

## Development and Initial Validation of the Self-Harm Behavior Questionnaire

Peter M. Gutierrez

*Department of Psychology  
Northern Illinois University*

Augustine Osman, Francisco X. Barrios,  
and Beverly A. Kopper

*Department of Psychology  
University of Northern Iowa*

Evaluation of suicide-related behaviors and thoughts about suicide with a newly developed self-report instrument is described. The Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, 1998) generates detailed clinical information from an easy to administer and score self-report form. A sample of 342 participants were drawn from university undergraduate students enrolled in various psychology courses. Participants were then divided into a severe suicidal ideation group ( $n = 20$ ) and a nonsuicidal control group ( $n = 20$ ) to conduct subgroup and criterion-related validity analyses. Preliminary analyses indicate this new questionnaire is both valid and reliable when used with young adults drawn from a nonclinical population. The questionnaire should be of use to both clinicians and researchers due to the flexibility of the data generated.

Numerous tools are available to the researcher and clinician in need of gathering information about an individual's likelihood of engaging in intentional self-harmful behavior. Many of these tools are self-report measures and questionnaires that are popular because they are relatively easy and inexpensive to administer and do not require the level of specialized training necessary to conduct a standard clinical interview (Range & Knott, 1997). Unfortunately, evidence of reliability and validity varies across scales and some appear better suited to research purposes because of a lack of evidence of clinical utility. Most also assess only specific types of suicide

risk such as ideation (e.g., Reynolds, 1991), probability of suicide in the future (e.g., Cull & Gill, 1982), or past suicidal behavior (e.g., Linehan & Nielsen, 1981).

The purpose of our study was to demonstrate the psychometric qualities of a newly developed self-harm questionnaire with the potential for both research and clinical applications. The Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, 1998) was initially developed as a compromise between the breadth and depth of information gathered during an open-ended clinical interview and the efficiency of a self-report questionnaire (Gutierrez, King, & Ghazziudin, 1996). An extensive review of the suicide risk assessment literature resulted in the development of a semistructured interview for adolescents that tapped suicidal ideation, risk taking and nonsuicidal self-harm, suicide threats, thoughts about suicide, and behaviors specifically intended as attempts at suicide. Although proving useful in clinical (Gutierrez et al., 1996) and nonclinical (Gutierrez, 1999) adolescent suicide risk research, this relatively brief interview still required individual administration by a trained interviewer. A second limitation was the method of translating participant responses into a quantitative variable. The Spectrum of Suicidal Behavior (SSB; Pfeffer, Conte, & Plutchik, 1979), a 5-point clinician rating scale of an individual's lifetime history of suicidality was chosen for this purpose. Unfortunately, this approach distilled potentially rich interview data into a single numeric variable.

To increase the efficiency of using the SHBQ, Hagstrom and Gutierrez (1998) translated the interview into a self-report questionnaire. College students were given a form with the original question stems, space for writing brief responses, and printed instructions for proceeding through the questionnaire based on their answers to previous questions. This modification allowed for group administration, thus greatly reducing the cost of using the questionnaire. However, the researchers continued to utilize the SSB as the means of quantifying the resulting data.

Several studies (e.g., Joiner, Rudd, & Rajab, 1999; Klimes-Dougan, 1998; Malone, Szanto, Corbitt, & Mann, 1995) have suggested that better data on sensitive topics such as suicide risk are generated by self-report than interview. It is generally believed that people are more comfortable admitting to thoughts and behaviors related to suicide when they are asked to circle a response or write a brief explanation instead of providing a verbal report. In research settings, it is also easier to assure participants of the confidentiality of self-reports. Free responses to written question stems reduces the risk of data being influenced by participants' interpersonal reactions to interviewers.

We therefore sought to determine the feasibility of maintaining the self-report nature of the SHBQ and developing a comprehensive coding system that would take full advantage of the breadth of information generated. The nomenclature proposed by O'Carroll et al. (1996) was adopted to generate operational definitions of the behaviors of interest. The coding system translates both categorical and free-response variables into numerical values weighted by seriousness of the

behavior reported. The SHBQ is fully described following; copies of the questionnaire and the scoring system are available from us as the authors of this article.

## METHOD

### Participants

Participants (140 men and 202 women) were university undergraduate students enrolled in various psychology courses. The average age of the participants was 19.48 years ( $SD = 1.52$ ). Men (mean age = 19.66 years,  $SD = 1.59$ ) and women (mean age = 19.35 years,  $SD = 1.47$ ) did not differ with regards to their age,  $t(340) = 1.83$ ,  $p < .07$ . Approximately 98.2% of the participants were single, never married; 1.5% were married; and 0.3% were divorced. The ethnicity of the sample was 95.9% White, 0.6% African American, 2.3% Asian American, and 1.2% were from other racial or ethnic groups.

### Measures and Procedure

All participants provided written consent before completing a brief demographic questionnaire and the following self-report instruments.

**SHBQ.** The SHBQ (Gutierrez, 1998) is divided into four distinct sections. Part A asks about intentional self-harm that the individual did not identify as suicidal in nature, Part B asks about suicide attempts, Part C asks about suicide threats, and Part D about suicide ideation. Within each section follow-up questions were designed to determine the specific type of behavior, thought, or verbalization being reported. As relevant, information on intent, lethality, and outcome is also gathered. For example, Part A begins with the question "Have you ever hurt yourself on purpose? (e.g., scratched yourself with finger nails or sharp object)." Participants who answer in the affirmative move on to indicate how many times they have engaged in the behavior, their ages at the first and most recent incident, whether anyone else is aware of the behavior, and if the behavior resulted in injury requiring medical attention. The other sections are similarly structured to provide adequate data from which to code the seriousness of the behavior in a meaningful way. We designed the coding system so that a single numerical value is derived to represent each item in carrying out statistical analyses. This approach was taken to accommodate the combined use of questions requiring a single response and those with one or more subitems and minimizes the error of using items with different measurement units or scales in statistical analyses (Gorsuch, 1991).

Grouping questions into four sections on the SHBQ serves the purpose of assessing the full range of nonlethal suicide-related behavior. Given the consistent finding in the literature that the best predictor of future suicidal behavior is a his-

tory of past behavior, the intention is to not overlook any possible useful predictive data. It seems reasonable to assume that very low lethality behaviors and vague thoughts about self-harm precede more serious thoughts and behaviors.

The raters for the SHBQ were advanced undergraduates enrolled in a research experience course. All raters received extensive instructions from the second author in scoring the SHBQ items. The training included discussions and practice in scoring the SHBQ items. Two of the raters were assigned as primary raters (one man and one woman), and two were assigned as reliability raters during the data coding period. The primary raters coded all the protocols. The reliability raters randomly selected and recoded 171 (50%) of the protocols. We used the subscale scores to compute percentage agreement scores between the primary and reliability raters. Overall, the percentage rater agreements ranged from 95% to 100%.

**SBQ-R.** The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) is a brief self-report measure of suicidal behavior and past attempts. These four items, unlike the original 34 SBQ items (Linehan & Nielsen, 1981), have been used in research with clinical and nonclinical populations (Cole, 1989; Cotton, Peters, & Range, 1995; Osman et al., 1996). The SBQ-R Item 1 (“Have you ever thought about or attempted to kill yourself?”) is designed to assess past suicide ideation and suicide attempts. The SBQ-R Item 2 (“How often have you thought about killing yourself in the past year?”) taps the frequency of past suicidal ideation. The SBQ-R Item 3 (“Have you ever told someone that you are going to commit suicide, or that you might do it?”) evaluates the threat of suicidal behavior. The SBQ-R Item 4 (“How likely is it that you will commit suicide someday?”) assesses self-reported suicide likelihood. Although the four domains tapped by the SBQ-R do not completely overlap with the SHBQ, there is enough similarity to make it a good choice for examining convergent validity. Results of the receiver operating characteristic curve analyses have shown that both the SBQ-R Item 1 and total scores are valid criterion measures of suicidal ideation and behavior (see Osman et al., 2000; Gutierrez, Osman, Kopper, Barrios, & Bagge, 2000). The corrected item-total correlations (range = .62 to .77), as well as the alpha estimate ( $\alpha = .83$ ) for the SBQ-R in our sample were comparable to those reported by Osman et al. (2001). Consistent with previous investigations with the SBQ-R, we used scores on Item 1 to define subgroups of suicide ideation and nonsuicidal participants. Also, we used the SBQ-R total score to examine evidence of convergent validity for the SHBQ.

**ASIQ.** The frequency of suicidal thoughts or ideation was measured using the 25-item Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991). In the administration of this instrument, respondents are generally asked to rate how frequently they have experienced each thought using a 7-point scale ranging from 0 (*I*

*never had this thought*) to 6 (*almost every day*). The ASIQ total score is obtained by summing all responses from the items; the total score ranges from 0 to 150. This widely used instrument possesses satisfactory internal consistency reliability, test–retest reliability, good discriminant validity, and concurrent validity in clinical and nonclinical samples (Carris, Sheeber, & Howe, 1998; Osman et al., 1999; Reynolds, 1991; Velting, 1999). In this sample, the alpha estimate was high (.98; corrected item-total correlations range = .67 to .88). Reynolds (1991) reported that individuals scoring above the clinical cutoff on the ASIQ are at risk of engaging in suicide-related behavior and warrant follow-up risk assessment. Therefore, the ASIQ is a useful risk screening tool. We used the total *T* score as a measure of frequency of suicide ideation to evaluate validity estimates for the SHBQ.

**SPS.** We included the Suicide Probability Scale (SPS; Cull & Gill, 1982) as a measure of suicide risk or probability in our sample. Each of the 34 SPS items is rated on a 4-point Likert-type scale ranging from *none or a little of the time* to *most or all of the time*. This inventory covers four dimensions of the suicide risk construct: hopelessness (12 items), suicide ideation (8 items), negative self-evaluation (9 items), and hostility (7 items). The SPS has excellent internal consistency reliability and shows strong relations with other self-report measures of suicidal behavior and scores on several measures of general psychopathology (Bagge & Osman, 1998; Gutierrez et al., 2000; Larzelere, Smith, Batenhorst, & Kelly, 1996; Rogers, Ustad, & Salekin, 1998). In our study, Cronbach's coefficient alpha estimate was excellent (.92). We used the SPS total *T* score to investigate evidence for the convergent and incremental validity for the SHBQ. For example, we expected scores on the SHBQ to predict scores on the SPS, a commonly used measure of suicidal behavior.

**BDI-II.** The Beck Depression Inventory–II (BDI–II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure of depression severity. Each item is rated on a 4-point scale ranging from 0 (*absence of symptom*) to 3 (*severe symptom*). The BDI–II total score (range = 0 to 63) is derived by summing the highest rating from each item. Unlike the amended BDI–IA (Beck & Steer, 1993), respondents are asked to endorse each BDI–II item as experienced “over the past two weeks, including today.” Since its recent revision, several studies have examined the factor structure and psychometric properties of the BDI–II in clinical and nonclinical populations (Dozois, Dobson, & Ahnberg, 1998; Osman et al., 1997; Steer & Clark, 1997). The alpha estimate for the BDI–II in our sample was high (.93; corrected item-total correlations range = .41 to .71). Because depression severity has been strongly associated with suicidal ideation and behavior in the suicide literature, we predicted that scores on the SHBQ would be as useful as the BDI–II total scores in predicting suicide risk behavior.

*Severe suicidal ideation and nonsuicidal control subgroups.* To address the issues of known groups discriminant validity as well as criterion-related validity for scores on the SHBQ (Gutierrez, 1998), we developed two homogeneous subgroups of participants using scores on the SBQ-R and the ASIQ. As noted previously, several investigations have used the SBQ-R Item 1 to define subgroups of suicidal and nonsuicidal participants. Also, Osman et al. (2001) showed that a total score of 7 or higher on the SBQ-R yields acceptable sensitivity (92.5%) and specificity (90.6%) estimates in clinical and nonclinical samples. Regarding scores on the ASIQ, the manual suggests that *T* scores > 65 (for college-age students) are considered to be in the severe clinical range for suicidal ideation. To reduce the likelihood of false positive classifications in this study, the criteria for inclusion in the severe suicidal ideation subgroup included an ASIQ *T* score > 65 and a total SBQ-R score of 7 or higher. The appropriate control subgroup (nonsuicidal ideation) was defined as an ASIQ *T* score < 50 (average score) and a score of 1 (*no serious thought or past suicide attempts*) on the SBQ-R Item 1. Using these criteria, 20 (5.8%) participants were assigned to the severe suicidal ideation subgroup, and 144 (42.1%) participants were initially assigned to the nonsuicidal ideation control subgroup. Given the substantial differences in sample sizes, we selected 20 controls that matched to the severe suicidal ideation subgroup for age ( $M = 19.5$ ,  $SD = 1.38$ ) and sex (14 men and 26 women) in the subgroup and criterion-related validity analyses. Participants ( $n = 178$ , 52%) who did not meet the study's criteria for inclusion in either group were also excluded from these analyses.

The decision to examine the responses of participants with severe suicidal ideation on this newly developed instrument was based on previous investigations (e.g., Cole, 1989; Cotton et al., 1995) that have consistently identified this subgroup to be at greater risk for a range of other suicide-related behaviors and psychopathology.

## RESULTS

### Exploratory Factor Analysis

The SHBQ was designed to tap four theoretically distinct aspects of suicide-related behaviors. To test the a priori hypothesis that four factors are being assessed, we used principal axes factor analyses with varimax and promax rotations. The classical roots > 1 and the minimum average partial (Velicer, 1976; Gorsuch, 1991) suggested that four factors would adequately explain the covariation among the SHBQ items. In addition, results of the preliminary analyses from the SYSTAT 10.0 program revealed that the Cattell's scree test also suggested the presence of four factors. Only items with absolute values of .36 or higher on a single factor were retained on a primary factor. The eigenvalues of the first five factors before rotation

TABLE 1  
Promax Factor Pattern for the Scored Self-Harm Behavior Questionnaire Items

Item	Factor			
	1	2	3	4
Factor 1: Past Suicide Attempts				
1. Method	<u>0.98</u>	0.02	-0.06	0.02
2. Frequency	<u>0.87</u>	0.00	0.06	-0.04
3. Risk	<u>0.98</u>	-0.01	0.02	-0.02
4. Medical treatment	<u>0.99</u>	0.00	-0.07	0.03
5. Related event	<u>0.78</u>	0.03	0.10	-0.03
6. Intent	<u>0.85</u>	-0.02	0.03	0.02
Factor 2: Self-Harm				
7. Frequency	-0.03	<u>0.90</u>	0.02	0.03
8. History	-0.01	<u>0.90</u>	0.01	-0.04
9. Risk	-0.01	<u>0.94</u>	0.04	-0.03
10. Disclosure	0.01	<u>0.92</u>	-0.03	0.02
11. Treatment	0.03	<u>0.98</u>	-0.02	0.01
Factor 3: Suicide Threat				
12. Method	0.02	-0.02	<u>0.84</u>	0.02
13. Frequency	0.02	0.00	<u>0.90</u>	0.01
14. History	0.04	0.02	<u>0.91</u>	0.00
15. Risk	0.00	0.02	<u>0.95</u>	0.01
16. Related event	-0.04	-0.01	<u>0.93</u>	0.01
17. Intent	-0.06	-0.02	<u>0.70</u>	0.04
Factor 4: Suicide Ideation				
18. Method	0.05	0.10	0.13	<u>0.56</u>
19. Related event	0.03	-0.01	-0.01	<u>0.79</u>
20. Plan	-0.01	-0.01	0.10	<u>0.90</u>
21. Reaction of others	-0.07	0.00	-0.08	<u>0.90</u>
22. Preparation	0.03	-0.02	0.01	<u>0.97</u>
Total Factor 1	1.00			
Total Factor 2	0.08	1.00		
Total Factor 3	0.38	0.27	1.00	
Total Factor 4	0.24	0.30	0.49	1.00

Note. Underlined values = significant factor loadings.

were 8.71, 4.40, 2.99, 2.00, and 0.44; the eigenvalues after rotation were 1.51, 2.03, 1.96, 1.42, and 0.72.

We conducted the final analyses using the UniMult program (Gorsuch, 1991) because of its ability to handle measures with differential scaling of items. The promax rotation in this program also allows for correlations among the factors. The results of the exploratory factor analysis are presented in Table 1. These results were comparable to the oblique rotation in the preliminary analyses with the SYSTAT 10.0 program. The four factors explained 80.1% of the variance in the sample data, offering strong support for our hypothesis. Items tapping times respondents hurt themselves

badly on purpose or tried to kill themselves loaded on the first factor; this factor (23% of the variance) was named *Past Suicide Attempts*. Items designed to assess things respondents may have actually done to themselves on purpose loaded on the second factor; this factor (20% of the variance) was named *Self-Harm*. Items tapping times respondents threatened to hurt themselves badly or tried to kill themselves loaded .70 and higher on the third factor. We named this factor (22% of the variance) *Suicide Threat*. Items designed to evaluate times respondents talked or thought seriously about attempting suicide loaded high on the fourth factor. We named this factor (16% of the variance) *Suicide Ideation*.

Results of the intercorrelations among the four SHBQ factors are also presented in Table 1 (lower portion). The correlation between the Past Suicide Attempts and Self-Harm factors was low ( $r = .08$ ). Overall, the correlations among the SHBQ factors were from low to moderate; the highest correlation between the Suicide Ideation and Suicide Threat factors was moderate ( $r = .49, p < .01$ ). The low to moderate correlations among the SHBQ factors strongly suggest that these factors are not redundant.

### Internal Consistency

Having supported the factor structure of the SHBQ, we next tested the hypothesis that each would be internally consistent. Therefore, we computed alpha coefficient estimates for the SHBQ total and factor scale scores. The alpha estimates were high for each scale: Past Suicide Attempts,  $\alpha = .96$  (corrected item-total correlations range = .79 to .97); Self-Harm,  $\alpha = .95$  (corrected item-total correlations range = .88 to .95); Suicide Threat,  $\alpha = .94$  (corrected item-total correlations range = .68 to .91), and Suicide Ideation,  $\alpha = .89$  (corrected item-total correlations range = .65 to .90).

### Gender Differences on the SHBQ

Significantly more male college students commit suicide than female college students, a finding that is consistent in the general population (Silverman, Meyer, Sloane, Raffel, & Pratt, 1997). A second consistent finding is that women engage in more nonlethal suicide-related behavior than men (Canetto, 1997). We therefore expected the female participants in this sample to score higher on the SHBQ subscale and total score than male participants. For each factor, the weighted scores were summed to derive a scale score for the factor. We conducted a one-way multivariate analysis of variance (MANOVA) with the four SHBQ scale scores as the primary dependent variables. The overall MANOVA was significant; Hotelling's  $T^2 = .04$ ; Exact  $F(4, 337) = 3.44, p < .01$ . Examination of individual univariate effects showed that, contrary to our prediction, significant differences were obtained on only three of the four scale scores. Specifically, one-way ANOVAs showed that women obtained significantly higher scores than did men on



the Past Suicide Attempts,  $F(1, 340) = 3.86, p < .05, d = .22$ ; the Suicide Threat,  $F(1, 340) = 4.57, p < .03, d = .23$ ; and the Suicide Ideation,  $F(1, 340) = 3.96, p < .05, d = .22$  scale scores. The effect size estimates, however, suggested that these differences were small. Men and women did not differ significantly on the Self-Harm scale scores,  $F(1, 340) = 2.76, p < .10, d = .18$ .

Additionally, univariate analyses revealed that men ( $M = 5.24, SD = 8.26$ ) and women ( $M = 6.74, SD = 10.68$ ) did not differ significantly in their responses on the SHBQ total score,  $F(1, 340) = 1.95, p = .16, d = .15$ , as previously predicted.

### Subgroup Differences on the SHBQ

It was hypothesized that the SHBQ would accurately classify respondents into suicide-related behavior group categories. To examine the ability of the SHBQ scales to differentiate between the severe suicide ideation and nonsuicidal subgroups, we carried out a one-way MANOVA using the subgroups as the independent variable. First, we conducted a  $t$  test for the subgroups using scores on the SPS to establish the validity of the distinction between these subgroups. As expected, the severe suicide ideation subgroup ( $M = 74.9, SD = 9.52$ ) reported higher suicide risk scores than did the control ( $M = 47.35, SD = 6.52$ ) subgroup,  $t(38) = -.10.68, p < .001, d = 3.38$ . Next we examined subgroup differences on the SHBQ subscales using a one-way MANOVA. The MANOVA was highly significant, Hotelling's  $T^2 = 3.88$ , Exact  $F(4, 35) = 33.91, p < .001$ . The  $F$  ratios for the four scales showed statistical differences between the groups. Follow-up one-way ANOVAs, using the Bonferroni correction (.05/4) procedure, showed that consistent with the prediction the severe suicidal ideation subgroup obtained significantly higher scores than the nonsuicidal control subgroup on all four SHBQ scale scores, all  $ps < .01$ . Because of the small sample sizes, the analyses were repeated using the StatXact Version 3.1 program. The exact  $p$ -level values for all the comparisons were similar to the traditional  $p$ -level values.

In addition, to assess subgroup differences on the SHBQ total score we conducted an ANOVA using the severe suicidal ideation and nonsuicidal control groups as the independent factor. As predicted, subgroup differences were obtained on the SHBQ total score,  $F(1, 38) = 69.03, p < .001$ ; the severe suicidal ideation subgroup obtained a higher SHBQ total score than the controls. The means and standard deviations for the SHBQ total and scales by subgroup are presented in Table 2.

### Relationships With Suicide-Related Measures: Convergent Validity

The protocol measures in addition to the SHBQ were chosen for their demonstrated ability to assess various components of suicide-related behavior. To test whether

TABLE 2  
Means and Standard Deviations for the Nonsuicidal and Severe Suicidal Groups  
on the Self-Harm Behavior Questionnaire

<i>Ideation Scale</i>	<i>Groups</i>			
	<i>Nonsuicidal Subgroup<sup>a</sup></i>		<i>Severe Suicidal Subgroup<sup>a</sup></i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Self-Harm behavior total	0.65	2.16	28.50	14.83
Self-Harm	0.45	2.01	4.85	5.62
Past Suicide Attempts	0.00	0.00	5.90	7.63
Suicide Threat	0.00	0.00	9.95	6.19
Suicide Ideation	0.20	0.89	7.80	2.80

<sup>a</sup>*n* = 20.

the SHBQ total and scale scores were correlated with scores on existing measures of suicidal behavior (the ASIQ, SPS, and the SBQ-R), zero-order correlational analyses were examined (convergent validity). We expected moderate and significant correlations between scores on the SHBQ and each validity measure. Results of the zero-order correlations are given in Table 3. Consistent with our prediction, evidence of convergent validity was shown by the moderate and significant correlations between the four SHBQ scale scores with scores on the ASIQ (range = .34 to .58), the SPS (range = .30 to .47), and the SBQ-R (range = .27 to .67). Scores on the SHBQ total scale also correlated moderately and significantly with scores on the SPS (.57), but highly with scores on both the ASIQ (.70) and SBQ-R (.77).

In addition, we conducted partial correlational analyses to examine the unique relations between the SHBQ scores and scores on the validity measures (construct validity). The results revealed that the SHBQ total scores remained correlated moderately and significantly with scores on the ASIQ (.51), the SPS (.23), and the SBQ-R (.63) after partialling out the BDI-II total scores. We observed similar patterns of correlations between the ASIQ and scores on each of the four SHBQ scale scores after controlling for scores on the BDI-II. However, the relations between (a) the Past Suicide Attempts and the SPS ( $r = .03, p = .58$ ) scale scores and (b) the Suicide Threat and the SPS ( $r = .09, p = .11$ ) scale scores were no longer significant after we partialled out the BDI-II total scores. Overall, the relations between these two SHBQ scales (Past Suicide Attempts and Suicide Threat) and the risk for suicide-related behavior (SPS scores) were shown only by disturbances in mood in this nonclinical sample.

### SHBQ Scale Scores As Predictors of Scores on the SPS

First, to evaluate the ability of the SHBQ scale scores to predict scores on the SPS, we conducted a simultaneous multiple regression analysis. Specifically, all four scale

scores were entered simultaneously in the prediction of the SPS score. Because the criterion variable is generally used as a measure of suicidal ideation, we predicted that scores on the SHBQ Suicide Ideation scale would make the strongest contribution to the prediction of scores on the SPS. Results of the regression evaluation showed that two of the four scale scores contributed to the prediction of scores on the SPS,  $R^2 = .70$ ,  $F(4, 35) = 20.11$ ,  $p < .001$ . Examination of the standardized coefficients revealed that both scale scores were positive and significantly related to scores on the SPS: Suicide Threat (coefficient = .34,  $t = 2.12$ ,  $p < .04$ ) and Suicide Ideation (coefficient = .51),  $t = 3.22$ ,  $p < .003$ . Our hypothesis was supported in that the SHBQ Suicide Ideation made the greater contribution to the prediction equation.

Second, we conducted a hierarchical multiple regression analysis to assess the incremental validity of the four scale scores in predicting scores on the SPS. Again, we expected that scores on the SHBQ Suicide Ideation scale should predict the SPS *T* score over and beyond the BDI-II scores. The BDI-II score was entered in the first block; the four scale scores were entered in the second block. Results of the analysis revealed that the BDI-II score was significantly associated with the SPS score in the first block, adjusted  $R^2 = .82$ ,  $F(1, 38) = 175.63$ ,  $p < .001$ . Consistent with our prediction, only the Suicide Ideation (coefficient = .27),  $t = 2.26$ ,  $p < .03$ , scale scores contributed additional significant amount of the variance in SPS *T* score over and above the BDI-II score. The adjusted  $R^2$  increased to .83 after the SHBQ Suicide Ideation scores had entered the equation.

TABLE 3  
Correlation (Partial) Coefficients Between the SHBQ and the Other Study Measures

Measures	Combined Sample		SHBQ Scales				Total Score
	M	SD	PSA	SH	ST	SI	
ASIQ	49.52	11.85	.45** (.30**)	.34** (.24**)	.58** (.37**)	.58* (.38**)	.70** (.51**)
SPS	52.86	10.96	.30** (.03)	.35** (.25**)	.44** (.09)	.48** (.17**)	.57** (.23**)
SBQ-R	4.61	2.21	.57** (.47**)	.27** (.14**)	.67** (.52**)	.66** (.53**)	.77** (.63**)
BDI-II	9.58	8.77	.36**	.26**	.50**	.49**	.58**

Note. Numbers within parentheses are partial correlation coefficients (controlling for the BDI-II total score). SHBQ = Self-Harm Behavior Questionnaire; PSA = Past Suicide Attempt; SH = Self-Harm; ST = Suicide Threat; SI = Suicide Ideation; ASIQ = Adult Suicidal Ideation Questionnaire; SPS = Suicide Probability Scale; SBQ-R = Suicide Behaviors Questionnaire-R ; BDI-II = Beck Depression Inventory-II.

\* $p < .05$  (Bonferroni's  $\alpha$ ). \*\* $p < .01$  (Bonferroni's  $\alpha$ ).

## DISCUSSION

Based on this initial study using the SHBQ as a primarily free-response, self-report measure of thoughts and behaviors related to suicide, it appears to be both valid and reliable. The results of the factor analysis support the four distinct content areas among which questions are divided on the SHBQ. The strength of the factor loadings and relatively weak intercorrelations among the four factors indicates that respondents clearly recognize that they are giving information in distinct content areas. Total and factor score alpha estimates ranging from .89 to .96 indicate that the SHBQ is highly internally consistent. Additionally, these results support current theory regarding the multi-dimensional nature of suicide-related behaviors and thoughts (Lewinsohn, Rohde, & Seeley, 1996; Silverman et al., 1997).

The SHBQ demonstrated promising convergent validity as evidenced by moderate to strong correlations with widely validated measures of suicidality. Demonstrating convergent validity between newly developed and existing measures requires some degree of subjective evaluation. If very weak correlations are found, the implication is that the measures are not assessing the same construct. High correlations indicate that a great deal of overlap between the scales exists. However, that result would also suggest that the two scales are redundant, requiring evidence of unique benefits of the new scale to justify its use over the other. The range of correlations observed between the SHBQ and the chosen validity measures is fairly broad and could therefore draw both of these criticisms. We interpret these results as evidence that the SHBQ validly assesses risk of suicide-related behaviors in a substantively different fashion than existing self-report measures. Although controlling for the effects of depressive symptoms (i.e., partialling out the BDI-II scores) reduced the strength of the observed relations, most remained significant. This finding is taken as evidence that the SHBQ is not simply measuring negative affect but is instead getting at unique components of suicide-related behaviors.

Reliability and validity are both necessary for new scales, but many valid and reliable tools exist. We therefore sought to show that the SHBQ is either more useful than other scales or that it provides particularly useful information not available from alternative sources. Results indicate that participants were accurately separated by their scores on the SHBQ into two groups based on level of current and past suicide-related behaviors. More specifically, the severe suicidal ideation group scored significantly higher on all four SHBQ subscales and the total score than the nonsuicidal participants. It should be noted that the comparison groups were formed based on participants' scoring above or below statistically derived criterion scores on other self-report measures. These findings therefore beg the question of why the SHBQ should be used in favor of other widely used and psychometrically sound instruments. It appears that the SHBQ comprehensively assesses suicide risk based on current thoughts about suicide and the combined ef-

fects of factors such as history of self-harm and prior threats or plans to commit suicide. Joiner, Walker, Rudd, and Jobes (1999) recently argued that the two keys to effectively assessing suicide risk are information on the number of prior attempts and current suicidal symptoms. They also stated that current ideation causes the greatest concern when the individual has formulated a plan for killing themselves and taken steps to prepare for that plan. By assessing all of these areas with both forced choice and free response question formats, the SHBQ provides a more complete picture of suicide risk than any of the other self-report measures used in this study. These arguments must all be understood in the context of the inherent difficulty of predicting low likelihood behaviors. Silverman et al. (1997) estimated completed suicide rates among university students to be 7.5 per 100,000 population. To place that figure in context, 261 university students enrolled in Big 10 schools committed suicide between 1980 and 1990. No assessment can be sensitive enough to predict such a low occurrence behavior. However, one can determine that risk factors exist for an individual, provide appropriate interventions, and reduce the occurrence even further (Gutierrez et al., 2000).

Taken together, the evidence indicates that the SHBQ is at least as useful as several existing measures when used in combination. The primary benefit of this newly developed questionnaire is the flexibility of how the data can be used. Researchers looking for an easy to administer and comprehensive measure of suicide-related behaviors could choose to utilize the total and scale scores in a variety of ways. Rather than asking participants to complete separate measures of ideation and behaviors, all the necessary data can be generated with this one questionnaire. In addition to the empirically derived scores, researchers have access to the participants' free responses, which can provide context for interpretation of data. A factor analytic study conducted by Joiner, Rudd, and Rajab (1997) determined from self-report information that individuals who have made clear plans to commit suicide and taken some preparatory steps, were at more risk than those who had thought seriously about suicide and expressed a wish to die. Individuals endorsing the current thoughts about suicide item on the SHBQ are also asked to indicate the extent of planning and preparation in which they have engaged. Also in line with Joiner et al.'s (1997) findings, the SHBQ allows participants to provide a complete history of the number and seriousness of their past suicide attempts. There is a significant difference between an individual who attempted suicide once by scratching their wrist and someone who has made four attempts in the past year by ingesting a large combination of prescription medications. Both types of attempt histories are clearly identifiable with the SHBQ.

The SHBQ may also be appealing to clinicians who want to have a way of measuring suicidality in a standardized way. Once the questionnaire is scored, the client's responses could help guide the course of treatment. Instead of knowing that a client has thought about suicide within a specified period of time (e.g., ASIQ re-

sponses), the clinician using the SHBQ could also know the content of those thoughts, their intent, and whether they were communicated to anyone. As previously stated, this type of information is more likely to be given on a self-report measure than during an interview, at least in the early stages of the therapeutic relationship. Additionally, it has been suggested that clinicians tend to overestimate clients' suicide risk (Joiner, Rudd, et al., 1999). The authors contended that a client's self-report of suicide potential must be given primary consideration and that any individual with a history of more than one past attempt must be considered to be at elevated risk of suicide.

Several caveats must be given before adoption of the SHBQ can be recommended. Due to the nonclinical nature of the sample used in this study, overall level of suicidality was limited. Therefore, the results of the study strongly supported the ability of the SHBQ to discriminate between groups of students based on the presence or absence of serious thoughts about suicide. We were not able to test, for example, if the scale can discriminate between individuals who have made a recent suicide attempt (i.e., high risk), those who are actively thinking about suicide (i.e., lower risk), and those with no evidence of suicidality (i.e., lowest risk). It is possible that more seriously distressed individuals in a clinical setting might have difficulty with the response format of the SHBQ. The sample was also limited in terms of racial and ethnic diversity, so there is a risk of the questions being less relevant to assessing suicidality in minority group members. Small gender differences in scale scores were found in this study. Gender differences were not demonstrated on the Self-Harm subscale, as was expected. That finding suggests either a validity problem with the subscale, an inferential error, or an anomaly in the data set. Of note, a recent nationally representative telephone survey (Crosby, Cheltenham, & Sacks, 1999) of adults (18 and older) in the United States failed to demonstrate gender differences in the percentage of individuals reporting suicidal ideation or planning in the prior year. Further research with the SHBQ is required to determine if different norms are necessary for interpreting subscale scores and to resolve the issue with the Self-Harm subscale. It would also be useful to determine if a cutoff score or other criterion can be established to aid clinicians in interpreting results on the SHBQ. A sample comprised of individuals currently being treated for suicidality compared to nonclinical controls would be most appropriate for this next stage in the scale development process.

We presented data supporting the reliability and validity of the SHBQ in a nonclinical sample of university students. It appears that this questionnaire has promise as both a research and a clinical tool by combining the easy administration of a self-report measure with the qualitative details one gets from conducting a clinical interview. This single questionnaire yields data on four distinct aspects of suicidality and therefore may be more parsimonious than administering a packet of measures to a research participant or client.

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Peter M. Gutierrez  
 Department of Psychology  
 Northern Illinois University  
 DeKalb, IL 60115-2892

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