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The Relation between Descriptive Norms, Suicide Ideation, and Suicide Attempts among Adolescents

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This study examined the relationship between adolescents' beliefs about the prevalence of youth suicide ideation (ideation descriptive norms) and suicide attempts (attempt descriptive norms) with self-reported suicide ideation and attempts. Descriptive norms, suicide ideation, and suicide attempts as well as gender, race/ethnicity, and exposure to family, peer, and others' suicide were assessed in 2,109 students at six suburban New York State high schools. After controlling for demographic variables and exposure to suicide, elevated ideation descriptive norms and attempt descriptive norms were associated with higher rates of suicide ideation and lifetime suicide attempts among adolescents. Adolescents who believed suicide ideation and attempts to be more widespread among peers (i.e., elevated ideation and attempt descriptive norms) were more likely to endorse suicide ideation and attempts. Correcting these descriptive norms may be a worthwhile goal for school-based suicide prevention programs.

Preventing suicide among adolescents and young adults has been named a top priority in the United States (U.S. Department of Health and Human Services Office of the Surgeon General and National Action Alliance for Suicide Prevention, 2012), and understanding factors that increase suicide risk is key for prevention efforts. Research has identified risk factors for suicide

ideation and suicidal behavior among adolescents, including gender, ethnicity, physical and sexual abuse, peer victimization, and psychiatric problems such as depression, anxiety, and substance abuse (Beautrais, 2002; Goldston et al., 2008; Gould, Greenberg, Velting, & Shaffer, 2003; King & Merchant, 2008; Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2008). Studies

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have also begun to examine social-cognitive factors, such as attitudes, associated with increased suicide risk (e.g., Lake, Kandasamy, Kleinman, & Gould, 2013). Yet little is known about the impact on adolescent suicidality of descriptive norms: an individual's perception or beliefs about how widespread a particular behavior is among referent others (Cialdini, Reno, & Kallgren, 1990; Rimal & Real, 2003).

A large body of research describes the relationship between descriptive norms and behavior (see Rimal & Real, 2003, for a review). Specifically, the more prevalent an individual perceives a behavior to be, the more likely the individual is to believe that engaging in the behavior is normative, and the more likely he or she is to engage in the behavior him- or herself (Rimal & Real, 2003). It should be noted that much of the work in this area has been cross-sectional and a causal relationship between descriptive norms and behavior cannot be inferred. The impact of descriptive norms on adolescent behavior has been most researched in the field of alcohol studies, where longitudinal research has found that perceptions of the prevalence of peer alcohol use uniquely predict adolescent drinking (Borsari & Carey, 2003; Brooks-Russell, Simons-Morton, Haynie, Farhat, & Wang, 2014) and that elevated descriptive norms regarding alcohol use precede alcohol use behaviors (Brooks-Russell et al., 2014). Research also indicates that adolescents often overestimate the quantity and frequency of their peers' alcohol consumption (Borsari & Carey, 2003). The direct effect of descriptive norms on adolescent drinking behavior has been found to be small in meta-analyses (e.g., Borsari & Carey, 2003), and in a cross-sectional study (Rimal & Real, 2003) the association was greatly attenuated after other variables, such as communication about alcohol and social approval, were taken into account. Descriptive norms have also been found to be associated with other risk-taking behaviors among adolescents, such as tobacco and marijuana use (Elek, Miller-Day, & Hecht, 2006), risky sexual behavior (Basen-Engquist & Parcel,

1992), and distracted driving behavior (Carter, Bingham, Zakrajsek, Shope, & Sayer, 2014).

In one of the few studies to examine the association between descriptive norms and self-harm, O'Connor, Armitage, and Gray (2006) examined whether social-cognitive variables, including perceptions of the prevalence of deliberate self-harm among adult friends and peers (descriptive norms), were associated with the intention to engage in deliberate self-harm and actual suicide ideation and deliberate self-harm 3 months later. Participants were 90 adult patients admitted to the emergency department (ED) for parasuicidal behavior and followed up for 3 months. Descriptive norms were not associated with participants' intention to deliberately self-harm as assessed at the time of their ED visit, and did not predict suicide ideation or deliberate self-harm in the 3 months following participants' emergency room visit. However, among those participants who most strongly identified with their peers, the intention to engage in deliberate self-harm increased as descriptive norms increased. It should be noted that the investigators were only able to interview about a quarter of participants at 3-month follow-up, which may have limited their ability to detect significant effects.

O'Connor, Rasmussen, and Hawton (2012) examined factors associated with thoughts of self-harm versus engagement in self-harm in a sample of secondary school students. The belief that peers engaged in self-harm was associated with increased odds of both self-harm thoughts and behavior among students. Additionally, students who self-harmed had greater odds than those who experienced thoughts alone of believing their peers engaged in self-harm. While these studies examined self-harm irrespective of suicide intent, no existing research has examined the association between descriptive norms and adolescent suicidality specifically.

Modeling of a behavior by peers has been found to increase the strength of the

descriptive norm for that particular behavior. For instance, Brooks-Russell et al. (2014) found that drinking with peers increased adolescents' descriptive norms for peer drinking, which in turn mediated the relationship between drinking with peers and subsequent alcohol consumption. Modeling effects have also been implicated in suicide ideation and suicidal behavior among adolescents (Insel & Gould, 2008). It is unknown whether descriptive norms contribute to adolescent suicide risk independently of the known effects of exposure to a family or peer suicide attempt (Insel & Gould, 2008).

With the current study our aim was to contribute to our understanding of the relationship between adolescents' beliefs about the prevalence of youth suicide ideation and attempts (ideation and attempt descriptive norms) and their own suicidality. Using data from six New York State high schools, we examined the association of ideation and attempt descriptive norms with adolescents' self-reported suicide ideation and history of suicide attempts, as well as with gender, race/ethnicity, and exposure to family and peer/other suicidal behavior. We hypothesized that ideation and attempt descriptive norms would be associated with increased suicide ideation and attempts among adolescents, even after controlling for demographic and exposure variables.

METHOD

Participants

The study sample was drawn from a larger study examining possible iatrogenic effects of screening adolescents for suicide ideation and suicidal behavior (Gould et al., 2005). From fall 2002 to spring 2004, students in grades 9 to 12 at six suburban high schools in Nassau, Suffolk, and Westchester counties in New York State were recruited to complete surveys on two successive days. Five schools were public coeducational schools; one was a parochial all-boys school. Sixty-four percent of students (2,342 of

3,635) agreed to participate. Reasons for nonparticipation included parental refusal (61.9%), student refusals (14.3%), and absences (23.7%). The ethnic distribution of the sample was 80.3% White, 5.1% Black, 7.3% Latino, 3.8% Asian, and 3.5% Other. A total of 58.1% of participants were boys. The mean age was 14.8 ($SD = 1.2$). There were no differences between participants and nonparticipants on sex, age, and race/ethnicity (Gould et al., 2005). Students were recruited with a waiver of parental consent for parents and active written assent for adolescents. The institutional review board of the New York State Psychiatric Institute/Columbia University Department of Psychiatry approved this study.

Only those students who completed surveys on both days were included in this study ($N = 2,189$). Of these, 58.4% were male, while 81% self-identified as White, 4.7% as Black, 8% as Latino, 3.2% as Asian, and 3.1% as Other. The mean age was 14.80 years ($SD = 1.18$ years). There were no significant differences in sex and race/ethnicity between students who did or did not complete both days ($n = 153$). However, those who did not complete the second day were older than those who participated both days (Gould et al., 2005).

Measures

On the second day of a 2-day screening procedure, students were asked to complete a survey that assessed suicide ideation, suicide attempts, descriptive norms, and exposure to family and peer/other suicidal behavior. The assessment time frame was the past 4 weeks, with the exception of lifetime suicide attempts.

Demographic Questionnaire. The demographic questionnaire elicited information on age, grade, gender, and racial/ethnic background.

Suicide Ideation. The Suicide Ideation Questionnaire (SIQ-JR) was designed for large-scale, school-based screening of adolescents (Reynolds, 1988). The 15-item SIQ-JR uses a 7-point Likert-type scale,

ranging from 0 (*I never had this thought*) to 6 (*This thought was in my mind almost every day*), assessing the frequency of specific suicidal thoughts during the past month. It assesses thoughts related to death and dying, passive and active suicide ideation, and suicidal intent. The reliability of the SIQ-JR is high, ranging from 0.91 to 0.96 for internal consistency (McGlinchey, Courtney-Seidler, German, & Miller, 2017; Reynolds & Mazza, 1999; Robinson et al., 2016) and from 0.87 to 0.93 for test-retest reliability (Reynolds & Mazza, 1999). The SIQ-JR has demonstrated construct validity in the community (Reynolds & Mazza, 1999; Robinson et al., 2016) and clinical samples (King, Hill, Naylor, Evans, & Shain, 1993; McGlinchey et al., 2017). Cronbach's alpha for this scale was .93 in the current sample.

Suicide Attempts. Seven questions about lifetime and recent suicide attempts were derived from the depression module of the Diagnostic Interview Schedule for Children (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) and an earlier suicide screen (Shaffer et al., 2004). These items have demonstrated good construct validity (Gould et al., 1998; Shaffer et al., 2004). The assessment of an attempt covered occurrences, injuries sustained, medical care sought, and hospitalization. The adolescent was considered to have a history of attempt if he or she reported any past attempt, regardless of timing, injury, or medical attention, because there is no evidence that injury or need for medical attention is a clear indication of the severity of attempts among adolescents (Brent, 1987).

Descriptive Norms. Descriptive norms for suicide ideation and attempts were assessed via two items: (1) "Out of 100 teenagers your age, how many do you think have seriously thought about killing themselves in the past year?"; and (2) "Out of 100 teenagers your age, how many do you think have tried to kill themselves in the past year?" Students were asked to rate these items on a 6-point (1–6) scale (*Less than 5, 5 to 9, 10 to 19, 20 to 29, 30 to 50, and More than 50*).

Exposure to Suicidal Behavior. Exposure to family and peer suicide and family and peer/other suicide attempts was assessed via the following four items, asked in this order: (1) "Have any of your parents, brothers or sisters, grandparents, aunts, uncles, or other relatives ever killed themselves?"; (2) "Has anybody in your family ever tried to kill themselves?"; (3) "Have any of your friends or other teenagers you knew ever killed themselves?"; and (4) "Have you known anybody else who tried to kill themselves?" We intended the fourth item to refer to peer suicide attempts; however, we do not know whether participants interpreted it this way. The response options were "Yes," "No," or "Don't Know."

Data Analysis

Univariate (*t* test, chi-square, ANOVA) statistics were computed to assess the relationships of descriptive norms to demographic variables, and to exposure to family and peer/other suicidal behavior. Linear regression analyses were used to examine whether descriptive norms were associated with suicide ideation controlling for demographic variables and exposure to suicide. School, grade, gender, and race/ethnicity were entered in Block 1. Gender and race/ethnicity were dummy-coded such that males and White adolescents were the reference groups. Exposure to family suicide, family suicide attempts, peer suicide, and peer/other suicide attempts were added in Block 2. A "Don't Know" response to the exposure questions was treated as a "No" response in the analyses. The percentage of participants who provided "Don't Know" responses to the exposure to family suicide, family suicide attempts, peer suicide, and peer/other suicide attempts items was 16%, 24%, 6%, and 6%, respectively. Block 3 included either ideation descriptive norms or attempt descriptive norms, treated as continuous variables. Two similar logistic regression models were used to examine the impact of descriptive norms on suicide attempts (dummy-coded: 1 = Yes, 0 = No).

Nagelkerke R-square, a pseudo-R-square statistic, was used to examine the amount of variation in suicide attempts explained by each block of predictors for the logistic regression models (Pallant, 2007). All statistical analyses were performed using the Statistical Package for Social Sciences Version 22 (SPSS 22; Armonk, NY: IBM Corp.).

Random effects for school were not included in the regression analyses because the sample clusters (school) had little impact on the outcomes or correlates (gender, race/ethnicity, suicide ideation/behavior; intraclass coefficients < 0.07).

Only students completing all study measures were included in the analyses ($n = 2,100$, 96%). There were no significant sex or age differences between those with and without missing data. However, the groups differed in terms of race/ethnicity, with Black and Latino adolescents having significantly greater odds of missing data than White adolescents (OR 4.97 [CI = 2.66, 9.28]; OR 2.91 [CI = 1.61, 5.27], respectively).

RESULTS

Descriptive Norms

Around 49% of students reported believing that at least one fifth of adolescents of their age seriously thought about killing themselves in the past year (see Table 1), overestimating the reported prevalence of suicide ideation among adolescents (Grunbaum et al., 2004). Compared to boys, girls believed that other adolescents experienced serious suicide ideation at higher rates ($t = 11.58$, $p < .001$). There were no significant ethnic differences in ideation descriptive norms, $F(4, 2,095) = 4.96$, $p = .097$. Adolescents exposed to family suicide, family suicide attempts, peer suicide, and peer/other suicide attempts were more likely than nonexposed adolescents to believe that more adolescents experienced serious suicide ideation ($t = 3.36$, $p = .001$; $t = 5.30$, $p < .001$;

$t = 9.45$, $p < .001$; $t = 11.70$, $p < .001$, respectively) (see Table 2).

Roughly 43% of students reported believing that at least one tenth of adolescents of their age attempted suicide in the past year (see Table 1), overestimating the reported prevalence of suicide attempt among adolescents (Grunbaum et al., 2004). Girls were more likely than boys to believe that other adolescents attempted suicide at higher rates ($t = 10.60$, $p < .001$). Significant ethnic differences in attempt descriptive norms emerged, $F(4, 2,095) = 5.65$, $p < .001$. Bonferroni post hoc analyses indicated that Black and Latino adolescents were more likely than White adolescents to believe that more adolescents attempted suicide. Adolescents exposed to family suicide, family suicide attempts, peer suicide, and peer/other suicide attempts were more likely than nonexposed adolescents to believe that more adolescents attempted suicide ($t = 2.50$, $p = .013$; $t = 4.46$, $p < .001$; $t = 8.80$, $p < .001$; $t = 9.58$, $p < .001$, respectively; see Table 2).

Relationship of Descriptive Norms to Adolescent Suicide Ideation and Suicidal Behavior

Mean suicide ideation (SIQ-JR) scores were approximately five times as high and nearly three times as high from the lowest to the highest category of ideation and attempt descriptive norms, respectively (see Table 3). Increased ideation and attempt descriptive norms were significantly associated with increased suicide ideation after controlling for demographic variables and exposure to suicide (see Table 4). The addition of ideation norms to the model explained an additional 3% of the variance in suicide ideation scores beyond what was explained by demographics and exposure, $F(15, 2084) = 21.47$, $p < .001$. Similarly, attempt descriptive norms explained an additional 1% of the variance beyond that explained by demographics and exposure, $F(15, 2084) = 19.09$, $p < .001$. In univariate models (i.e., without

TABLE 1
The Association of Suicide Descriptive Norms and Demographic Characteristics

Ideation Descriptive Norms											
Out of 100 Teenagers Your Age, How Many Do You Think Have Seriously Thought about Killing Themselves in the Past Year?											
	Male <i>n</i> = 1,221 no. (%)	Female <i>n</i> = 879 no. (%)	White <i>n</i> = 1,718 no. (%)	Black <i>n</i> = 88 no. (%)	Latino <i>n</i> = 161 no. (%)	Asian <i>n</i> = 68 no. (%)	Other <i>n</i> = 65 no. (%)	Total <i>N</i> = 2,100 no. (%)			
< 5	216 (17.7)	50 (5.7)	214 (12.5)	11 (12.5)	21 (13.0)	13 (19.1)	7 (10.8)	266 (12.7)			
5-9	252 (20.6)	125 (14.2)	316 (18.4)	10 (11.4)	29 (18.0)	14 (20.6)	8 (12.3)	377 (18.0)			
10-19	260 (21.3)	171 (19.5)	355 (20.7)	18 (20.5)	31 (19.3)	13 (19.1)	14 (21.5)	431 (20.5)			
20-29	221 (18.1)	191 (21.7)	340 (19.8)	15 (17.0)	34 (21.1)	10 (14.7)	13 (20.0)	412 (19.6)			
30-50	158 (12.9)	158 (18.0)	264 (15.4)	11 (12.5)	23 (14.3)	7 (10.3)	11 (16.9)	316 (15.0)			
50+	114 (9.3)	184 (20.9)	229 (13.3)	23 (26.1)	23 (14.3)	11 (16.2)	12 (18.5)	298 (14.2)			
Attempt Descriptive Norms											
Out of 100 Teenagers Your Age, How Many Do You Think have Tried to Kill Themselves in the Past Year?											
	Male <i>n</i> = 1,221 no. (%)	Female <i>n</i> = 879 no. (%)	White <i>n</i> = 1,718 no. (%)	Black <i>n</i> = 88 no. (%)	Latino <i>n</i> = 161 no. (%)	Asian <i>n</i> = 68 no. (%)	Other <i>n</i> = 65 no. (%)	Total <i>N</i> = 2,100 no. (%)			
< 5	496 (40.6)	188 (21.4)	570 (33.2)	22 (25.0)	44 (27.3)	28 (41.2)	20 (30.8)	684 (32.6)			
5-9	309 (25.3)	203 (23.1)	434 (25.3)	15 (17.0)	32 (19.9)	17 (25.0)	14 (21.5)	512 (24.4)			
10-19	212 (17.4)	211 (24.0)	340 (19.8)	20 (22.7)	38 (23.6)	7 (10.3)	18 (27.7)	423 (20.1)			
20-29	114 (9.3)	136 (15.5)	208 (12.1)	11 (12.5)	20 (12.4)	7 (10.3)	4 (6.2)	250 (11.9)			
30-50	48 (3.9)	89 (10.1)	99 (5.8)	11 (12.5)	14 (8.7)	8 (11.8)	5 (7.7)	137 (6.5)			
50+	42 (3.4)	52 (5.9)	67 (3.9)	9 (10.2)	13 (8.1)	1 (1.5)	4 (6.2)	94 (4.5)			

TABLE 2
The Association of Suicide Descriptive Norms and Exposure to Family and Peer/Other Suicide

Ideation Descriptive Norms	Family Suicide		Family Suicide Attempts		Peer Suicide		Peer/Other Suicide Attempts		Total N = 2,100 no. (%)
	Yes (n = 125) no. (%)	No (n = 1,975) no. (%)	Yes (n = 130) no. (%)	No (n = 1,970) no. (%)	Yes (n = 394) no. (%)	No (n = 1,706) no. (%)	Yes (n = 742) no. (%)	No (n = 1,358) no. (%)	
< 5	8 (6.4)	258 (13.1)	6 (4.6)	260 (13.2)	19 (4.8)	247 (14.5)	43 (5.8)	223 (16.4)	266 (12.7)
5-9	15 (12.0)	362 (18.3)	13 (10.0)	364 (18.5)	33 (8.4)	344 (20.2)	87 (11.7)	290 (21.4)	377 (18.0)
10-19	25 (20.0)	406 (20.6)	23 (17.7)	408 (20.7)	73 (18.5)	358 (21.0)	142 (19.1)	289 (21.3)	431 (20.5)
20-29	26 (20.8)	386 (19.5)	22 (16.9)	390 (19.8)	95 (24.1)	317 (18.6)	168 (22.6)	244 (18.0)	412 (19.6)
30-50	29 (23.2)	287 (14.5)	39 (30.0)	277 (14.1)	90 (22.8)	226 (13.2)	143 (19.3)	173 (12.7)	318 (15.0)
50+	22 (17.6)	276 (14.0)	27 (20.8)	271 (13.8)	84 (21.3)	214 (12.5)	159 (21.4)	139 (10.2)	298 (14.2)

Attempt Descriptive Norms	Family Suicide		Family Suicide Attempts		Peer Suicide		Peer/Other Suicide Attempts		Total N = 2,100 no. (%)
	Yes (n = 125) no. (%)	No (n = 1,975) no. (%)	Yes (n = 130) no. (%)	No (n = 1,970) no. (%)	Yes (n = 394) no. (%)	No (n = 1,706) no. (%)	Yes (n = 742) no. (%)	No (n = 1,358) no. (%)	
< 5	30 (24.0)	654 (33.1)	23 (17.7)	661 (33.6)	60 (15.2)	624 (36.6)	146 (19.7)	538 (39.6)	684 (32.6)
5-9	28 (22.4)	484 (24.5)	27 (20.8)	485 (24.6)	88 (22.3)	424 (24.9)	186 (25.1)	326 (24.0)	512 (24.4)
10-19	29 (23.2)	394 (19.9)	35 (26.9)	388 (19.7)	114 (28.9)	309 (18.1)	180 (24.3)	243 (17.9)	423 (20.1)
20-29	19 (15.2)	231 (11.7)	23 (17.7)	227 (11.5)	68 (17.3)	182 (10.7)	118 (15.9)	132 (9.7)	250 (11.9)
30-50	13 (10.4)	124 (6.3)	12 (9.2)	125 (6.3)	31 (7.9)	106 (6.2)	60 (8.1)	77 (5.7)	137 (6.5)
50+	6 (4.8)	88 (4.5)	10 (7.7)	84 (4.3)	33 (8.4)	61 (3.6)	52 (7.0)	42 (3.1)	94 (4.5)

Exposure to

TABLE 3
Univariate Associations of Suicide Descriptive Norms, Suicide Ideation, and Suicide Attempts

	Suicide Ideation <i>M (SD)</i>	Suicide Attempts <i>n (%)</i>
Ideation Descriptive Norms		
< 5 (<i>n</i> = 266)	2.35 (4.34)	4 (1.5)
5–9 (<i>n</i> = 380)	3.90 (7.96)	4 (1.1)
10–19 (<i>n</i> = 433)	5.41 (8.92)	15 (3.5)
20–29 (<i>n</i> = 414)	7.07 (11.07)	24 (5.8)
30–50 (<i>n</i> = 318)	8.20 (11.38)	23 (7.3)
50+ (<i>n</i> = 298)	11.70 (14.48)	23 (7.7)
Attempt Descriptive Norms		
< 5 (<i>n</i> = 688)	3.68 (6.18)	11 (1.6)
5–9 (<i>n</i> = 515)	5.87 (9.79)	18 (3.5)
10–19 (<i>n</i> = 425)	8.25 (12.52)	25 (5.9)
20–29 (<i>n</i> = 250)	8.21 (12.24)	13 (5.2)
30–50 (<i>n</i> = 137)	10.33 (13.97)	13 (9.5)
50+ (<i>n</i> = 94)	9.93 (13.70)	13 (13.8)

demographics and exposure), ideation and attempt norms explained 6.9% and 4.2%, respectively, of the variance in suicide ideation scores [ideation norms, $F(1, 2098) = 156.48, p < .001$; attempt norms, $F(1, 2098) = 91.33, p < .001$, respectively].

There was a clear and steady increase in the percentage of suicide attempts across the levels of ideation and attempt descriptive norms (see Table 3). After controlling for demographic variables and exposure to suicide, each unit increase in ideation descriptive norms was associated with 1.20 times greater odds of a lifetime suicide attempt ($p = .026$). Similarly, each unit increase in attempt descriptive norms was associated with 1.30 times greater odds of a lifetime suicide attempt ($p < .001$) (see Table 4). The inclusion of ideation descriptive norms and attempt descriptive norms significantly improved model fit [Block 3a, $\chi^2(15, N = 2,100) = 123.02, p < .001$; Block 3b, $\chi^2(15, N = 2,100) = 129.47, p < .001$, respectively]. In univariate models (i.e., without demographics and exposure), ideation and attempt norms explained 4.7% and 5.5%, respectively, of the variance in suicide attempts [ideation norms, $\chi^2(1, N = 2,100)$

$= 30.22, p < .001$; attempt norms, $\chi^2(1, N = 2,100) = 35.73, p < .001$, respectively].

DISCUSSION

The primary aim of this study was to assess the relationship between descriptive norms and adolescents' suicide ideation and suicide attempts. We found that adolescents who believed suicide ideation and attempts to be more widespread among their peers (i.e., greater ideation and attempt descriptive norms) were more likely to report suicide ideation and a history of suicide attempt. Our results are consistent with previous research indicating that an adolescent's engagement in a particular behavior is associated with the belief that that behavior is prevalent among his or her peers (O'Connor et al., 2012).

We found that girls were more likely than boys to have elevated ideation and attempt descriptive norms. Black and Latino adolescents were more likely than White adolescents to have elevated attempt descriptive norms. Additionally, those exposed to family and peer suicide and family and peer/other suicide attempts were more likely to have elevated ideation and attempt descriptive norms. As hypothesized, the relationships between descriptive norms and suicide ideation/attempts were present after controlling for gender, race/ethnicity, and exposure to family and peer/other suicidal behavior.

Only about 21% and 24% of participants' responses were correct with regard to the actual rates of serious suicide ideation and suicide attempts among U.S. high school students, which were 16.9% and 8.5%, respectively, in 2003 (Grunbaum et al., 2004) when these data were collected. Many participants overestimated the actual frequency of suicide ideation and attempts among peers. Relatively higher attempt descriptive norms among girls and among Black and Latino students may reflect the higher rates of suicide attempts in those groups nationally; however, average descriptive norms in these groups were still elevated

TABLE 4
Multivariate Associations of Suicide Descriptive Norms, Suicide Ideation, and Suicide Attempts

Outcome: Suicide Ideation				
Predictor Variables	Block 1 <i>B^a</i> (<i>SE</i>)	Block 2 <i>B^a</i> (<i>SE</i>)	Block 3a <i>B^a</i> (<i>SE</i>)	Block 3b <i>B^a</i> (<i>SE</i>)
Female	3.42 (0.49) [‡]	2.22 (0.49) [‡]	1.37 (0.49) [†]	1.59 (0.49) [†]
Black	0.39 (1.18)	0.80 (1.15)	0.17 (1.13)	0.24 (1.14)
Latino	1.53 (0.88)	1.33 (0.85)	1.23 (0.84)	0.98 (0.84)
Asian	-0.24 (1.28)	0.59 (1.24)	0.68 (1.22)	0.61 (1.23)
Other	1.28 (1.31)	1.61 (1.27)	1.14 (1.25)	1.36 (1.26)
Exposure to family suicide		1.12 (0.94)	0.91 (0.93)	1.03 (0.94)
Exposure to family attempt		4.74 (0.94) [‡]	4.30 (0.92) [‡]	4.50 (0.93) [‡]
Exposure to peer suicide		2.08 (0.60) [†]	1.56 (0.60) [†]	1.68 (0.60) [†]
Exposure to peer/other suicide attempt		3.96 (0.49) [‡]	3.20 (0.49) [‡]	3.56 (0.49) [‡]
Ideation norms			1.23 (0.15) [‡]	
Attempt norms				1.01 (0.16) [‡]
<i>R</i> ²	.04 [‡]	.10 [‡]	.13 [‡]	.11 [‡]
Outcome: Suicide Attempts				
Predictor Variables	Block 1 <i>OR^a</i> (95% <i>CI</i>)	Block 2 <i>OR^a</i> (95% <i>CI</i>)	Block 3a <i>OR^a</i> (95% <i>CI</i>)	Block 3b <i>B^a</i> (<i>SE</i>)
Female	2.60 [‡] (1.60, 4.22)	1.67* (1.01, 2.79)	1.50 (0.89, 2.52)	1.41 (0.84, 2.37)
Black	1.72 (0.57, 5.19)	1.94 (0.63, 5.98)	1.73 (0.56, 5.36)	1.64 (0.53, 5.13)
Latino	2.56 [†] (1.30, 5.05)	2.26* (1.13, 4.54)	2.30* (1.15, 4.59)	2.17* (1.09, 4.33)
Asian	0.76 (0.18, 3.23)	1.09 (0.25, 4.76)	1.00 (0.23, 4.41)	1.01 (0.23, 4.46)
Other	0.79 (0.19, 3.35)	0.95 (0.22, 4.08)	0.91 (0.21, 3.94)	0.90 (0.21, 3.92)
Exposure to family suicide		1.02 (0.47, 2.20)	1.03 (0.48, 2.23)	1.04 (0.47, 2.26)
Exposure to family attempt		3.13 [†] (1.75, 5.61)	2.97 [‡] (1.66, 5.32)	3.05 [‡] (1.70, 5.47)
Exposure to peer suicide		2.05 [‡] (1.27, 3.29)	1.92 [‡] (1.19, 3.09)	1.85* (1.15, 2.99)
Exposure to peer/other suicide attempt		3.86 [‡] (2.31, 6.48)	3.55 [‡] (2.11, 5.97)	3.57 [‡] (2.13, 6.00)
Ideation norms			1.20* (1.02, 1.41)	
Attempt norms				1.30 [‡] (1.12, 1.51)
Pseudo- <i>R</i> ^{2b}	.07 [‡]	.18 [‡]	.19 [‡]	.20 [‡]

CI = confidence interval; SE = standard error.

^aAdjusted for school attended.

^bNagelkerke *R*².

**p* < .05; [†]*p* < .01; [‡]*p* < .001.

above the groups' actual rates as identified by the Youth Risk Behavior Surveillance Survey (Grunbaum et al., 2004). There was very little variability across schools in descriptive norms or in rates of suicide ideation and attempts, and average descriptive

norms in each school were elevated above that school's actual rates.

It may be hypothesized that direct exposure to others' suicidal behavior may contribute to the elevation of adolescents' descriptive norms regarding suicide;

descriptive norms may thus be one previously unexplored mechanism by which adolescent suicide contagion operates (Lake & Gould, 2014). However, our finding that descriptive norms were associated with adolescents' own suicide ideation and attempts even when controlling for exposure to family and peer/other suicide and suicide attempts suggests that descriptive norms may to a certain extent function independently of direct exposure to suicide. Other factors, such as an adolescent's own preexisting suicidal thoughts and/or exposure to media narratives about suicide (Gould, 2001; Gould, Kleinman, Lake, Forman, & Basset Midle, 2014), may play a role in the development of adolescents' descriptive norms. However they are acquired, elevated descriptive norms may reinforce adolescents' perceptions of suicide ideation and behavior as viable coping strategies. For adolescents who believe suicidality to be prevalent among their peers, the suicidal peers they imagine to exist may serve as virtual models for their own future suicidal behavior (Insel & Gould, 2008; Lake & Gould, 2014).

Regardless of whether elevated descriptive norms develop before or after an adolescent's own suicidal thoughts or behavior, decreasing descriptive norms to more accurate levels, and thus denormalizing suicide, may have preventative effects. Providing education regarding accurate rates of suicide ideation and behavior among adolescents may help to reduce elevated descriptive norms. The inclusion of norm education designed to correct misperceptions about rates of student drinking in interventions aimed at reducing drinking among college students has resulted in significant decreases in both descriptive norms and self-reported alcohol use (Borsari & Carey, 2003; Carey, Scott-Sheldon, Carey, & DeMartini, 2007). Our research suggests that adaptation of the descriptive norm education strategy for inclusion in adolescent suicide prevention programs may be warranted.

The present study has several limitations. First, our sample was drawn from suburban schools with predominantly White

populations of limited socioeconomic diversity, so that the results cannot be generalized to urban, more ethnically or socioeconomically diverse settings. The schools were recruited from an earlier postvention screening project, involving schools where a student had recently committed suicide and demographically matched comparison schools where a suicide did not occur. The timing of the current study, several years after the initial study, was such that no students in our sample had been exposed to a suicide at their school. Second, the study design was cross-sectional and we are unable to make any inferences regarding causality or the temporal ordering of variables. For instance, it is possible that adolescents' suicide ideation and/or attempts preceded the development of elevated ideation and attempt descriptive norms. Third, a standardized measure of descriptive norms was not used. To the authors' knowledge, a standardized measure does not currently exist; however, the manner in which the construct was assessed is similar to other studies (e.g., O'Connor et al., 2006). Fourth, we did not examine other norms, such as injunctive norms (i.e., individuals' perceptions or beliefs about others' approval of a behavior; Rimal & Real, 2003), which may also be associated with suicide ideation and suicide attempts in this sample. Finally, the question used to assess peer suicide attempts was broadly phrased and did not ask about peer suicide attempts specifically. Although this question followed the question about exposure to peer suicide, it is unclear how participants interpreted this question. Suicide attempts by nonadolescent friends or acquaintances may have been included.

Despite these limitations, this is the first study to our knowledge to examine the relationship among descriptive norms and adolescents' suicide ideation and suicide attempts. As our results indicate, adolescent beliefs about what their peers do are related to their own feelings and behaviors. Thus, targeting ideation and attempt descriptive norms may be a promising youth suicide prevention strategy.

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