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Ethnic differences in prevalence and correlates of self-harm behaviors in a treatment-seeking sample of emerging adults

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ABSTRACT

The present study examined differences between White and ethnic minority emerging adults in the prevalence of self-harm behaviors – i.e., non-suicidal self-injury (NSSI) and suicide attempts (SA) – and in well-documented risk (i.e., depressive symptoms, generalized anxiety symptoms, social anxiety symptoms, suicidal ideation (SI), substance use, abuse history) and protective factors (i.e., religiosity/spirituality, family support, friend support) associated with NSSI and SAs. Emerging adults ($N=1156$; 56% ethnic minority), ages 17–29 ($M=22.3$, S.D.$=3.0$), who were presented at a counseling center at a public university in the Northeastern U.S., completed a clinical interview and self-report symptom measures. Univariate and multivariate logistic regression models were used to examine the association between risk and protective factors in predicting history of NSSI-only, any SA, and no self-harm separately among White and ethnic minority individuals. Ethnic differences emerged in the prevalence and correlates of NSSI and SAs. Social anxiety was associated with SAs among White individuals but with NSSI among ethnic minority individuals. Substance use was a more relevant risk factor for White individuals, and friend support was a more relevant protective factor for ethnic minority individuals. These findings suggest differing vulnerabilities to NSSI and SAs between White and ethnic minority emerging adults.

1. Introduction

Rates of self-harm, including both suicide attempts (SAs) and non-suicidal self-injury (NSSI), are higher in emerging adulthood (ages 18–29) than at any other time in adulthood (Kessler et al., 2005; Prinstein, 2008). SAs involve potentially fatal, self-inflicted injury with intention to die, while NSSI involves self-inflicted injury without intention to die (Prinstein, 2008). Large-scale studies suggest a 17% lifetime prevalence of NSSI and 8% lifetime prevalence of SAs among college students in the U.S. (Whitlock et al., 2006; American College Health Association, 2012). However, there is a dearth of information about the prevalence of NSSI and SAs across racial/ethnic groups. According to national data, 11% of Latino high school students and 9% of Black students, compared to 6% of White students, made a SA within a 12-month period (Centers for Disease Control and Prevention, 2014). There are no comparable data available for emerging adults, although some smaller-scale research reported higher rates of SAs among racial/ethnic minority compared to White college students (Gutierrez et al., 2001). The racial/ethnic differences in SAs evident among adolescents may thus extend to emerging adults.

Prior research has alluded to the role of social and environmental factors in risk for different types of self-harm (Gratz et al., 2002; Dupéré et al., 2009). However, the role of culture has not been adequately investigated. The cultural theory and model of suicide suggests that culture affects the ways in which people experience and respond to stress and thus how self-harm-related thoughts and behaviors arise (Chu et al., 2010), but existing research findings are scarce and largely mixed. With regard to NSSI, some researchers report no significant racial/ethnic differences (Brausch and Gutierrez, 2010; Serras et al., 2010), while others report higher rates among White compared to ethnic minority individuals (Whitlock et al., 2006; Muehlenkamp and Gutierrez, 2007; Gollust et al., 2008; Kuentzel et al., 2012; Swahn et al., 2012; Chesin et al., 2013), and one study reported higher rates among ethnic minority compared to White adolescents (Taliaferro et al., 2012). Closer examination suggests that rates vary by race/ethnicity when the different types of self-harm behaviors are disaggregated. In a racially/ethnically diverse sample of urban adolescents in the U.S., White teenagers had greater odds of reporting a history of NSSI without a previous SA compared to Black and Hispanic teenagers, who had greater odds of having a history of SAs without previous NSSI (Swahn et al., 2012).

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These findings suggest that there may be racial and ethnic differences in the prevalence of different types of self-harm behaviors. Specifically, whereas White youth may be particularly vulnerable to engaging in NSSI, racial/ethnic minority youth may be particularly vulnerable to SAs.

1.1. Non-suicidal self-injury versus suicide attempts

NSSI and SAs often co-occur (Nock et al., 2006; Whitlock et al., 2006; Klonsky et al., 2013), but the direction of their relationship remains unclear. Some research suggests that NSSI prospectively predicts SAs (Guan et al., 2012), while other research does not (Wichström, 2009). Further, each type of self-harm behavior may be associated with unique behavioral and cognitive characteristics and may consequently serve a different function (for review, see Andover et al. (2012)). SAs occur with less frequency and involve more lethal methods than does NSSI (Andover et al., 2012). Further, adolescents who attempt suicide, regardless of NSSI history, tend to report fewer reasons for living and more negative attitudes toward life than do adolescents who engage in NSSI (Muehlenkamp and Gutierrez, 2004, 2007). Such observations have yielded varying accounts of the functions of NSSI compared to SAs. Escape theories suggest that a SA is intended as a final solution to the perception of a persistent and unbearable negative cognitive and affective state (Baumeister, 1990; Nock and Kessler, 2006; Whitlock and Knox, 2007). In contrast, one proposed function of NSSI is to temporarily and immediately alleviate unwanted negative thoughts or feelings (Klonsky and Muehlenkamp, 2007; Nock et al., 2010a). Better understanding of risk factors differentiating NSSI and SAs may improve detection and prevention.

1.2. Risk factors for self-harm behaviors

Despite similarities in risk factors (e.g., psychiatric diagnosis, suicidal ideation, and abuse history) independently associated with NSSI or SAs (Nock et al., 2006; Nock et al., 2010b), researchers have also identified factors that differentiate between them (Andover et al., 2012; Brausch and Gutierrez, 2010; Taliaferro et al., 2012). A recent review found that while suicidal ideation and a history of abuse were consistently associated with NSSI or SAs, depressive symptoms, anxiety symptoms, and substance use were more strongly related to SAs than to NSSI (Andover et al., 2012). These differences in risk factors further support the idea that NSSI and SA are distinct self-harm behaviors.

Culture may also affect the types of stressors that lead to self-harm-related thoughts and behaviors (Chu et al., 2010). Indeed, several studies suggest racial/ethnic differences in risk factors for self-harm behaviors, although these findings are inconsistent. For example, some studies suggest that depression and anxiety might be less related to suicidal behavior in Asian American, African American, and Hispanic individuals who think about suicide, compared to White individuals (Rockett et al., 2009; Cheng et al., 2010). In a nationally representative sample of Asian Americans, one study found that more than one-third of individuals who attempted suicide reported no history of depression or anxiety (Cheng et al., 2010). Similarly, in a nationally representative sample of Black adolescents, about half of those who reported a suicide attempt did not meet criteria for any DSM-IV diagnosis, including depression or anxiety disorders (Joe et al., 2009). In another study, depression emerged as an additional risk factor in White, but not in Black suicide decedents (Kung et al., 2005). However, a study of college students demonstrated a weaker relationship between depressive symptoms and SA history in White compared to Black college students, despite similar levels of depressive symptoms (Gutierrez et al., 2001). These findings suggest that risk factors for SAs may vary across racial and ethnic groups.

Findings on the relationship between substance use and SAs in different racial/ethnic groups are also often equivocal. One study demonstrated a relationship between heavy drinking and suicide deaths in White, but not in Black suicide decedents (Kung et al., 2005). However, another study found significantly higher levels of substance use in African Americans who attempted suicide compared to those who did not (Kaslow et al., 2004). With the exception of a few studies (Jacobson et al., 2008; Brausch and Gutierrez, 2010; Kuentzel et al., 2012; Swahn et al., 2012), much of the information known about risk for NSSI or SAs has been obtained through studies of predominantly White and adolescent samples. Further, ethnic minorities, namely Black and Hispanic individuals, have been underrepresented in most of the studies examining risk for different types of self-harm behavior among emerging adults, with samples consisting of about 70% White individuals (Gollust et al., 2008; Whitlock et al., 2006; Whitlock and Knox, 2007). Considering that 57% of 18–24 year-olds in the U.S. are identified as non-Hispanic White, and this estimate is projected to decrease over time as younger populations are increasingly racial/ethnic minority (U.S. Census Bureau, 2010), there is a need to identify reliable risk factors for NSSI and SAs among emerging adults with samples that include a greater representation of racial/ethnic minority groups.

1.3. Protective factors for self-harm behaviors

Some factors that have also been shown to vary by culture (Chu et al., 2010) may reduce individuals' susceptibility to engaging in self-harm behaviors. These factors include social support, namely from family (Andover et al., 2012; Nkansah-Amankra et al., 2012; Taliaferro et al., 2012), and religiosity (Kuentzel et al., 2012; Nkansah-Amankra, 2013). Adolescents who reported more parent connectedness had lower odds of NSSI – with and without SA – compared to adolescents with no history of self-harm, regardless of gender (Taliaferro et al., 2012). A longitudinal study with a U.S. population-based sample tracked suicidal behavior from adolescence into emerging adulthood and found that parental support during adolescence reduced the likelihood of SAs in emerging adulthood (Nkansah-Amankra et al., 2012). Although more limited in comparison to the mainstream literature, several studies also demonstrate the impact of social support on self-harm behaviors among racial and ethnic minority individuals. For example, family conflict was predictive of SAs in Latinos (Fortuna et al., 2007) and of suicidal thoughts and attempts among Asian American individuals (Cheng et al., 2010). Higher social support was also associated with lower suicidality among African American men (Wingate et al., 2005). By assessing engagement in NSSI and SAs over time, one study of Norwegian high school students reported that satisfaction with social support protected against the onset of NSSI, whereas parental care protected against the onset of SAs (Wichström, 2009). Furthermore, one study found that individuals with a history of NSSI were more likely to feel supported by family, compared to individuals with a SA history, independently of NSSI history (Brausch and Gutierrez, 2010). Social support, particularly from family, may thus reduce risk for NSSI and SAs.

Religiosity – or the degree to which religion is important in people's lives – has also been linked to lower rates of NSSI and of SAs (Kuentzel et al., 2012; Nkansah-Amankra, 2013). However, findings with racial/ethnic minority groups are inconsistent. Although a number of studies demonstrated a negative association between religiosity and suicidality (e.g., Anglin et al., 2005), several other studies reported no relationship between suicidality and importance of religion among racial/ethnic minority individuals (e.g., Molock

et al., 2006; Fortuna et al., 2007). More research is thus needed to resolve these inconsistencies.

1.4. The present study

Given the important yet largely unexamined role of culturally related risk and protective factors in self-harm-related thoughts and behaviors (Chu et al., 2010), this study sought to elucidate racial/ethnic differences in the prevalence and correlates of NSSI and SAs in a treatment-seeking sample of college students. We examined risk (i.e., depression, generalized anxiety, social anxiety, substance use, suicidal ideation, and abuse) and protective factors (i.e., religiosity, family support, and friend support) that have been implicated in vulnerability to self-harm. We also examined the relation between these factors and endorsement of a lifetime history of NSSI-only compared to SA history (with or without NSSI), separately for White and racial/ethnic minority college students.

2. Method

2.1. Participants

Participants were college undergraduates ($N=1156$; 873 females), ages 17–29 ($M=22.3$, S.D.$=3.0$), who were present for an intake assessment at the counseling center in an urban, public university in the northeastern U.S. and who reported their race/ethnicity. The sample was predominantly U.S.-born ($N=731$; 63%), and racially/ethnically diverse, with 44% of individuals identifying themselves as White, 19% as Latino, 14% as Black, 15% as Asian; and 8% identifying as another race/ethnicity (see Table 1).

2.2. Measures

2.2.1. Self-harm-related thoughts and behaviors

Lifetime history of NSSI, lifetime SAs, and suicidal ideation (SI) within the past two weeks were assessed via a clinical intake interview and/or a self-report questionnaire (see below). Variables were coded as binary, and a *yes* response was coded if a participant indicated that he or she "Purposely injured yourself without suicidal intent" on the self-report. Similarly, a *yes* response was coded for SI if the participant indicated that he or she had ever "Seriously considered attempting suicide" on the self-report. A *yes* response was coded for SA if the participant indicated that he or she had ever "Made a suicide attempt" either during the clinical interview or on the self-report measure. There was strong agreement between the clinical interview and the self-report measure (Kappa$=0.77$, $p<0.01$). This approach was employed to avoid overlooking any cases of SA, considering that the clinical interview contained 94 missing cases for SA history, 19 of whom screened positive for history of SA on the self-report measure.

2.2.2. Abuse history

The Standardized Data Set (SDS; Center for Collegiate Mental Health, 2012a) is a self-report questionnaire used by counseling centers to assess college-student mental health. Abuse history was determined by whether students responded *yes* to an item inquiring about lifetime experiences of either sexual abuse (i.e., "Someone had sexual contact with you without your consent (e.g., you were afraid to stop what was happening, passed out, drugged, drunk, incapacitated, asleep, threatened, or physically forced))" or emotional/physical abuse (i.e., "Experienced harassing, controlling, and/or abusive behavior from another person (e.g., friend, family member, partner, or authority figure))".

2.2.3. Psychological symptoms

The Counseling Center Assessment of Psychological Symptoms-62 (CCAPS-62; Center for Collegiate Mental Health, 2012b) was used to assess psychological symptoms along eight domains, four of which were of interest in the present study: depressive symptoms, generalized anxiety symptoms, social anxiety symptoms, and substance use. Participants rated, on a Likert-type scale, how much each item described them, ranging from 1 ("Not at all like me") to 5 ("Extremely like me"). Thirteen items assessed depressive symptoms (e.g., "I feel sad all the time"), nine items assessed generalized anxiety (e.g., "There are many things I am afraid of"), seven items assessed social anxiety (e.g., "I feel uncomfortable around other people"), and six items assessed substance use (e.g., "I drink more than I should"). These subscales have demonstrated good concurrent validity and test–retest reliability with college students (Center for Collegiate Mental Health, 2012b; Locke et al., 2011). Subscale items were totaled, and a binary variable was created for each subscale using the recommended clinical cut-off for each scale (Center for Collegiate Mental Health, 2012b).

2.2.4. Religiosity/spirituality

One SDS item (Center for Collegiate Mental Health, 2012a) inquired about the degree to which religion or spiritual connections were central to respondents' lives (i.e., "To what extent does your religious or spiritual preference play an important role in your life?"). Individuals responded on a Likert-type scale ranging from "Very Important" (coded as 5) to "Very Unimportant" (coded as 1).

Table 1
Sample characteristics, frequencies of self-harm behaviors, and means and standard deviations of variables entered in the regression models.

	White ($N=514$)	Latino ($N=218$)	Asian ($N=172$)	Black ($N=156$)	Other ($N=96$)	χ^2/F	p
Demographics							
Age*	22.67 (3.06)	22.13 (2.87)	21.68 (3.02)	22.01 (2.94)	22.00 (3.07)	4.59	0.001
Female	389 (75%)	162 (74%)	131 (75%)	123 (78%)	68 (70%)	2.12	0.71
U.S. born*	398 (82%)	124 (61%)	65 (40%)	83 (57%)	61 (74%)	117.84	0.01
Self-harm behaviors							
No NSSI/SA	369 (72%)	151 (69%)	120 (70%)	108 (69%)	54 (56%)	9.21	0.06
NSSI only	98 (19%)	35 (16%)	22 (13%)	27 (17%)	19 (20%)	4.38	0.38
SA only*	9 (2%)	9 (4%)	10 (6%)	12 (8%)	9 (9%)	19.72	0.001
NSSI+SA	38 (7%)	23 (11%)	20 (12%)	9 (6%)	14 (15%)	9.36	0.05
SA (with or without NSSI)*	47 (9%)	32 (15%)	30 (18%)	21 (14%)	23 (24%)	23.78	0.00
Risk factors							
Depressive Sxs	263 (51%)	113 (51%)	100 (58%)	92 (58%)	54 (56%)	4.64	0.33
Generalized anxiety Sxs	283 (55%)	109 (50%)	86 (49%)	69 (44%)	55 (57%)	7.60	0.11
Social anxiety Sxs	138 (27%)	68 (31%)	54 (31%)	51 (32%)	23 (24%)	4.23	0.38
Substance use*	117 (23%)	29 (13%)	21 (12%)	20 (13%)	18 (19%)	18.15	0.001
Suicidal ideation*	152 (30%)	77 (35%)	65 (38%)	59 (38%)	41 (43%)	10.01	0.04
Abuse history	216 (43%)	96 (44%)	78 (48%)	75 (50%)	42 (46%)	3.19	0.53
Protective factors							
Religiosity/spirituality*	3.01 (1.19)	2.99 (1.16)	3.23 (1.13)	3.43 (1.25)	3.20 (1.22)	4.82	0.001
Friend support*	3.56 (1.26)	3.31 (1.32)	3.46 (1.19)	3.30 (1.20)	3.67 (1.15)	2.94	0.02
Family support*	3.35 (1.34)	2.82 (1.30)	2.75 (1.33)	2.78 (1.27)	3.20 (1.36)	12.12	0.000

Note: NSSI=non-suicidal self-injury; SA=suicide attempt; Sxs=symptoms. Chi square analyses were used to examine group differences with categorical variables; one-way ANOVAs with post-hoc Bonferroni corrected t-tests were used to examine group differences with continuous variables.

* $p<0.05$.

2.2.5. Family support

One SDS item (Center for Collegiate Mental Health, 2012a) inquired about emotional support obtained from family members (i.e., "I get the emotional help and support I need from my family"), rated on a Likert-type scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree").

2.2.6. Friend support

One item on the SDS (Center for Collegiate Mental Health, 2012a) inquired about emotional support obtained from friends (i.e., "I get the emotional help and support I need from my social network, e.g., friends and acquaintances"), with responses on a Likert-type scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree").

2.3. Procedure

The present study involved analysis of data collected from the above self-report questionnaires and clinical interview for each student who was seen for a diagnostic assessment at a college counseling center. All respondents included in the analyses consented to allow the center to use their information for research purposes. Measures were administered by a staff clinician or by a graduate-level trainee under supervision. The study procedures were approved by the college's Institutional Review Board.

2.4. Data analysis

Differences in risk and protective factors between White and ethnic minority individuals were examined via chi-square analysis for categorical variables (i.e., binary codes for psychological symptoms, SI, and abuse history) and one-way Analysis of Variance (ANOVA) with Bonferroni corrected *t*-tests for continuous variables (i.e., religiosity, family support, and friend support). Multiple logistic regression analyses were conducted to examine statistical predictors of self-harm history. First, univariate models were constructed to examine the independent relation between each predictor and the outcome variables, adjusting for gender. Then, the protective factors (i.e., religiosity, family support, and friend support) and risk factors (i.e., depressive symptoms, generalized anxiety symptoms, social anxiety symptoms, substance use, SI, and abuse history) were entered simultaneously in the multivariate model, adjusting for gender. Further, each set of analyses was stratified by ethnic minority status (White versus ethnic minority). Analyses for each racial/ethnic group consisted of three models: one model in which the outcome was history of NSSI-only (with no NSSI/SA history as the reference group); a second model in which the outcome was any SA history (with no NSSI/SA as the reference group); and a third model in which any SA history was the outcome with NSSI-only as the reference group. This third model served to extend the comparison beyond individuals with and without self-harm by differentiating among individuals endorsing SA compared to NSSI.

3. Results

About one-third ($N=354$) of participants reported a history of any self-harm, with 228 (18%) reporting NSSI-only, 55 (4%) reporting SA-only, and 117 (9%) reporting both NSSI and SAs. Therefore, 13% ($N=172$) of respondents reported any SA history (with or without NSSI history). A higher proportion of females than males reported a history of NSSI and SA, $Z_{adj}=3.0$, $p<0.01$, and NSSI-only, $Z_{adj}=2.3$, $p<0.05$. There were racial/ethnic differences in self-harm history, $\chi^2(12)=33.68$, $p<0.01$, with White individuals having a lower proportion of SA-only than would be expected by chance, $Z_{adj}=3.8$, $p<0.01$. Black individuals and individuals identifying as Other race/ethnicity had a higher proportion of SA-only than would be expected by chance, $Z_{adj}=2.3$, $p<0.05$, and 2.6, $p<0.01$, respectively. Furthermore, individuals identifying as Other had a lower proportion of no self-harm, $Z_{adj}=2.9$, $p<0.01$, and higher proportion of NSSI+SA, $Z_{adj}=2.0$, $p<0.05$, than would be expected by chance. Since only a small subgroup of individuals reported SA-only (without NSSI), further analyses examining SA history as an outcome did not exclude individuals who also had a history of NSSI. Further, White emerging adults had a lower proportion of lifetime SA history, with or without NSSI, than would be expected by chance, $Z_{adj}=3.7$, $p<0.01$, whereas individuals identifying as Other race/ethnicity reported a lower proportion of no history of self-harm, $Z_{adj}=2.9$, $p<0.01$, and a higher proportion of SA history, with or without NSSI, $Z_{adj}=3.2$, $p<0.01$, than expected by chance. For more details on ethnic differences in history of NSSI and SA, see Table 1.

3.1. Racial/ethnic differences in risk and protective factors

There were significant racial/ethnic differences in reports of substance use, $\chi^2(4)=18.15$, $p<0.001$, and suicidal ideation, $\chi^2(4)=10.01$, $p<0.04$, but not in other risk factors. Specifically, a greater proportion of White individuals, $Z_{adj}=4.0$, $p<0.01$, and a lower proportion of Asian individuals $Z_{adj}=2.1$, $p<0.05$, reported high levels of substance use than would be expected by chance. Furthermore, a lower proportion of White individuals reported suicidal ideation than would be expected by chance, $Z_{adj}=2.9$, $p<0.01$. Differences also emerged in protective factors – specifically in religiosity, $F(4, 1132)=4.82$, $p<0.01$, friend support, $F(4, 1141)=4.55$, $p<0.05$, and family support, $F(4, 1142)=12.12$, $p<0.01$. Post-hoc Bonferroni-corrected *t*-tests revealed that Black individuals reported significantly greater religiosity ($M=3.43$; S.D.$=1.25$) compared to White ($M=3.01$; S.D.$=1.19$), $t(654)=3.84$, $p<0.01$, and Latino ($M=2.99$; S.D.$=1.16$) individuals, $t(367)=3.54$, $p<0.01$. In addition, White individuals reported significantly higher family support ($M=3.35$; S.D.$=1.34$) than did Latino ($M=2.82$; S.D.$=1.30$), $t(722)=4.96$, $p<0.01$, Black ($M=2.78$; S.D.$=1.27$), $t(659)=4.65$, $p<0.01$, and Asian ($M=2.75$; S.D.$=1.33$) individuals, $t(678)=5.09$, $p<0.01$. For more details on racial/ethnic differences in risk and protective factors, see Table 1. For additional power, and given the similarities across the profiles of the ethnic minority groups, further analyses compared white individuals with ethnic minority individuals.[1]

3.2. Correlates of NSSI and suicide attempts among White emerging adults

In univariate analyses, high symptoms of depression and generalized anxiety were associated with higher odds of NSSI-only, versus no NSSI/SAs (O.R.$_{dep}=2.54$; 95% C.I.$=1.59$, 4.07, Bonferroni-corrected $p<0.01$; O.R.$_{genanx}=1.93$; 95% C.I.$=1.21$, 3.08, Bonferroni-corrected $p<0.05$), and depressive symptoms were also associated with higher odds of SAs, versus no NSSI/SAs (O.R.$=2.51$; 95% C.I.$=1.32$, 4.76, Bonferroni-corrected $p<0.05$), among White emerging adults. However, after adjusting for other risk (i.e., suicidal ideation, abuse history, social anxiety symptoms, and substance use), and protective (i.e., religiosity, family support, and friend support) factors, depression and generalized anxiety symptoms were no longer significantly associated with higher odds of having a history of NSSI-only or history of any SA (compared to no NSSI/SA history) among White emerging adults (see Table 2). Similarly, while family support was associated with lower odds of NSSI-only history (O.R.$=0.77$; 95% C.I.$=0.65$, 0.91,

[1] The cultural model of suicide suggests that cultural experiences may impact risk for suicide through various avenues (Chu et al., 2010), and minority stress may play a significant role. Although we were unable to examine cultural factors directly, we attempted to examine the impact of cultural experiences on risk for NSSI and SA by identifying ethnic differences in risk profiles. Furthermore, the findings from our study – specifically, the descriptive data that compared the variables of interest across racial/ethnic groups – revealed that the profiles of the White students were significantly different from the profiles of the students who did not identify as White (e.g., chi-square analyses indicated that White students more often reported substance use and less often reported suicidal ideation than would be expected by chance; White students reported significantly more family support than did Black, Asian, and Latino students). Finally, previous research on self-harm behaviors has examined ethnic differences by comparing White and non-White/ethnic minority individuals (e.g., Taliaferro et al., 2012; Muehlenkamp and Gutierrez, 2007). We recognize, however, that there are between-group differences that we are unable to capture by combining the racial/ethnic minority groups into one group.

Table 2
Univariate and multivariate models for risk and protective factors predicting history of NSSI and SA, adjusting for gender, among White emerging adults.

	Unadjusted O.R.			Adjusted O.R.		
	NSSI only versus no NSSI/SA	SA versus no NSSI/SA	SA versus NSSI only	NSSI only versus no NSSI/SA	SA versus no NSSI/SA	SA versus NSSI only
Protective factors						
Religiosity/spirituality	0.99 (0.81–1.20)	1.06 (0.81–1.37)	1.07 (0.79–1.44)	1.00 (0.80–1.25)	0.95 (0.67–1.35)	0.95 (0.67–1.35)
Friend support	0.83 (0.70–0.99)	1.03 (0.79–1.33)	1.23 (0.93–1.64)	0.96 (0.77–1.21)	1.34 (0.90–1.97)	1.39 (0.94–2.05)
Family support	**0.77 (0.65–0.91)**	0.77 (0.61–0.98)	1.01 (0.78–1.32)	0.88 (0.72–1.09)	0.80 (0.58–1.11)	0.91 (0.65–1.26)
Risk factors						
Depressive Sxs	**2.54 (1.59–4.07)**	**2.51 (1.32–4.76)**	0.99 (0.47–2.06)	1.59 (0.85–2.96)	1.04 (0.38–2.88)	0.65 (0.23–1.88)
Generalized anxiety Sxs	**1.93 (1.21–3.08)**	1.58 (0.85–2.95)	0.82 (0.40–1.68)	0.95 (0.52–1.72)	0.54 (0.20–1.47)	0.58 (0.21–1.59)
Social anxiety Sxs	1.15 (0.68–1.92)	**4.18 (2.23–7.83)**	**3.65 (1.75–7.60)**	0.86 (0.47–1.59)	**3.68 (1.49–9.11)**	**4.26 (1.69–10.78)**
Substance use	1.97 (1.18–3.29)	1.73 (0.86–3.47)	0.87 (0.40–1.90)	**2.11 (1.16–3.84)**	**2.79 (1.08–7.20)**	1.32 (0.52–3.39)
Suicidal ideation	**6.04 (3.63–10.06)**	**51.15 (19.08–137.16)**	**8.47 (3.06–23.45)**	**5.49 (3.11–9.67)**	**54.35 (18.13–162.88)**	**9.91 (3.25–30.15)**
Abuse history	**2.02 (1.28–3.19)**	**6.05 (2.89–12.67)**	2.99 (1.33–6.74)	**1.77 (1.05–2.99)**	**8.32 (3.23–21.43)**	**4.69 (1.80–12.22)**

Note: NSSI=non-suicidal self-injury; SA=suicide attempt; Sxs=symptoms. No NSSI/SA was entered as the reference group in the first model, while any NSSI only was entered as the reference group in the second model. $p<0.05$ (corrected p-Value for univariate models, $p<0.006$).

Bonferroni-corrected $p<0.05$), versus no history of NSSI/SA, in a univariate analysis, it was no longer significant in the multivariate model (Adjusted O.R.=0.88; 95% C.I.=0.72, 1.09, $p=0.25$). The following findings also emerged in the multivariate models: Individuals reporting substance use had 2.8 times higher odds of endorsing SA history (95% C.I.=1.08, 7.20, $p<0.05$) and 2.1 times higher odds of endorsing NSSI-only history (95% C.I.=1.16, 3.84, $p<0.05$) compared to individuals with no self-harm history. Suicidal ideation was associated with 54.4 times higher odds of SA (95% C.I.=18.13, 162.88, $p<0.01$). It should be noted that only 9% ($n=47$) of White individuals reported any SA, which may influence the reliability of this estimate. Further, suicidal ideation was associated with 5.5 times higher odds of NSSI-only (95% C.I.=3.11, 9.67, $p<0.01$) versus no history of NSSI/SA, and 9.9 times higher odds of SA (95% C.I.=3.25, 30.15, $p<0.01$) versus NSSI-only. Social anxiety was associated with nearly 3.7 times higher odds of SA versus no history of NSSI/SA (95% C.I.=1.49, 9.11, $p<0.05$), and 4.3 times higher odds of SA versus NSSI-only history (95% C.I.=1.69, 10.78, $p<0.01$). Finally, abuse history was associated with 8.3 times higher odds of SA (95% C.I.=3.23, 21.43, $p<0.01$) and 1.8 times higher odds of NSSI (95% C.I.=1.05, 2.99, $p<0.05$) versus no history of NSSI/SA, and 4.7 times higher odds of SA versus NSSI-only (95% C.I.=1.80, 12.22, $p<0.01$). See Table 2 for more details on the unadjusted and adjusted odds ratios for White emerging adults.

3.3. Correlates of NSSI and suicide attempts among ethnic minority emerging adults

In univariate analyses conducted with ethnic minority emerging adults, high depression and generalized anxiety symptoms were associated with higher odds of NSSI-only, versus no NSSI/SAs ($O.R._{dep}=1.95$; 95% C.I.=1.24, 3.07, Bonferroni-corrected $p<0.05$; $O.R._{genanx}=2.31$; 95% C.I.=1.48, 3.62, Bonferroni-corrected $p<0.01$) and of any SA history versus no NSSI/SAs ($O.R._{dep}=2.86$; 95% C.I.=1.77, 4.62, Bonferroni-corrected $p<0.01$; $O.R._{genanx}=2.08$; 95% C.I.=1.34, 3.24, Bonferroni-corrected $p<0.05$), and high substance use was also associated with higher odds of any SA history versus no NSSI/SA ($O.R._{substance}=2.40$; 95% C.I.=1.37, 4.19, Bonferroni-corrected $p<0.05$). However, after adjusting for other risk (i.e., suicidal ideation, abuse history, and social anxiety symptoms) and protective (i.e., religiosity, family support, and friend support) factors, substance use, depressive symptoms, and generalized anxiety symptoms were no longer associated with higher odds of NSSI-only history or any SA history (compared to no NSSI/SA history). In multivariate analyses conducted among racial/ethnic minority individuals, friend support was not associated with NSSI-only nor with any SA history, when no history of NSSI/SA was the reference group. However, it was associated with lower odds (Adjusted O.R.=0.75; 95% C.I.=0.58, 0.98, $p<0.05$) of any SA history compared to a reference group of NSSI-only, after adjusting for other risk and protective factors. Furthermore, social anxiety was associated with 1.8 times higher odds of NSSI versus no history of NSSI/SA (95% C.I.=1.05, 2.99, $p<0.05$). Suicidal ideation was associated with 17.5 times higher odds of endorsing SA (95% C.I.=9.00, 34.12, $p<0.01$) and 3.4 times higher odds of endorsing NSSI (95% C.I.=2.09, 5.66, $p<0.01$) versus no history of NSSI/SA, and 5.1 times higher odds of endorsing SA (95% C.I.=2.42, 10.74, $p<0.01$) versus NSSI-only history. Abuse history was associated with 5.7 times higher odds of endorsing SA versus no history of NSSI/SA (95% C.I.=3.06, 10.67, $p<0.01$) and 4.4 times higher odds of endorsing SA versus NSSI-only (95% C.I.=2.22, 8.80, $p<0.01$). For more details on the unadjusted and adjusted odds ratios for ethnic minority emerging adults, see Table 3.

4. Discussion

This study examined well-documented risk and protective factors in relation to non-suicidal self-injury (NSSI) and suicide attempts (SAs) among White and ethnic minority emerging adults presenting for treatment at a college-counseling center. Racial/ethnic differences emerged in the prevalence of different self-harm behaviors. Black emerging adults and individuals identifying as Other race/ethnicity had a higher rate of lifetime SA-only history compared to White individuals, supporting previous research (Gutierrez et al., 2001). In contrast to previous research (Brausch and Gutierrez, 2010; Serras et al., 2010), there was no significant group difference in history of NSSI-only.

As hypothesized, racial/ethnic differences emerged in protective factors associated with NSSI and SA. In univariate analyses, family support was associated with lower risk for NSSI (versus no history of NSSI/SA) among White individuals, but this relationship was no longer significant in a multivariate analysis that adjusted for all risk and protective factors. Meanwhile, friend support was associated with lower odds of lifetime SA compared to history of NSSI-only among ethnic minorities, after adjusting for risk and protective factors. These findings provide mixed support for previous research identifying the potentially protective quality of social support, namely from family, against NSSI among White individuals (Andover et al., 2012; Nkansah-Amankra et al., 2012; Taliaferro et al., 2012). They also extend our understanding of the

Table 3
Univariate and multivariate models for risk and protective factors predicting history of NSSI and SA, adjusting for gender, among ethnic minority emerging adults.

	Unadjusted O.R.			Adjusted O.R.		
	NSSI only versus no NSSI/SA	SA versus no NSSI/SA	SA versus NSSI only	NSSI only versus no NSSI/SA	SA versus no NSSI/SA	SA versus NSSI only
Protective factors						
Religiosity/spirituality	0.98 (0.82–1.18)	1.10 (0.91–1.32)	1.12 (0.89–1.41)	1.04 (0.85–1.28)	1.12 (0.88–1.43)	1.07 (0.82–1.41)
Friend support	1.07 (0.89–1.28)	0.81 (0.68–0.96)	0.76 (0.61–0.95)	1.19 (0.96–1.47)	0.89 (0.71–1.13)	**0.75 (0.58–0.98)**
Family support	0.89 (0.75–1.05)	0.82 (0.69–0.97)	0.92 (0.75–1.14)	0.93 (0.77–1.13)	0.99 (0.79–1.23)	1.05 (0.82–1.35)
Risk factors						
Depressive Sxs	**1.95 (1.24–3.07)**	**2.86 (1.77–4.62)**	1.47 (0.80–2.68)	0.98 (0.54–1.78)	1.14 (0.57–2.27)	1.16 (0.53–2.55)
Generalized anxiety Sxs	**2.31 (1.48–3.62)**	**2.08 (1.34–3.24)**	0.90 (0.51–1.59)	1.70 (0.98–2.94)	1.13 (0.61–2.08)	0.66 (0.33–1.34)
Social anxiety Sxs	**1.97 (1.26–3.08)**	1.52 (0.97–2.40)	0.77 (0.44–1.35)	**1.76 (1.04–2.99)**	1.08 (0.58–2.02)	0.61 (0.31–1.22)
Substance use	1.56 (0.84–2.90)	**2.40 (1.37–4.19)**	1.53 (0.76–3.11)	1.05 (0.53–2.08)	1.30 (0.64–2.64)	1.24 (0.56–2.74)
Suicidal ideation	**3.72 (2.36–5.86)**	**22.09 (12.15–40.15)**	**5.94 (3.03–11.62)**	**3.43 (2.09–5.66)**	**17.52 (9.00–34.12)**	**5.10 (2.42–10.74)**
Abuse history	1.58 (1.01–2.46)	**7.39 (4.27–12.78)**	**4.68 (2.45–8.92)**	1.29 (0.80–2.09)	**5.71 (3.06–10.67)**	**4.42 (2.22–8.80)**

Note: NSSI = non-suicidal self-injury; SA = suicide attempt; Sxs = symptoms. No NSSI/SA was entered as the reference group in the first model, while NSSI only was entered as the reference group in the second model. $p < 0.05$ (corrected p-Value for univariate models, $p < 0.006$).

relationship between social support and risk for self-harm by identifying friend support as a relevant protective factor against suicide attempts, relative to NSSI, among ethnic minority emerging adults. In support of literature demonstrating no relationship between religiosity and suicidality (Molock et al., 2006; Fortuna et al., 2007), but contrary to some previous studies (Anglin et al., 2005; Kuentzel et al., 2012; Nkansah-Amankra, 2013), religiosity was not a significant predictor of history of NSSI or SA for White or ethnic minority individuals. Importantly, these results highlight the need to further elucidate culturally specific disparities in the relationships between a range of social factors and self-harm-related thoughts and behaviors (Chu et al., 2010).

In line with the cultural model of suicide, which suggests that culture has an influence on the kinds of stressors that may lead to suicidal behavior (Chu et al., 2010), we found ethnic differences in the risk factors differentially associated with NSSI and SAs. Specifically, we found that high social anxiety was associated with higher odds of NSSI among ethnic minority students but with higher odds of SA history among White students. These findings are in line with a recent study that found a positive relationship between anxiety and NSSI among racially/ethnically diverse young adults (Chesin et al., 2013) and contribute to this literature by identifying the potential role of social anxiety as a risk factor for NSSI among racial/ethnic minorities and for SA among White emerging adults. Indeed, another recent study found that, compared to other anxiety disorders, social phobia was associated with the highest number of deliberate self-harm acts in a nationally representative sample (Chartrand et al., 2012). Research should continue to investigate the relationship between social anxiety and self-harm in emerging adults. Contrary to prior research demonstrating a strong link between depression, anxiety, and self-harm behaviors (Nock et al., 2010b; Selby et al., 2012), we found that depressive and generalized anxiety symptoms did not predict self-harm history, after adjusting for other factors. Since this was a clinical sample in which more than half of the participants met clinical cutoff criteria for depression and generalized anxiety symptoms, symptom levels were invariably high across all groups, perhaps not allowing for meaningful group comparisons. Furthermore, the measures used in the present study may not have been sensitive enough to differentiate among individuals in this clinical sample. Thus, the present findings should be interpreted carefully, in light of these limitations.

We also found that among White and ethnic minority emerging adults, SI and abuse history predicted NSSI and SA history. They were also more robust correlates of SA history than of NSSI among both ethnic minority and White students, consistent with existing studies (see Andover et al. (2012) for a review). The small representation of SAs in White individuals may account for the wide confidence interval in SI predicting SA among White individuals compared to ethnic minority individuals. Thus, caution should be heeded in interpreting the strength of the relationship between SI and SA history among White emerging adults. Further, while abuse history was significantly associated with higher odds of NSSI among White students, it was not a unique correlate of NSSI among ethnic minority students. Lastly, consistent with some (e.g., Kaslow et al., 2004), but not all (e.g., Kung et al., 2005) previous findings, substance use emerged as a significant predictor of both NSSI and SAs among White, but not among ethnic minority, individuals. Taken together, these findings suggest ethnic differences in the prevalence of, as well as in risk and protective factors associated with, different types of self-harm behaviors and highlight the need for greater representation of racial/ethnic minorities in studies examining the etiology of NSSI and SAs.

Although recent research suggests engaging in NSSI predicts future suicidal behavior (Klonsky et al., 2013), this pattern may not extend to ethnic minorities, given the higher rates of SA-only among ethnic minority emerging adults in the present study. Perhaps culturally related factors may provide further insight into our understanding of vulnerability to SA among ethnic minority emerging adults. For example, a recent study found that acculturative stress and perceived discrimination may increase risk for SI to the degree that they increase hopelessness, but not among individuals with a strong ethnic identity (Polanco-Roman and Miranda, 2013). However, a recent study examining cultural factors in relation to NSSI among a largely ethnic minority sample of emerging adults found that neither perceived discrimination nor ethnic identity was associated with NSSI (Chesin et al., 2013). More research of this kind is needed to elucidate the ways in which the unique challenges experienced by ethnic minority groups may impact their vulnerability to self-harm. A better understanding of the racial/ethnic disparity in the prevalence and correlates of NSSI and SAs may contribute to the improvement of prevention and intervention services available to emerging adults.

This study has a number of strengths, including racial/ethnic diversity of the sample and collection of data through both clinical interviews and self-report questionnaires to reduce missing data. Furthermore, the size of the sample facilitated the cross-ethnic examination of NSSI and SAs among a treatment-seeking group of emerging adults. However, several study limitations should be noted. First, this was a primarily female sample from a college-counseling center. Findings may not generalize to males, to the

greater emerging adult clinical population, or to non-treatment-seeking individuals. Considering that less than half of college students with psychological symptoms seek mental health treatment, and that racial/ethnic minorities are less likely than their White counterparts to seek treatment (Downs and Eisenberg, 2012), the present sample may not be a representative of a higher risk group that would not typically seek treatment. This study was also retrospective. Therefore, it was not possible to examine the direction of the relationship between risk and protective factors and self-harm behaviors. Despite the multiple assessments employed in the study, the findings remain subject to self-report bias. Furthermore, the one-item measures used to assess the protective factors (i.e., religiosity, family support, and friend support) may not fully capture these constructs. Finally, although the sample was racially/ethnically diverse, we did not have enough statistical power to examine differences across the various ethnic minority groups represented. Future research should address these limitations.

In conclusion, the present study contributes to our understanding of ethnic differences in the prevalence and correlates of NSSI and SA among emerging adults. The findings suggest that vulnerability to NSSI and SAs may differ between White and ethnic minority emerging adults, highlighting the need to better understand ethnic differences in vulnerability to NSSI and SAs in this population. This information could improve early detection and prevention targeted at reducing risk for self-harm in emerging adulthood. The treatment implications of these findings include: refinement of safety planning discussions during treatment that explore risk and protective factors, focus on development of specific protective factors, and early intervention during treatment based on exhibited risk factors. Our findings suggest that among White emerging adults, treatment for NSSI should address substance use, suicidal ideation, and abuse history, while interventions to reduce risk of a suicide attempt should additionally target social anxiety symptoms. Among racial/ethnic minority emerging adults, treatment for NSSI should address social anxiety symptoms and suicidal ideation, while treatment for suicide risk should address suicidal ideation and history of abuse.

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