Neurology, Psychiatry and Brain Research 33 (2019) 73–81

Contents lists available at ScienceDirect

Neurology, Psychiatry and Brain Research

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

Does it hurt to ask? An analysis of iatrogenic risk during suicide risk assessment

Theodore W. Bender[a,*], Skye Fitzpatrick[b], Marco-Antonio Hartmann[c], Jennifer Hames[d], Lindsay Bodell[e], Edward A. Selby[f], Thomas E. Joiner Jr.[g]

[a] Addiction Campuses, Dallas, TX, United States
[b] York University, Department of Psychology, Canada
[c] Case Western Reserve University, Department of Psychological Sciences, United States
[d] University of Notre Dame, Department of Psychology, United States
[e] Western University, Department of Psychology, Canada
[f] Rutgers, The State University of New Jersey, Department of Psychology, United States
[g] Florida State University, Department of Psychology, United States

ARTICLE INFO

Keywords:
Suicide
Self-harm
Risk assessment
Implicit cognition
Implicit attitudes test
College

ABSTRACT

Background: There remains concern regarding whether suicide risk screening is harmful despite literature suggesting that it is not. The present study aimed to replicate and extend literature demonstrating that suicide risk assessment does not influence immediate or persistent distress, and examine its impact on implicit suicidality. Further, it examined whether having a suicide attempt history, higher depression symptoms, and high alcohol use yielded a beneficial effect of suicide risk assessment on distress and implicit suicidality.

Methods: Undergraduates (N = 147) were randomized to undergo suicide risk assessment or not. Distress was measured before and after survey/interviews, and again two days later along with implicit suicidality via *The Suicide Implicit Association Task*.

Results: The two groups did not differ in immediate or persistent distress, nor implicit suicidality. Individuals with high alcohol use comparable exhibited less immediate distress reduction following suicide risk assessment than those with low alcohol use, but comparable reductions in persistent distress. Those with a suicide attempt history who underwent suicide risk assessment exhibited lower levels of implicit suicidality than those who did not, but suicide risk assessment did not influence implicit sucidality for those without an attempt history.

Limitations: This study is limited by its small predominantly Caucasian and college sample, with a low base rate of suicidal behavior.

Conclusions: These findings add to a literature suggesting that suicide risk assessment may not be iatrogenic, even implicitly, and may be beneficial for those with a suicide attempt history. Clinicians are urged to continue suicide risk assessment.

1. Introduction

In 2017, suicide was the second leading cause of death among 15–24 year olds in the United States (Center for Disease Control & Prevention, 2019). There has been debate about whether screening for suicide may be iatrogenic, despite substantial evidence to the contrary. Longitudinal studies in undergraduates (Hom et al., 2018), adolescents who received psychiatric care (Mathias et al., 2012), and individuals with major depressive disorder with a history of either suicide attempts or suicidal ideation (Smith, Poindexter, & Cukrowicz, 2010) show that repeated suicide risk assessment results in no change or even decreases in suicidal ideation and behavior, as assessment has therapeutic value (Finn & Tonsager, 1992). Qualitative studies also suggest that adolescent medical and adult psychiatric inpatients respond favorably to suicide risk assessment from healthcare providers (Ross et al., 2016; Snyder et al., 2017). Furthermore, asking people to describe their worst suicidal thoughts, or presenting participants with suicidal content (i.e., images, vignettes, words) in experiments, either does not alter or slightly decreases suicidal ideation, urges, or behaviors (Poindexter, Nazem, Barnes, Hostetter, & Smith, 2019; Smith et al., 2010). Notably, Cha et al. (2016) reported an increase in desire to self-injure following presentations of suicide content in one study, but the effect size was

* Corresponding author at: 6950 Shady Lane, Scurry, TX 75158, United States.
E-mail address: tbender@addictioncampus.com (T.W. Bender).

https://doi.org/10.1016/j.npbr.2019.07.005
Received 9 May 2019; Received in revised form 25 June 2019; Accepted 18 July 2019
Available online 24 July 2019

very small ($d = .02$) and did not replicate across two additional studies they conducted. Literature reviews and meta-analyses have concluded that suicide risk assessment and exposure to suicide content either does not influence (Dazzi, Gribble, Wessely, & Fear, 2014) or slightly decreases (Blades, Stritzke, Page, & Brown, 2018) suicidal ideation or suicidal behavior. The present study aims to replicate and extend these works by assessing its impact on distress and implicit suicidality.

Extant literature on the lack of impact of suicide risk assessment on suicidality has been extended by two randomized clinical trials. One study examined the impact of suicide risk assessment on student distress and suicidal ideation during a school-based screening program. It also examined whether the impact of the program was unique to high-risk students with elevated depression, substance abuse, or past suicide attempts. Classes that collectively held over 2000 high school students were randomized to receive suicide questions in a survey or not. The two groups did not differ in distress or suicidal ideation immediately after the survey or two days later. Moreover, individuals with higher depression and a suicide attempt history who received suicide risk assessment reported lower distress and suicidal ideation than their counterparts who did not receive these questions (Gould et al., 2005). In another randomized clinical trial, psychiatric outpatients who provided answers to questions about negative psychological experiences multiple times per day for two weeks were randomized to either receive questions about suicidal ideation and behavior or not. Suicidal ideation and behavior were measured at the end of each study week and monthly for six months. There were no differences between the groups throughout the assessment period in suicidal ideation or behavior. Subgroup analyses suggested that individuals with borderline personality disorder who received suicide questions reported marginally significant increases in suicidal behavior at the $p = .10$ level compared to counterparts who did not receive suicide questions, but this difference disappeared when baseline variables were controlled for (Law et al., 2015). Taken together, these studies corroborate that suicide risk assessment does not increase suicidality and may actually lower distress and ideation in high-risk groups with elevations in depression, substance use, and a suicide attempt history.

Although extensive research supports the safety of suicide risk assessment, there are several limitations in the literature. Specifically, a recent meta-analysis suggested that that there is variability in the extent to which individuals report suicidality prior to completed suicides, and that 50% of individuals who die by suicide do not communicate their intentions to do so prior to their death (Pompili et al., 2016). This finding both implies that suicide communications are an important risk factor for completed suicide, but are also absent in a significant portion of people who go on to die by suicide. A sole reliance on self-report tools in the presence of other risk factors for suicide is thus unlikely to produce reliable or accurate indices of risk. Measurement of risk by means other than self-report is necessary to increase the chances of detecting at-risk individuals who are motivated to conceal their suicide risk. Implicit measurement of suicidality may address the shortcoming in self-report methodologies by providing estimates that cannot be obfuscated by motivations to conceal suicidality or general self-report biases. Implicit cognitions are mental processes that may be outside a person's conscious awareness but can influence that person's behavior (Nock et al., 2010). However, critics of implicit cognitive testing argue that they may not reflect underlying attitudes per se, but rather confounding cognitive processes such as the saliency, novelty, familiarity, and valence of a stimulus, the relative preference for one stimulus over another apart from attitudes, cognitive effects from switching tasks and priming, and the results of deliberate faking (Brendl, Markman, & Messner, 2001; Fiedler et al., 2010; Klauer & Mierke, 2005). Despite these critiques, meta-analytic research suggests that implicit attitude testing can significantly outperform self-report measurement in both incremental and predictive validity across a number of domains (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Testing to see whether suicide risk assessment is iatrogenic at an implicit level could therefore help to further clarify its effects. However, there are no examinations of implicit reactions to suicide risk assessment, despite its potential to surmount existing limitations in the literature.

The Suicide Implicit Association Task (S-IAT; Nock et al., 2010) was developed as a clinical assessment method to detect and predict suicidal behavior without solely relying on self-report. Despite criticisms regarding the validity and accuracy of IATs as a measure of implicit attitudes (Brendl et al., 2001; Fiedler et al., 2010; Klauer & Mierke, 2005), the S-IAT test has the ability to differentiate between suicide attempters and patients experiencing psychological distress in a psychiatric facility, and to predict future suicide attempts (Nock et al., 2010). These findings therefore support its validity in assessing some implicit and meaningful relationship to suicidality, although the exact nature of the construct under assessment remains controversial. In the S-IAT, participants are instructed to classify stimuli that appear in the center of a computer screen as quickly as possible by pressing one of two keys. It uses people's reaction times when classifying stimuli to measure automatic mental associations. The IAT is based on the assumption that it is easier for individuals to make the same behavioral response to concepts that are strongly associated with themselves (e.g., "me" concepts), rather than those with a weaker association. The S-IAT thus asks respondents to classify stimuli representing the constructs of "death" and "life" with the attributes of "me" and "not me." Greater associations between "me" and "death" or "not me" and "life" are purported to be indicative of higher suicide risk (Nock et al., 2010). One recent study administered the S-IAT after providing participants with either suicide awareness material, which described an individual feeing suicidal and seeking help, or an unrelated article. The suicide awareness material strengthened associations between the self and "life", but only for participants who reported that low desire to be like the protagonist in the awareness material (Arendt, Till, & Niederkrotenthaler, 2016). This finding suggests that suicide awareness material either does not impact implicit or, depending on individual association with the protagonist, strengthens opposing associations. However, this study examined suicide awareness material rather than suicide risk assessment specifically. It therefore remains unclear whether suicide risk assessment influences implicit suicidality.

This study therefore had three aims. First, we attempted to replicate the extant literature that suggests that suicide risk assessment does not exacerbate distress immediately (i.e., immediate distress) or over a period of days (i.e., persistent distress; Gould et al., 2005). Second, we attempted to extend this literature by examining the impact of suicide risk assessment at the implicit level using the S-IAT (Nock et al., 2010). Third, we examined whether, consistent with prior research, specific high-risk individuals (i.e., with elevations in suicide attempt history, depression, and alcohol use) *benefit* from suicide risk assessment with respect to both distress and implicit suicidality (Gould et al., 2005). Consistent with extant literature, we expected that suicide risk assessment would not significantly increase immediate or persistent distress or implicit suicidality. Additionally, consistent Gould et al. (2005), we hypothesized that suicide risk assessment would result in *reduced* distress and implicit suicidality for those with elevated suicide attempt history, depression symptoms, or alcohol use as measured by self-report.

2. Material and methods

2.1. Participants

Participants were 147 undergraduates who were recruited through General Psychology courses at a large Southeastern University and participated in two study visits, two days apart. All participants received course credit for participation. Because the focus of this study was on the effects of suicide risk assessment, it was preferable to have a general sample in which the participants had not had extensive experience with the mental health treatment system, as clinical

populations would have likely amassed prior experience with suicide risk assessment. Participant demographics are presented in Table 1. Sex and race/ethnicity demographics largely reflected that of the university, with women and Caucasian individuals being overrepresented and Hispanic individuals being somewhat underrepresented (i.e., in 2018, 56.3% of entering Freshmen were women, and 58.8% and 18.9% of enrollees were Caucasian and Hispanic, respectively; Florida State University, 2019).

Table 1
Participant demographics.

Age [Mean (SD)]		18.78 (3.92)
Race/Ethnicity		
	Caucasian	74.7%
	African American	11.6%
	Hispanic	8.9%
	Asian	1.4%
	Other	3.4%
Sex		
	Female	67.8%
	Male	31.5%
Sexual orientation		
	Heterosexual	93.8%
	Gay/Lesbian	2.1%
	Bisexual	4.1%
Marital status		
	Single/never married	96.6%
	Cohabitating	.7%
	Married	.7%
	Other	2.1%

Note. SD = Standard deviation.

2.2. Measures

Demographic factors were assessed to characterize the sample.

2.2.1. DSM-IV disorders

Participants were interviewed using the *Mini International Neuropsychiatric Interview* (MINI; Sheehan et al., 1998) to assess for psychiatric disorders. The MINI is a short structured diagnostic interview that assesses current and past episodes of psychiatric illness according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000)[1] . The MINI has strong psychometric properties. For example, the MINI correlates strongly and in expected directions with other gold-standard interviews for psychiatric disorders and has good test-retest reliability across modules (Sheehan et al., 1998). The first author and three graduate-level research assistants administered this interview to compare psychiatric diagnoses between experimental groups. All graduate-level research assistants were trained to competency by the first author, and were supervised by the senior author, in the administration of the MINI. This training involved both group training sessions and competency testing by the first author.

2.2.2. Suicide risk assessment

The Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007) is a structured clinical interview designed to assess self-injurious and suicidal ideation and behaviors. In past studies, the SITBI has demonstrated strong inter-rater reliability and good test-retest reliability over a 6-month period (Nock, Holmberg, Photos, & Michel, 2007).

2.2.3. Outcome measures

The Profile of Mood States (POMS; McNair & Droppleman, 1992) is a self-administered adjective checklist that measures transient mood states, and is sensitive to short-term mood changes. The POMS was administered at three times, namely the beginning (POMS-1) and end (POMS-2) of the first survey (Time 1) and at the beginning of the second survey (Time 2; POMS-3) in order to assess immediate and persistent distress, respectively. The POMS has strong psychometric properties. For example, it has good convergent validity, correlating highly with similar gold standard measures of affect such as the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988).

2.2.3.1. Implicit suicidality. We measured implicit suicidality using a modified version of the IAT (Greenwald, McGhee, & Schwartz, 1998). *The Suicide Implicit Associations Task* (S-IAT; Nock et al., 2010) is a 5-minute computer-based, reaction time test that requires people to classify different stimuli (i.e., words or images appearing in the middle of the computer screen) into concept and attribute categories by pressing either a left or right key on a keyboard. The test compares the speed with which stimuli are classified when the paired concept-attribute categories match an individual's implicit associations versus the speed of classification when the paired categories do not match an individual's implicit associations (see www.implicit.harvard.edu for samples).

The S-IAT examines how quickly (in milliseconds) people classify images related to the constructs of "death" (i.e., die, dead, deceased, lifeless, and suicide) and "life" (i.e., alive, survive, live, thrive, and breathing) and the attributes of "me" (i.e., I, myself, my, mine, and self) and "not me" (i.e., they, them, their, theirs, and other). Faster response times are interpreted as representing stronger mental associations between constructs. The relative strength of each participants association between "death" and "me" was measured by calculating a D score for each participant in the study. Positive D scores represented a stronger association between death and self, and negative scores represented a stronger association between life and self.

Variations of this task have been used in previous work. The Self-Injury Implicit Association Task (SI-IAT; Nock & Banaji, 2007a, 2007b) revealed very large and statistically significant differences between those engaging in non-suicidal self-injury (NSSI) and matched controls on the SI-IAT, and SI-IAT scores significantly improved the prediction of NSSI beyond important demographic and psychiatric factors (Nock & Banaji, 2007a). A second study revealed similarly large differences between non-suicidal adolescents, suicide ideators, and suicide attempters on this same task (Nock & Banaji, 2007b). Importantly, the SI-IAT also demonstrated good accuracy in predicting suicide ideation and attempt status, both at baseline and 6-month follow-up, and incrementally improved prediction beyond known risk factors (Nock & Banaji, 2007b).

2.2.4. Risk status measures

Past suicide attempt history was measured via one item on the SITBI assessing whether participants had ever made a suicide attempt. The Beck Depression Inventory (BDI-II: Beck, Steer, & Brown, 1996) addresses behavioral, cognitive, affective, and somatic components of depression. The BDI-II is a reliable and valid measure of depression symptoms. For example, the BDI-II exhibits strong internal reliability, with test-retest reliabilities in the range of .96 (Sprinkle et al., 2002) and a Cronbach alpha of .90 in the present study. Each response ranges from 0 ("symptom not present") to 3 ("severe"). It was necessary to delete the suicide question from the control group's first survey, therefore it was also necessary to omit this item from both groups' total scores at survey 1, lowering the total maximum score to 60. The Short Michigan Alcoholism Screening Test (SMAST; Selzer, Vinokur, & van Rooijen, 1975) is a self-administered report of alcohol use. The individual is asked to respond to 13 questions about alcohol related negative consequences, with a dichotomous response format (yes/no). Meta-analytic research generally supports the internal consistency

[1] Data collection was in progress when DSM-5 was released; changes are not expected to impact the findings of the study.

estimates of the SMAST (Shields, Howell, Potter, & Weiss, 2007), and the Cronbach alpha in this study was .50.

2.3. Procedure

All procedures were approved by the Florida State University Institutional Review Board and informed consent was received prior to beginning any study procedures. Data collection took place over the course of a year. Interested participants were scheduled to come into the laboratory for assessment. Undergraduate research assistants ran the study procedure. However, trained graduate student interviewers conducted clinical interviews. No participants refused to participate in the study. Participants were randomized into two groups, an experimental (N = 73) and control (N = 74) condition. All participants came into the lab twice, two days apart. At Time 1, participants in the experimental group completed the POMS-1 to assess baseline distress, followed by the MINI and SITBI interviews and questionnaires that included items assessing suicidal ideation. After completion of the surveys, a second measure of distress was completed (POMS-2). Participants in the control group completed the exact same procedures at Time 1 *except* for the SITBI interview and questionnaire items assessing suicidal ideation. At the beginning of Time 2, all participants completed another measure of distress (POMS-3) and then the S-IAT. The S-IAT was completed and scored according to recommended IAT procedures (Greenwald, Nosek, & Banaji, 2003). At Time 2, after POMS-3 and S-IAT, participants in the control condition also completed the SITBI interview to obtain a suicide attempt history. Following this, participants were debriefed. Three participants did not return for Time 2.

2.3.1. Data analytic strategy

Primary analyses focused on comparisons of the experimental and control groups on outcome measures of distress and implicit suicidality. In order to examine whether suicide risk assessment influences distress, two repeated measures analyses of variance (rANOVAs) were conducted: one examined whether group (experimental versus control) predicted an increase in *immediate* distress from before to after suicide assessment at Time 1. The other examined whether group (experimental versus control) predicted increases in later distress from after suicide assessment on Time 1 to Time 2. Group and a two-way group × time interaction were entered into models to examine whether suicide risk assessment resulted in increases in distress. To examine whether suicide risk assessment influences implicit suicidality, a univariate ANOVA was conducted with S-IAT D-scores as the outcome and group status as the between-subjects predictor (unlike the previous analyses, this was a univariate analysis because S-IAT was administered only once, at Time 2). POMS scores were positively skewed (raw skew statistics ranged from 1.55 to 3.64) and were logarithmically transformed (base 10) with one unit added to yield a more normal distribution (transformed variable skew statistics ranged from .93 to 2.23).

In order to examine whether risk factors influenced response to suicide risk assessment, we re-ran the above ANOVAs with suicide attempt history, depression symptoms, and alcohol use as predictors. Depression symptoms and alcohol use were grand-mean centered. We then entered interactions between each risk factor, group, and time point (for the distress analyses), or only group (for the implicit suicide analyses), to examine whether they influenced the impact of suicide risk assessment on distress or implicit suicidality.

2.3.2. Power analysis

According to G-power 3.1 analysis software, approximately 90 participants would be needed (45 per group) for an ANOVA with 2 main groups, to detect a small to medium effect size (.3) with .80 power at an alpha of .05. The experimental and control groups in this study included over 70 participants each, suggesting substantial power to detect an effect. Our sample size also was consistent with the sample sizes used in the Nock & Banajai (2007a, 2007b) studies and suggested that study analyses were adequately powered.

Table 2
Psychiatric Diagnoses of All Participants.

	N (%) Experimental Group (N = 73)	*N* (%) Control Group (N = 74)	$\chi^2(df)$
MDD Current	6 (8%)	8 (11%)	.29(1)
Dysthymia	0 (0%)	1 (1%)	.99(1)
Past Manic Episode	0 (0%)	1 (1%)	2.02(1)
Social Phobia	5 (7%)	1 (1%)	2.84(1)
OCD Current	3 (4%)	2 (3%)	.19(1)
PTSD Current	2 (3%)	3 (4%)	.35(1)
Panic Disorder	3 (4%)	3 (4%)	1.00(1)
GAD Current	3 (4%)	8 (11%)	3.27(1)
Alcohol Abuse, Current	13 (18%)	7 (10%)	2.10 (1)
Alcohol Dependence, Current	7 (10%)	8 (11%)	.06(1)
Substance Abuse, Current	10 (14)	9 (12%)	.08(1)
Substance Dependence	9 (12%)	5 (7%)	1.32(1)
Psychotic Disorder, Current	1 (1%)	0 (0%)	.99(1)
Bulimia Nervosa, Current	3 (4%)	2 (3%)	.22(1)
Anorexia Nervosa, Current	0 (0%)	1 (1%)	.99(1)

* = Significant at $p < .05$.

3. Results

3.1. Preliminary analyses

The mean age of the sample was 19.31 (standard deviation = 2.42). The sample was majority female (67.3%) and Freshmen (56.5%; with 15.6% as Sophomores, 16.3% as Juniors, and 10.9% as Seniors). Independent samples t-tests and chi-square tests suggested that the groups did not differ on demographic variables including age, gender, and race/ethnicity (*p*s range from .25 to .59). Psychiatric diagnoses of all participants are described in Table 2. There were no significant group differences in the presence of any diagnosis (*p*s range from .07 to .81). Regarding past suicidal behavior, eight participants (5%) reported a history of suicide attempts (15 attempts total, some participants had multiple attempts), 2 (1.3%) reported having suicidal ideation in the last week, and 4 (2.7%) reported suicidal ideation in the last month on the SITBI. Fourteen individuals (approximately 10%) met criteria for current depression. Correlations between study variables are in Table 3, along with their means and standard deviations.

3.2. Does suicide risk assessment increase distress?

There was a significant main effect of time point on immediate distress such that, across all participants, distress decreased from pre- to post-surveys (Wilk's $\lambda = .74$, $F(1, 127) = 44.39$, $p < .001$, $\eta_p^2 = .26$),

Table 3
Correlations between study variables.

	1.	2.	3.	4.	5.	6.	7.
1. BDI	–						
2. S-IAT	−.10	–					
3. POMS-1	.50***	−.12	–				
4. POMS-2	.58***	−.09	.86***	–			
5. POMS-3	.28**	−.05	.68***	.65***	–		
6. Alcohol use	.31***	.10	.05	.19*	−.05	–	
7. Suicide attempt history	.33***	−.002	.23**	.21*	.11	−.08	–
Mean	7.88	.16	68.87	63.58	59.21	.91	.06
Standard deviation	7.31	.20	18.92	19.00	16.43	1.19	.23

Note. N = 150, * = p < .05, ** = p < .01.
[1]Refers to Group given initial suicide assessment, [2] refers to percent of participants endorsing this experience.

Table 4
Repeated measures ANVOA results examining moderating impact of risk factors on effect of suicide risk assessment on immediate and persistent distress.

	η_p^2	df	F	*p-value*
Immediate distress				
Intercept	**.99**	**1, 119**	**9546.51**	**< .001**
Time	**.07**	**1, 119**	**8.26**	**.01**
Group	.00	1, 119	.17	.68
Suicide attempt history	.00	1, 119	.06	.81
Depression	**.30**	**1, 119**	**50.28**	**< .001**
Alcohol use	.01	1, 119	.84	.36
Group × suicide attempt history	.01	1, 119	.56	.46
Group × depression	.01	1, 119	.80	.37
Group × alcohol use	.00	1, 119	.09	.77
Group × time	.02	1, 119	1.76	.19
Time × suicide attempt history	.00	1, 119	.02	.90
Time × depression	.01	1, 119	.74	.39
Time × alcohol use	**.03**	**1, 119**	**3.80**	**.05**
Group × time × suicide attempt history	.00	1, 119	.40	.53
Group × time × depression	.00	1, 119	.02	.88
Group × time × alcohol use	**.04**	**1, 119**	**5.49**	**.02**
Persistent distress				
Intercept	**.99**	**1, 122**	**11729.00**	**< .001**
Time	.02	1, 122	2.87	.09
Group	.00	1, 122	.39	.53
Suicide attempt history	.00	1, 122	.16	.69
Depression	**.25**	**1, 122**	**39.83**	**< .001**
Alcohol use	.01	1, 122	1.72	.19
Group × suicide attempt history	.00	1, 122	.39	.53
Group × depression	.01	1, 122	1.01	.32
Group × alcohol use	.00	1, 122	.04	.85
Group × time	.00	1, 122	.40	.53
Time × suicide attempt history	.00	1, 122	.02	.89
Time × depression	**.09**	**1, 122**	**11.97**	**.001**
Time × alcohol use	.03	1, 122	3.41	.07
Group × time × suicide attempt history	.01	1, 122	1.04	.31
Group × time × depression	.00	1, 122	.03	.87
Group × time × alcohol use	.02	1, 122	2.29	.13

Note. Significant main effects and interactions are bolded.

indicating a potentially therapeutic effect of assessment. However, there was no main effect of group, $F(1, 127) = .81$, $p = .37$, or group × time point interaction, $F(1, 127) = 2.12$, $p = .15$, on immediate distress. Similarly, there was a significant main effect of time point on persistent distress such that, across all participants, distress decreased from immediately after the survey to two days later (Wilk's $\lambda = .91$, $F(1, 129) = 12.13$, $p = .001$, $\eta_p^2 = .09$). However, there was no main effect of group, $F(1, 129) = .19$, $p = .67$, or group × time point interaction, $F(1, 129) = 1.49$, $p = .23$, on persistent distress.

3.2.1. The impact of risk factors

Analyses examining the impact of risk factors on immediate and persistent distress following suicide risk assessment are presented in Table 4. There was a statistically significant group × time × alcohol use interaction on immediate distress. In order to break down this interaction, we re-ran the rANOVA models within each group (omitting the group variable). There was no time × alcohol use interaction, $F(1, 58) = .09$, $p = .76$ in the control condition indicating that alcohol use did not influence immediate distress change following the general assessment). However, there was a statistically significant time × alcohol use interaction in the risk assessment condition, $F(1, 61) = 7.93$, $p = .01$. This interaction is depicted in Fig. 1, which presents changes in distress from pre- to post-risk assessment in two groups: individuals above and below the median of alcohol use. Although both groups ultimately exhibited decreases in distress, the group with high alcohol use exhibited less reduction in distress (pre-assessment to post-risk assessment $\Delta = 2.49$) than the group with low alcohol use (pre-assessment to post-risk assessment $\Delta = 5.18$). There was not a statistically significant group × time × alcohol use interaction for persistent distress, indicating that this effect disappeared over the days following. There were also no statistically significant interactions between group, time point, and depression or suicide attempt history.

3.3. Does suicide risk assessment increase implicit suicidality?

Regarding the S-IAT, the mean was D = .17 (SD = .22) and the index did not demonstrate skew or kurtosis. S-IAT score was not significantly related to any of the distress indices. The experimental group mean for the S-IAT was D = .16 (SD = .20), while the control group mean was D = .17 (SD = .24). An ANOVA revealed that the groups did not differ in implicit suicidality via the S-IAT following suicide risk assessment, $F(1, 142) = .02$, $p = .89$.

3.3.1. The impact of risk factors on implicit suicidality

Analyses examining the impact of risk factors on implicit suicidality following suicide risk assessment are presented in Table 5. There was a marginally statistically significant group × suicide attempt history interaction on S-IAT score, $F(1, 133) = 3.98$, $p = .05$, $\eta_p^2 = .03$. Results of this interaction are presented in Fig. 2 and suggest that suicide risk assessment reduced S-IAT scores for individuals with a suicide attempt history, but did not alter it for those with no such history. There were no statistically significant group × depression or group × alcohol use interactions.

4. Discussion

A strong concern remains in the general population that asking about suicidal thoughts and behaviors may trigger subsequent suicidal ideation and behavior. This study addressed this concern by examining whether suicide risk assessment elicits immediate or persistent distress, or increases implicit suicidality in college students. It also examined whether high-risk participants with previous suicide attempts, depression symptoms, or alcohol use problems exhibit differential responses to suicide risk assessment as compared to others. In order to assess implicit suicidality, we tested whether performance on the S-IAT, a brief, computerized, reaction time test, differs among individuals who received suicide risk assessment or not, and whether this effect was altered by risk factors (i.e., suicide attempt history, depression symptoms, or alcohol use problems). We also examined whether suicide risk assessment elicits immediate or persistent distress in participants. Consistent with study hypotheses and extant literature (Blades et al., 2018; Cha et al., 2016; Dazzi et al., 2014; Gould et al., 2005; Hom et al., 2018; Law et al., 2015; Mathias et al., 2012; Poindexter et al., 2019; Ross et al., 2016; Smith et al., 2010; Snyder et al., 2017), results generally did not support the presence of an iatrogenic effect of suicide risk assessment on distress or implicit measurements of suicidality.

The lack of group differences in both distress and implicit suicidality measurements corroborate an increasing literature that suggests that suicide risk assessment is not iatrogenic (Blades et al., 2018; Cha et al., 2016; Dazzi et al., 2014; Gould et al., 2005; Hom et al., 2018; Law et al., 2015; Mathias et al., 2012; Poindexter et al., 2019; Ross et al., 2016; Smith et al., 2010; Snyder et al., 2017), even when controlling for a history of suicide attempts, depression, and alcohol use. However, given that the present work was conducted in an undergraduate sample with a low base rate of suicide attempts, findings on the impact of suicide risk assessment on implicit suicidality is somewhat preliminary. Despite such caveats, in our results, individuals with higher alcohol use exhibited *less reduction* in distress from pre- to post-suicide risk assessment than those with lower alcohol use, but still showed decreases overall. Furthermore, the differential impact of alcohol use was no longer present by the two-day follow-up period. Given that individuals with high and low alcohol use both showed overall decreases in distress from pre- to post-suicide risk assessment, these preliminary findings do not suggest that suicide risk assessment is distressing to individuals with high alcohol use per se. Rather, they suggest that individuals with high alcohol use may initially benefit less from assessment involving

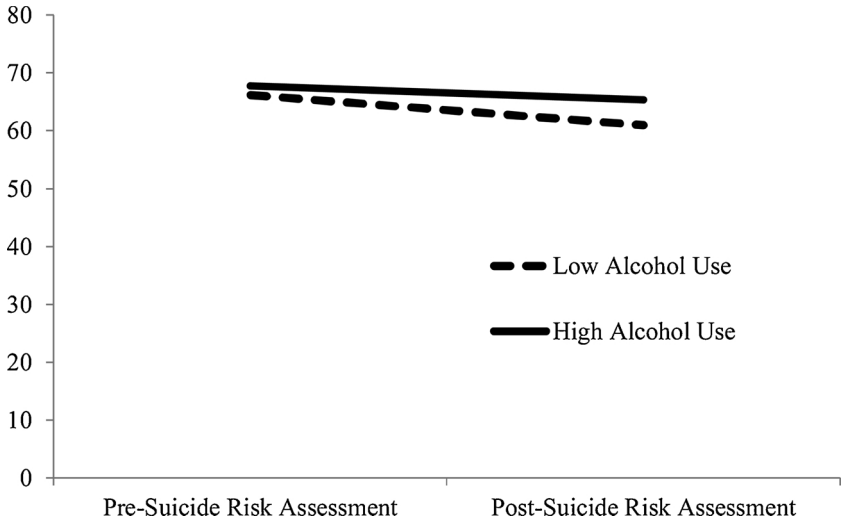

Fig. 1. Pre- to post-suicide risk assessment distress by low and high alcohol use.
Note. Low and high alcohol use divided by a median split.

Table 5
Univariate ANVOA results examining moderating impact of risk factors on effect of suicide risk assessment on implicit suicidality.

	η_p^2	df	F	p-value
Corrected Model	.07	7, 133	1.38	.22
Intercept	**.17**	**1, 133**	**26.79**	**< .001**
Group	.03	1, 133	3.53	.06
Suicide attempt history	.02	1, 133	2.06	.15
Depression	**.04**	**1, 133**	**4.84**	**.03**
Alcohol use	.02	1, 133	2.74	.10
Group × suicide attempt history	**.03**	**1, 133**	**3.98**	**.05**
Group × depression	.01	1, 133	1.67	.20
Group × alcohol use	.00	1, 133	.03	.87

Note. Significant main effects and interactions are bolded.

suicide risk questions, but benefit comparably over longer periods of time. Suicide risk assessment may be temporarily distressing for college students with high alcohol use, counteracting an overall beneficial effect of general assessment, but this is likely transient. Previous works suggested that there is not a moderating influence of alcohol use on the impact of suicide risk assessment on distress (Gould et al., 2005). However, perhaps the college sample in the present study had higher rates of alcohol use than that of Gould et al.'s (2005) high school sample, revealing this differential effect.

Assessing suicidality via implicit measurement adds novel data to the growing mass of literature that does not support an iatrogenic effect of suicide risk assessment, because it is not uncommon for suicidal individuals to actively conceal their risk level from clinicians and caregivers. These findings add to extant literature by showing a lack of support for an iatrogenic effect of suicide risk assessment even at implicit levels and in high-risk individuals. The absence of observed detrimental effects in the present study contrasts with previous findings in some suicide prevention programs (e.g., Shaffer et al., 1990; Overholser, Hemstreet, Spirito, & Vyse, 1989; Vieland, Whittle, Garland, & Hicks, 1991), which relied more heavily on presenting didactics, suicide statistics, and warning signs of suicide. The current study, along with several others (Blades et al., 2018; Cha et al., 2016; Dazzi et al., 2014; Gould et al., 2005; Hom et al., 2018; Law et al., 2015; Mathias et al., 2012; Poindexter et al., 2019; Ross et al., 2016; Smith et al., 2010; Snyder et al., 2017), suggest that possible detrimental effects of suicide prevention didactic programs may not apply to suicide assessment and screening programs in adolescents and adults. Other

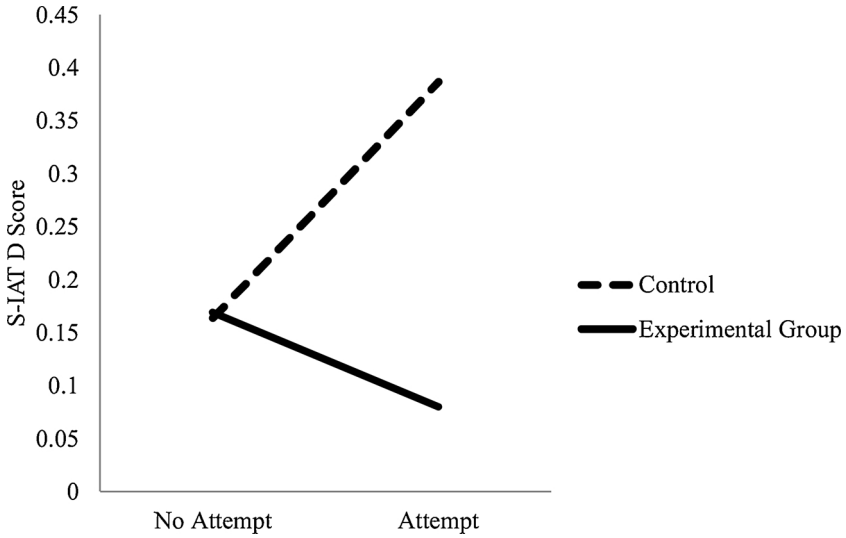

Fig. 2. Group × suicide attempt history interaction predicting S-IAT score.
Note. S-IAT = Suicide Implicit Association Task (Nock et al., 2010).

studies suggest possible beneficial effects of suicide risk assessment. For example, Smith et al. (2010) showed that following a suicide risk assessment, individuals with a history of suicidality did not experience increases in suicidal ideation, self-injurious behavior, or suicide attempts. This study further demonstrated that most patients reported a decrease in suicidal ideation at one-month follow up, and no changes at the three-month follow up time point. These data are also concordant with Arendt et al.'s (2016) work, which showed that the presentation of suicide awareness material also does not influence implicit suicidality and may reduce it for a subset of individuals.

Consistent with these studies, in the current sample, there was a significant interaction between group status and suicide attempt history predicting S-IAT scores, even when controlling for depression. This finding supports our hypothesis by suggesting that suicide risk assessment decreases implicit suicidality in students with past suicide attempts. This is also consistent with the Gould et al. (2005) findings, which showed that suicide risk assessment may have been beneficial for students with previous suicide attempts. However, the other risk factors (depression and alcohol use) did not modulate suicide risk assessment effects on implicit suicidality. These findings suggest that suicide attempt history may uniquely predispose individuals to implicitly benefit from suicide risk assessment. Perhaps this is because suicide risk assessment serves to remind individuals of the negative consequences of past suicidal behavior, or their desire to avoid engaging in it again. Alternatively, since individuals in the control condition did not receive the suicide risk assessment interview, it is possible that individuals with a suicide attempt history did not uniquely benefit from the suicide risk assessment per se but rather from additional interview time. Future research should match the amount of time spent interviewing across conditions in order to fully assess for this potential confound. However, it is notable that the size of this effect was small, and that it was only marginally statistically significant. Thus, although evident in our results, it remains unclear whether the impact of suicide attempt history on implicit responses to suicide risk assessment is clinically- or tangibly-significant in a real-world context. More research is needed in order to clarify why past suicidal behavior moderates the effect of suicide risk assessment on implicit suicidality, while depression and alcohol use do not. More research is also needed to examine whether these effects generalize to clinical samples and if they bear real-world clinical significance.

Our results are in contrast to those of Nock et al. (2010), who showed that people who have attempted suicide held a significantly stronger implicit association between death/suicide and self than controls. However, there were substantive differences between the current study and the Nock et al. (2010) study in the number of participants with suicide attempts, how recent the attempt was, and the setting in which the data were collected. Nock et al. (2010) measured implicit associations using the S-IAT in people seeking treatment at a psychiatric emergency room. Additionally, 43 participants had made a suicide attempt within the past week. It is possible that patients presenting to the emergency department of a psychiatric facility after a suicide attempt may have significantly stronger implicit association between death/self than those who have attempted suicide sometime in the past. Although these differences may help to explain discrepancies between the present study findings and Nock et al.'s (2010), very few studies have utilized the S-IAT as an implicit measure of suicidality. Future research with the S-IAT should be conducted in a variety of settings to assess generalizability.

4.1. Strengths and limitations

The present study has several advantages for addressing the impact of screening programs. The randomized experimental design involved direct manipulation of the suicide risk assessment exposure. Also, the sample was large enough to detect small to medium main effects and interactions with medium to large effects between the experimental condition and depression symptoms, substance use problems, and suicide attempt history. However, the study also has significant limitations. Arguably the most significant limitation of our study is that only eight participants presented with a history of suicidal behavior including attempts and ideation. Although our analyses suggest that we had sufficient power to examine primary study research questions, such nuanced implicit effects may still be difficult to identify when subgroups who have a history of suicidality are so small. Thus, despite our adequate sample size, a potential lack of statistical power remains a possibility in the present study. Indeed, perhaps the reason that past research also does not show an iatrogenic effect of suicide risk assessment is not because it does not exist but rather because it requires even larger sample sizes to detect. In this case, our sample may still be underpowered to detect such effects, and more research in very large sample sizes would be needed to rule out this possibility. This may be especially true given that our power analyses did not account for the low base rate of suicidality, and therefore its results may be underestimated. Moreover, given that our sample was an undergraduate one, it is unclear whether these effects generalize to individuals with high severity suicide histories (i.e., histories of multiple attempts or particularly intense ideation). It is possible that suicidality severity moderates the impact of risk assessment on implicit suicidality, which was not assessed in this study given the low base rate of suicide attempts and the non-clinical nature of the sample. Future works should investigate the present study questions in even larger sample sizes with a higher prevalence of suicidal behavior. In addition, although our study was sufficiently powered to detect small to medium effects, future research on this topic may benefit from a Bayesian statistical approach, which is less impacted by smaller sample sizes. Furthermore, Bayesian approaches have been shown to provide evidence in favor of the null hypothesis, unlike standard null hypothesis significance testing, which focuses on rejecting the null hypothesis (Wetzels et al., 2011).

In addition, although assessing implicit suicidality presents a novel method of assessing suicide risk that somewhat circumvents self-reporting biases, it is also fraught with its own interpretive issues. As mentioned, criticism of the IAT abounds and suggests that, among other things, it may not measure implicit attitudes but rather can reflect the saliency of a stimuli, response or lack thereof to a control stimulus, deliberate faking, cognitive costs from task switching and/or priming, and the novelty/familiarity of stimuli (e.g., Brendl et al., 2001; Fiedler et al., 2010; Klauer & Mierke, 2005). Such controversy has yet to reach a clear consensus, and it is therefore possible that the results observed do not reflect a lack of effect of suicide risk assessment on implicit suicidality per se, but rather one of the many confounds that have been suggested by IAT critics (e.g., Brendl et al., 2001; Fiedler et al., 2010; Klauer & Mierke, 2005). In this case, the present study findings are not clear with respect to whether or not suicide risk assessment is iatrogenic or not. Conversely, research shows that the S-IAT does predict future suicide attempts in psychiatric samples (Nock et al., 2010), and is thus likely indicative of at least some kind of suicide risk. However, specifically what aspect of suicide risk it reflects remains a point of controversy, which is an important context within which the present findings are situated.

Moreover, given that our sample was predominantly Caucasian college students, it is unclear whether the results generalize to racially or ethnically diverse settings. Finally, we measured alcohol use as a risk factor, but past work indicated that substance use, rather than alcohol use specifically, moderated the impact of suicide risk assessment (Gould et al., 2005). Future researchers are thus advised to attempt to replicate these findings with substance use measurement.

4.1.1. Conclusions

Despite these limitations, there are several important conclusions and clinical implications that can be drawn from this work. Our findings collectively do not support that that screening for suicide risk is harmful in college populations with respect to distress or implicit

suicidality. Our preliminary findings also suggest that individuals with a history of suicide attempts may benefit from suicide risk assessment at the implicit level, but subsequent work with larger sample sizes and more individuals with a suicide attempt history is required to firmly draw such conclusions. Clinically, our findings support the use of suicide risk assessment in college-aged adults, who are particularly at high risk for suicide (Center for Disease Control & Prevention, 2019) and corroborate the work of several additional studies (Blades et al., 2018; Cha et al., 2016; Dazzi et al., 2014; Gould et al., 2005; Hom et al., 2018; Law et al., 2015; Mathias et al., 2012; Poindexter et al., 2019; Ross et al., 2016; Smith et al., 2010; Snyder et al., 2017), which suggest that research using intensive screening measures for suicidality do not increase suicide symptoms or risk. Based on our findings and extant literature, we therefore suggest that suicide risk assessment be emphasized in scientific research as well as in community-based mental health screening.

Contributors

The first author (Bender) designed the study, oversaw data collection, and wrote an initial first draft of the manuscript. The second (Fitzpatrick) and sixth authors (Selby) updated data analyses and reworked the initial manuscript draft. The third (Hartmann), fourth (Hames), and fifth (Bodell) authors were active participants in data collection, clinical assessment, and manuscript revision. The senior author (Joiner) supervised study design, data collection, and manuscript preparation. All authors provided substantive feedback and edits on manuscript drafts.

Role of the funding source

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical statement

I, Skye Fitzpatrick, confirm on behalf of all co-authors that the manuscript, “Does it hurt to ask? An analysis of iatrogenic risk during suicide risk assessment”:

- Presents original work that has not been published elsewhere.
- Is not under consideration for publication elsewhere.
- Reflects a work that all authors have been substantively involved in and agree to/accept responsibility for the manuscript and authorship order in its current form.

Declaration of Competing Interest

None.

Acknowledgements

None.

References

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: American Psychiatric Association.

Arendt, F., Till, B., & Niederkrotenthaler, T. (2016). Effects of suicide awareness material on implicit suicide cognition: A laboratory experiment. *Health Communications, 31*, 718–726. https://doi.org/10.1080/10410236.2014.993495.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the beck depression Inventory-II.* San Antonio, TX: Psychological Corporation.

Blades, C. A., Stritzke, W. G. K., Page, A. C., & Brown, J. D. (2018). The benefits and risks of asking research participants about suicide: A meta-analysis of the impact of exposure to suicide-related content. *Clinical Psychology Review, 64*, 1–12. https://doi.org/10.1016/j.cpr.2018.07.001.

Brendl, C. M., Markman, A. B., & Messner, C. (2001). How do indirect measures of evaluation work? Evaluating the inference of prejudice in the implicit association test. *Journal of Personality and Social Psychology, 81*, 760–773. https://doi.org/10.1037/0022-3514.81.5.760.

Center for Disease Control and Prevention (2019). *Ten leading causes of death and injury.* (Accessed 9 April 2019) https://www.cdc.gov/injury/wisqars/LeadingCauses.html.

Cha, C. B., Glenn, J. J., Deming, C. A., D'Angelo, E. J., Hooley, J. M., Teachman, B. A., ... Nock, M. K. (2016). Examining potential iatrogenic effects of viewing suicide and self-injury stimuli. *Psychological Assessment, 28*, 1510–1515. https://doi.org/10.1037/pas0000280.

Dazzi, T., Gribble, R., Wessely, S., & Fear, N. T. (2014). Does asking about suicide and related behaviours induce suicidal ideation? What is the evidence? *Psychological Medicine, 44*, 3361–3363. https://doi.org/10.1017/S0033291714001299.

Fiedler, K., Messner, C., Bluemke, M., Fiedler, K., Messner, C., & Bluemke, M. (2010). Unresolved problems with the “I”, the “A”, and the “T”: A logical and psychometric critique of the Implicit Association Test (IAT). *European Review of Social Psychology, 17*, 74–147. https://doi.org/10.1080/10463280600681248.

Finn, S. E., & Tonsager, M. E. (1992). Therapeutic effects of providing MMPI-2 test feedback to college students awaiting therapy. *Psychological Assessment, 4*, 278–287. https://doi.org/10.1037/1040-3590.4.3.278.

Florida State University (2019). *2018 fact sheet.* Retrieved fromhttps://www.ir.fsu.edu/facts.aspx.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*, 1464–1480. https://doi.org/10.1037/0022-3514.74.6.1464.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*, 197–216. https://doi.org/10.1037/0022-3514.85.2.197.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*, 17–41. https://doi.org/10.1037/a0015575.

Gould, M. S., Marocco, F. A., Kleinman, M., Thomas, J. G., Mostkoff, K., Cote, J., ... Davis, M. (2005). Evaluating iatrogenic risk of youth suicide screening programs: A randomized controlled trial. *Journal of the American Medical Association, 293*, 1635–1643. https://doi.org/10.1001/jama.293.13.1635.

Hom, M. A., Stanley, I. H., Rogers, M. L., Gallyer, A. J., Dougherty, S. P., Davis, L., ... Joiner, T. E. (2018). Investigating the iatrogenic effects of repeated suicidal ideation screening on suicidal and depression symptoms: A staggered sequential study. *Journal of Affective Disorders, 232*, 139–142. https://doi.org/10.1016/j.jad.2018.02.022.

Klauer, K. C., & Mierke, J. (2005). Task-set inertia, attitude accessibility, and compatibility-order effects: New evidence for a task-set switching account of the implicit association test effect. *Personality and Social Psychology Bulletin, 31*, 208–217. https://doi.org/10.1177/0146167204271416.

Law, M. K., Furr, R. M., Arnold, E. M., Mneimne, M., Jaquett, C., & Fleeson, W. (2015). Does assessing suicidality frequently and repeatedly cause harm? A randomized control study. *Psychological Assessment, 27*, 1171–1181. https://doi.org/10.1037/pas0000118.

Mathias, C. W., Michael Furr, R., Sheftall, A. H., Hill-Kapturczak, N., Crum, P., & Dougherty, D. M. (2012). What's the harm in asking about suicidal ideation? *Suicide and Life-Threatening Behavior, 42*, 341–351. https://doi.org/10.1111/j.1943-278X.2012.0095.x.

McNair, D. M., & Droppleman, L. F. (1992). *POMS manual: Profile of mood states.* San Diego, CA: Educational and Industrial Testing.

Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-injurious thoughts and behavior interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment, 19*, 309–317. https://doi.org/10.1037/1040-3590.19.3.309.

Nock, M. K., & Banaji, M. R. (2007a). Assessment of self-injurious thoughts using a behavioral test. *The American Journal of Psychiatry, 164*, 820–823. https://doi.org/10.1176/ajp.2007.164.5.820.

Nock, M. K., & Banaji, M. R. (2007b). Prediction of suicide ideation and attempts among adolescents using a brief performance based test. *Journal of Consulting and Clinical Psychology, 75*, 707–715. https://doi.org/10.1037/0022-006X.75.5.707.

Nock, M. K., Park, J. M., Finn, C. T., Deliberto, T. L., Dour, H. J., & Banajai, M. R. (2010). Measuring the suicidal mind: Implicit cognition predicts suicidal behavior. *Psychological Science, 21*, 511–517. https://doi.org/10.1177/0956797610364762.

Overholser, J. C., Hemstreet, A. H., Spirito, A., & Vyse, A. (1989). Suicide awareness programs in the schools: Effects of gender and personal experience. *Journal of the American Academy of Child and Adolescent Psychiatry, 28*, 925–930. https://doi.org/10.1097/00004583-198911000-00018.

Poindexter, E. K., Nazem, S., Barnes, S. M., Hostetter, T. A., & Smith, P. N. (2019). Veteran participation in intensive suicide research protocols: No evidence of iatrogenic effects. *Suicide and Life-Threatening Behavior, 49*, 303–309. https://doi.org/10.1111/sltb.12444.

Pompili, M., Murri, B. M., Patti, S., Innamorati, M., Lester, D., Girardi, P., ... Amore, M. (2016). The communication of suicidal itentions: A meta-analysis. *Psychological Medicne, 46*, 2239–2253. https://doi.org/10.1017/S0033291716000696.

Ross, A. M., White, E., Powell, D., Nelson, S., Horowitz, L., & Wharff, E. (2016). To ask or not to ask? Opinions of pediatric medical inpatients about suicide risk screening in the hospital. *Journal of Pediatrics, 170*, 295–300. https://doi.org/10.1016/j.jpeds.2015.11.052.

Selzer, M. L., Vinokur, A., & van Rooijen, L. A. (1975). A self–administered Short Michigan Alcoholism Screening Test (SMAST). *Journal of Studies on Alcohol and Drugs, 36*, 117–126. https://doi.org/10.15288/jsa.1975.36.117.

Shaffer, D., Vieland, V., Garland, A., Rojas, M., Underwood, M. M., & Busner, C. (1990). Adolescent suicide attempters: Response to suicide prevention programs. *Journal of*

the American Medical Association, 264, 3151–3155. https://doi.org/10.1001/jama.1990.03450240053039.

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavas, J., Weiller, E., ... Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (MINI): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry, 59*, 22–23.

Shields, A. L., Howell, R. T., Potter, J. S., & Weiss, R. D. (2007). The Michigan Alcoholism Screening Test and its shortened form: A meta-analytic inquiry into score reliability. *Substance Use and Misuse, 42*, 1783–1800. https://doi.org/10.1080/10826080701212295.

Smith, P., Poindexter, E., & Cukrowicz, K. (2010). The effect of participating in suicide research: Does participating in a research protocol on suicide and psychiatric symptoms increase suicide ideation and attempts? *Suicide and Life Threatening Behavior, 40*, 535–543. https://doi.org/10.1521/suli.2010.40.6.535.

Snyder, D. J., Ballard, E. D., Stanley, I. H., Ludi, E., Kohn-Godbout, J., Pao, M., ... Horowitz, L. M. (2017). Patient opinions about screening for suicide risk in the adult medical inpatient unit. *Journal of Behavioral Health Services Research, 44*, 364–372. https://doi.org/10.1007/s11414-016-9498-7.

Sprinkle, S. D., Lurie, D., Insko, S. L., Atkinson, G., Jones, G. L., Logan, A. R., ... Bissada, N. N. (2002). Criterion validity, severity cut scores, and test-retest reliability of the beck depression inventory-II in a university counseling center sample. *Journal of Counseling Psychology, 49*, 381–385. https://doi.org/10.1037/0022-0167.49.3.381.

Vieland, V., Whittle, B., Garland, A., & Hicks, R. (1991). The impact of curriculum-based suicide prevention programs for teenagers: An 18-month follow up. *Journal of the American Academy of Child and Adolescent Psychiatry, 30*, 811–815. https://doi.org/10.1016/S0890-8567(10)80021-8.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063.

Wetzels, R., Matzke, D., Lee, M. D., Rouder, J., Iverson, G., & Wagenmakers, E. J. (2011). Statistical evidence in experimental psychology: An empirical comparison using 855 t tests. *Perspectives in Psychological Science, 6*, 291–298. https://doi.org/10.1177/1745691611406923.