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Brief Report: Suicidal Ideation in Adolescent Girls: Impact of Race

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Abstract

In the present study, we examine the unique and interactive effects of race (African American or European American) and depression on suicidal ideation, controlling for poverty, within a representative sample of adolescent girls. A community sample of 2,450 girls (43.9% African American) participating in the longitudinal Pittsburgh Girls Study (PGS) was interviewed annually about depression symptoms and suicidal ideation, from ages 10–15 years. Caregivers reported on the girls' racial/ethnic background and the family's receipt of public assistance. Race and depression scores explained unique variance in suicidal ideation; receipt of public assistance did not. Endorsement and recurrence of suicidal ideation was more likely for African American than European American girls: there was a nearly two-fold increase in the likelihood of reporting frequent thoughts of death or suicide as a function of race. Of the 255 girls reporting recurrent suicidal ideation, 65.9% were African American. An interaction effect between race and depression symptoms was observed, such that African American girls were more likely to report suicidal ideation at lower levels of depression severity. The findings indicate that race is a critical factor for understanding, preventing, and treating suicidal ideation in girls.

Keywords

Suicide prevention; adolescent girls; African American

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Suicide is among the leading causes of death for African American girls and, while rates for European American girls have declined in recent years, rates for African American girls remain consistently high (Bridge et al., 2015; Centers for Disease Control and Prevention [CDC], 2013a, 2013b). As such, there is a need for focused research examining the link between race and suicidality.

Suicidality is a complex constellation of thoughts and behaviors that includes suicidal ideation, communications, attempts, and completed suicide (O'Carroll et al., 1996; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007a; 2007b). Data from the National Comorbidity Survey Replication Adolescent Supplement revealed that approximately 40% of girls who report only suicidal ideation will make a suicide attempt (Nock et al., 2013).

Numerous studies identify depression as a key predictor of suicidality (e.g., Foley, Goldston, Costello, & Angold, 2006; Horwitz, Hill, & King, 2011) and depressed adolescents have been reported as five times more likely to make a suicide attempt (Goldston et al., 2009). However, the salience of depression as a risk factor for suicidality may be tempered by race; relative to depression, other psychosocial stressors may be more predictive of suicidality for African American girls such as violence exposure or victimization (Borowsky, Ireland & Resnick, 2001). Joe and colleagues (2009) reported that African American adolescents are at risk for suicide in the absence of significant depressive symptomatology. The present study re-examines the function of depression as a risk factor for suicidal ideation, within a representative community sample of African American and European American adolescent girls, followed prospectively.

Methods

Participants

This study utilizes data from the Pittsburgh Girls Study (PGS), a longitudinal study of 2,450 girls, enrolled at ages 5–8 years, and their primary caregivers. A stratified, random household sampling, with over sampling of households in low-income neighborhoods, was used. Written informed consent was obtained from the primary caregiver and verbal assent from the child. Nearly all of the primary caregivers were biological mothers (92%). Girls and their caregivers received yearly payments for participation. The University of Pittsburgh Institutional Review Board approved all study procedures. PGS design, procedures, and participants are fully described elsewhere (Keenan et al., 2010).

Measures

Based on caregiver report, girls were identified as African American (43.9%), European American (49.8%), multiracial (5.2%) or Asian American (1.1%); these latter two groups were excluded from the current analyses. An index for number of years of receipt of public assistance was created, also based on caregiver report.

Depression was measured using the Childhood/Adolescent Symptom Inventory (CSI-4/ASI-4; Gadow & Sprafkin, 1994; 1998), based on girls' report of symptoms over the past year. Adequate concurrent validity, and sensitivity and specificity of depression severity

scores to clinicians' diagnoses have been reported for the CSI-4 and ASI-4 (Gadow & Sprafkin, 1994; 1998). In the present study, internal consistency coefficients for the nine depression items ranged from $\alpha = .72$ (at age 10) to $\alpha = .80$ (at age 15). Depression scores were generated excluding the item on suicidal ideation. Total depression scores were averaged over ages 10–15 years, to generate a depression severity score.

Report of suicidal ideation was defined by the highest level of endorsement of the question, "has had thoughts of death or suicide," across ages 10–15 years. Consistent with DSM-V (American Psychiatric Association [APA], 2013), thoughts of death or suicide that occurred "a lot" or "all the time" were considered to meet *threshold* for suicidal ideation, whereas thoughts that occurred "sometimes" were considered *subthreshold*, and scores of "never" were coded as *absent*. Recurrent suicidal ideation was defined as endorsement in more than one annual assessment at either the subthreshold or threshold level. The prevalence of threshold suicidal ideation ranged from 1–2% in a given year. Descriptive statistics for depression and suicidal ideation are available via supplementary material.

Data Analysis

Analyses for the present study included data from participants, ages 10–15 years. Girls for whom suicidal data were missing in more than two waves were not included (9.5%). Multinomial logistic regression was used to test the main effects of race and depression, and their interaction on absence, subthreshold, and threshold endorsement of suicidal ideation. A general estimating equation model for correlated ordinal data was computed to test the effects of race and depression on suicidal ideation over time.

Results

Approximately one third of the sample (31.1%) reported thoughts of death or suicide at least one time between the ages of 10 and 15 years: 582 girls (27.9%) reported subthreshold and 107 girls (5.1%) reported threshold levels of suicidal ideation in at least one annual assessment. Endorsement of recurrent suicidal ideation was associated with race (see Table 1). Of the 689 girls who reported suicidal ideation at either level, 255 (12.2%) reported ideation in more than one assessment year and, of those girls who reported recurrent suicidal ideation, 65.9% were African American (χ^2 [df=2] = 20.68, $p < .001$). African American girls also had higher depression scores ($F = 32.86$, $p < .001$) and their families received public assistance in more assessment waves than European American families ($F = 481.53$, $p < .001$).

Univariate tests resulted in significant increases in the risk of threshold ($OR = 1.84$, $p = .006$), and subthreshold ($OR = 1.57$, $p < .001$), levels of suicidal ideation versus absence as a function of race, and significant effects of average depression scores at all levels of comparison (see Table 2). Multivariate models comparing girls at threshold for suicidal ideation versus absence yielded a significant main effect for average depression score ($OR = 2.13$, $p < .001$), and a significant interaction effect of race and depression score ($OR = 0.82$, $p = .009$), but not race or receipt of public assistance. Race ($OR = 1.33$, $p = .021$) and depression score ($OR = 1.48$, $p < .001$), but not their interaction, also increased the risk of subthreshold suicidal ideation versus absence; only depression score ($OR = 1.44$, $p = .004$)

increased the risk of threshold level of suicidal ideation compared to subthreshold (see Table 2).

The interaction effect of race and average depression score on suicidal ideation is depicted in Figure 1. As shown in Figure 1, the distribution of African American and European American girls among the three suicidal ideation categories (absent, subthreshold, and threshold) was comparable when average depression scores were above the mean (right panel). In contrast, when the average depression scores were below the mean, the rate of suicidal ideation at the threshold level was close to three time higher among African American girls (3.2% versus 1.1%) and 50% higher at the subthreshold level (18.8% versus 12.9%), in comparison to European American girls (left panel).

We used a general estimating equation model for correlated ordinal data with suicidal ideation from age 10–15 years as the dependent measure, and race and depression scores above and below the mean as the independent variables, to examine changes in suicidal ideation over time. A significant three-way interaction on suicidal ideation was observed with age, race and depression score explaining variances in level of suicidal ideation. (*Wald Chi-Square* = 4.96 = 3.71, $p = .026$). As shown in Figure 2, African American girls reported higher suicidal ideation scores than European American girls at younger ages and at low and high levels of depression. By age 15, suicidal ideation scores were comparable at low levels of depression. At higher levels of depression, suicidal ideation increased from ages 12 to 15 among European American girls, whereas the level of suicidal ideation remained fairly stable among African American girls (Figure 2).

Discussion

Race, level of depression, and age were associated with self-reports of suicidal ideation in this community sample of girls. African American girls reported higher levels of suicidal ideation than European American girls at lower levels of depression. At higher levels of depression, African American girls reported higher levels of suicidal ideation from ages 10–12, at which time increases in the level among European American girls were observed.

It may be that the depression phenotype varies as a function of racial status. Low levels of depression symptoms that appear in the preadolescent period may represent a more clinically significant condition among African American girls than among European American girls, a pattern that has been observed in adults, wherein depression symptoms are more chronic and impairing among African Americans compared to European Americans (Williams, et al., 2007). Another possible explanation is that suicidality may be more likely to accompany low levels of depression when exposure to environmental stress is high. African American girls are more likely than European American girls to experience high levels of contextual stressors, such as discrimination (Gaylord-Harden & Cunningham, 2009; Gomez, Miranda, & Polanco, 2011) and community violence (Cooley-Strickland et al., 2009). Lambert and colleagues (2008) reported a strong association between exposure to community violence and suicidal ideation for African American girls.

This study has several limitations including reliance on girls' self-report to assess depression and suicidal ideation, a sample restricted to those residing in Pittsburgh and the confounding of race and receipt of public assistance. Also, our measure of suicidal ideation included infrequent ideation, as research has demonstrated the predictive validity of continuous measures of ideation frequency, particularly for girls (King et al., 2014). In addition, we used averaged depression scores overtime as an index of depression severity. Although we have previously reported that depression symptoms are moderately stable from childhood to adolescence (Keenan et al., 2014), it is possible that effects of waxing and waning of symptoms on the impact of race on suicidal ideation over time were obscured.

Despite limitations, study findings support race as a critical factor for understanding and preventing suicide in African American girls. Joe and colleagues (2009) recommend suicide screenings for African American girls, even in the absence of depression. In the prevention of suicide among African American girls, universal suicide preventive interventions are recommended.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Suicidal ideation as a function of race and average depression scores below and above the mean

Figure 2.
Suicidal ideation scores over time for European American and African American girls with average depression scores below and above the mean.

Table 1

Descriptive statistics for study variables and racial differences

	Total Sample		African American		White		African American vs. White
	(N=2,084)		(n=1,201)		(n=883)		
	N	%	N	%	N	%	
Suicidal Ideation (ever)							$\chi^2 = 20.40^{***}$
absent	1395	66.9	756	62.9	639	72.4	
subthreshold	582	27.9	376	31.3	206	23.3	
threshold	107	5.1	69	5.7	38	4.3	
Suicidal Ideation (recurrent)	N	%	N	%	N	%	$\chi^2 = 20.68^{***}$
never	1395	66.9	756	62.9	639	%	
once	434	20.8	277	23.1	157	17.8	
recurrent	255	12.2	168	14.9	87	9.9	
	Mean	SD	Mean	SD	Mean	SD	
Average depression score	6.28	3.25	6.62	3.29	5.80	3.14	$F = 32.86^{***}$
Receipt of public assistance (years)	2.19	2.36	3.08	2.30	1.01	1.86	$F = 481.53^{***}$

p < .001

Table 2

Risk for suicidal ideation as a function of race, mean depression score, and receipt of public assistance

Suicidal Ideation (ever)	absent vs. threshold OR (95% CI)	p level	absent vs. subthreshold OR (95% CI)	p level	threshold vs. subthreshold OR (95% CI)	p level
<u>Univariate</u>						
Race (African American vs. White)	1.84 (1.19 – 2.85)	.006	1.57 (1.28 – 1.94)	<.001	1.17 (0.74 – 1.85)	.500
Average depression score	1.58 (1.48 – 1.70)	<.001	1.34 (1.30 – 1.40)	<.001	1.18 (1.10 – 1.26)	<.001
<u>Multivariate</u>						
Race (African American vs. White)	1.76 (0.93 – 3.36)	.084	1.33 (1.05 – 1.69)	.021	1.33 (0.69 – 2.57)	.402
Average depression score	2.13 (1.65 – 2.76)	<.001	1.48 (1.30 – 1.69)	<.001	1.44 (1.13 – 1.84)	.004
Race × depression score	0.82 (0.71 – 0.95)	.009	0.94 (0.87 – 1.01)	.077	0.88 (0.77 – 1.01)	.073
Receipt of public assistance	1.04 (0.94 – 1.14)	.455	1.00 (0.95 – 1.05)	.961	1.04 (0.94 – 1.14)	.471