either prevent or reduce PTSD symptoms following the event(s), mental health professionals may consider probing for distress specifically related to identity issues. The disruption of the emotional and behavioral functioning of youth who experience PTSD symptoms may interfere or deter them from successfully completing such developmental

tasks as identity formation. Attention to the possibility that youth may be impeded in identity development by the trauma exposure and/or subsequent PTSD symptoms may provide an additional target for clinicians working with trauma exposed youth. Furthermore, in a context where PTSD symptoms do remit over time, a slowing of attainment or failure to achieve a positive identity during adolescence may result in long-term problems. Therefore, screenings of youth exposed to trauma(s) might therefore benefit from incorporating an assessment of identity distress.

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Figure 1.

Indirect association between hurricane exposure and identity distress via PTSD symptoms.

Unstandardized regression coefficients (standard error) are reported; a = IV to mediator direct effect; b = mediator to DV direct effect; c = IV to DV direct effect; $\hat{c}$ = IV to DV direct effect after controlling for PTSD symptoms.

Figure 2.
PTSD symptoms moderating the link between identity distress and internalizing symptoms.

Table 1
Percentage of youth reporting identity distress and mean identity distress symptoms by identity stress domain

Identity Distress Domain	N	None	Mild	Moderate	Severe	Very Severe	Mean Identity Distress
1. Long Term Goals	322	21.4	17.7	20.2	15.2	25.5	3.10 (1.49)
2. Career Choice	321	24.0	18.1	20.2	11.8	25.9	2.98 (1.52)
3. Friendships	320	23.8	24.1	21.3	15.6	15.3	2.75 (1.38)
4. Sexual Orientation and Behavior	319	59.2	15.7	13.5	06.3	05.3	1.83 (1.20)
5. Religion	320	56.6	10.3	11.6	09.7	11.9	2.10 (1.46)
6. Values and Beliefs	321	41.1	18.1	20.6	10.0	10.3	2.30 (1.36)
7. Group Loyalties	321	45.2	18.1	18.1	8.1	10.6	2.21 (1.37)

Note: Standard deviation for each mean identity distress rating is in parentheses.

Table 2

Correlations among study variables

	1	2	3	4	5	Mean	SD
1. Age						15.10	1.05
2. Gender	-.10					1.60	0.49
3. Hurricane Exposure	.01	.27**				0.40	0.20
4. PTSD Symptoms	.09	.32**	.49**			16.80	13.70
5. Internalizing Symptoms	.04	.29**	.30**	.64**		21.60	16.70
6. Identity Distress	.12*	.05	.12*	.18**	.23**	2.46	1.01

Note:

** p < .01;

* p < .05

Summary of hierarchical regression analysis for identity distress predicting internalizing symptoms beyond age, gender, hurricane exposure, and PTSD symptoms.

Table 3

Predictors	R ²	B	Std. Error	β	<i>t</i>	<i>p</i>	Semi-Partial
Step 1	.084**						
Age		−0.32	0.73	−0.02	−0.44	0.66	−0.02
Gender		3.17	1.64	0.09	1.94	0.05	0.09
Step 2	.334**						
Hurricane Exposure		−0.12	0.27	−0.02	−0.45	0.65	−0.02
PTSD Symptoms		1.54	0.13	0.62	11.80	0.00	0.52
Step 3	.015**						
Identity Distress		2.06	0.75	0.12	2.76	0.01	0.12

Note:

**
p < .01;

Final model: *F* (4, 294) = 44.92, *p* < .001, *R*² = .433