Original Article

Validity of the Personal Suicide Stigma Questionnaire in a Community Sample

Jurgita Rimkeviciene[1], Katherine Mok[2,3], Fiona Shand[2,3], Jacinta Hawgood[4], and John O'Gorman[4]

[1]Suicide Research Centre, Institute of Psychology, Faculty of Philosophy, Vilnius University, Lithuania
[2]Black Dog Institute, Sydney, NSW, Australia
[3]The University of New South Wales, Sydney, NSW, Australia
[4]Australian Institute for Suicide Research and Prevention, Griffith University, Australia

Abstract: The Personal Suicide Stigma Questionnaire (PSSQ) is a new scale assessing the experience of stigma in those who have been suicidal. This study examined the construct validity of the scale using a sample of participants from the general community who reported being suicidal at some point in their lives (N = 3,947). The Distress Questionnaire – 5 and the Suicidal Ideation Attributes Scale were used to assess the severity of distress and suicidality. Confirmatory factor analysis (CFA) showed a three-factor model (Rejection, Minimization, Self-Blame) with one general Personal Stigma factor influencing the three first-order factors, which best fit the data. Scalar invariance was reached for both age and gender. The same factor structure was maintained when the format of the scale was altered for a subsample to provide a "not applicable" option for each item. PSSQ total score remained a significant predictor of distress after suicidality and demographic variables were accounted for. The PSSQ and its subscales can be used for the assessment of personal suicide stigma.

Keywords: suicide stigma, personal stigma, self-stigma, PSSQ, suicidality

The stigma attached to suicide is a major barrier to suicide prevention (IASP, 2013). It creates help-avoidance due to shame, fear of negative attitudes, and discrimination (Skruibis et al., 2015), which translates into missed opportunities for prevention. Recent studies suggest that the stigma attached to suicidality differs from mental illness stigma, with lower belief in recovery prominent for those who attempt suicide compared to those with a mental illness (Sheehan et al., 2017). Therefore, suicide stigma requires separate understanding and prevention efforts but has been comparatively understudied.

As defined by Link and Phelan (2001), "stigma exists when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them" (p. 377). The public level of stigma represents attitudes, beliefs, and behaviors present in the community (Corrigan et al., 2005). The term personal stigma describes stigma from the perspective of the person experiencing it and has three different aspects: (a) perceived stigma, the individual's beliefs about public attitudes to suicidality; (b) experienced stigma, the individual's experiences of actual discrimination and prejudice; and (c) self-stigma, the person's own internalization of public stigma (Brohan et al., 2010). Several instruments assessing the public level of suicide stigma are available, including the Stigma of Suicide Attempt Scale (Scocco et al., 2012), the Stigma of Suicide Scale (Batterham et al., 2013), and Suicide Stigma Assessment Scale (SSAS; Corrigan et al., 2017). These scales can be used to assess one aspect of perceived stigma among those who are suicidal, namely, their beliefs about the opinions the public hold about suicidal individuals in general. However, these scales do not capture their beliefs about the opinions the public holds about them as individuals (LeBel, 2008), nor the opinions they hold about themselves (self-stigma), which are both components of personal stigma (Brohan et al., 2010). The effects of public stigma on the stigmatized individual are not direct, but through personal stigma, also identified as felt stigma and self-stigma by some researchers (Corrigan et al., 2006; Livingston & Boyd, 2010). This level of stigma has been related to detrimental outcomes, such as lower quality of life, hope, and self-efficacy (Livingston & Boyd, 2010). Therefore, the Personal Suicide Stigma Questionnaire (PSSQ) was developed to assess personal suicide stigma among those who have been suicidal themselves (Rimkeviciene et al., 2019).

The items of the PSSQ were based on qualitative research with those who have experienced suicidal thoughts and attempts (Rimkeviciene et al., 2015) and thus one of its strengths is that the scale is grounded in lived experience. Initial findings on the validity of the scale (Rimkeviciene et al., 2019) indicated that PSSQ scores were related to a measure of mental illness stigma (r = .44). Furthermore, compared to the mental illness stigma, PSSQ scores related more strongly to suicidal behavior and ideation (r = .68 vs. r = .3 for mental illness stigma), with the difference in correlation statistically significant. This pattern implies that the construct underlying the PSSQ score is similar to the stigma of mental illness but is more specific to suicidal behavior. Questions remained, however, about construct validity in view of the high correlation with suicidal behavior that could imply that the PSSQ score is simply another measure of severity of such behavior. There were also questions about the validity of the subscales comprising the PSSQ.

The initial study (N = 244), using exploratory factor analysis (EFA), (Rimkeviciene et al., 2019) indicated that the 16-item scale has three correlated factors: Rejection, Minimization, and Self-Blame. Rejection and Minimization factors each capture a mixture of perceived and experienced stigma, while the items in the Self-Blame factor seem to specifically capture self-stigma as defined by Brohan and colleagues (2010). Replication using confirmatory factor analysis (CFA) with a larger sample would provide stronger evidence for this structure (Tabachnick & Fidell, 2013).

A characteristic of a psychological test that has received increasing attention over the last few decades is measurement invariance (MI; Putnick & Bornstein, 2016; Vandenberg & Lance, 2000). The essential idea of MI is that the meaning of a score on a test should not vary across groups for which there is no reason to expect a difference (e.g., between men and women on an ability test). Comparing mean scores for groups or interpreting correlations between scores on the test and other variables implies that the latent variable underlying test score is invariant across groups. CFA can be used to check this, typically in three ordered steps, which first compare the factor model (number of factors and pattern of item loadings on factors) across groups (configural invariance), then the equivalence of factor loadings (metric invariance), and finally the equivalence of intercepts or thresholds (scalar invariance). Change in fit is examined at each step and invariance is indicated if the change is within specified limits, depending on the fit index employed. The sample in the initial evaluation of the PSSQ was predominantly female (83%; Rimkeviciene et al., 2019), and it is important, therefore, to examine whether the test is measuring the same construct for females and males. We were also able, given the sample available to us, to test invariance across age by splitting at the median age into younger and older groups.

Some respondents in the initial study reported difficulty with items that implied that their suicidality was known to others. Participants, who had not disclosed this experience, were not sure how to respond. One option is to provide a "not applicable" (NA) response for each item. The effect of providing this option on the factor structure and PSSQ score calculations is an empirical matter that we sought to examine in this study, using a subsample for whom the original format of the scale was altered.

A further issue concerns the relation between PSSQ score and severity of distress and suicidality. In the initial study, PSSQ scores were higher for those who attempted suicide compared to those with suicide ideation and related to higher scores on a brief measure of severity of lifetime suicide attempts and ideation (Rimkeviciene et al., 2019). It is possible that the PSSQ score reflects the severity of suicidality (both in terms of severity of ideation and behavior) rather than the level of stigma (Rimkeviciene et al., 2019). To examine this possibility, we assessed the relationship of PSSQ score and severity of suicidal ideation and behavior to a third variable, distress. Both higher suicidal ideation and higher levels of stigma are known to relate to higher distress (Scocco et al., 2016). If PSSQ is a measure of personal suicide stigma rather than simply another indicator of suicidality, the PSSQ score should explain a proportion of variance in the level of distress when the severity of suicidal ideation and behavior is controlled. We explored this option both for the highest level of suicidality (behavior and ideation) experienced in life and for past-month suicidal ideation.

Method

Participants and Design

The present study used a subsample of participants recruited from the general community to an online survey as part of LifeSpan, an Australian multilevel suicide prevention trial implemented in four New South Wales (NSW) regions and the Australian Capital Territory (ACT). The sampling included both urban and regional areas. Participants were recruited online via paid Facebook advertisements that allowed interested people to click through to a landing page, provide informed consent, and complete the online survey. Advertisements were displayed to all users aged 18 and over residing in a LifeSpan trial region or a corresponding control region. Participants were not compensated for participating in the study. For the present subsample, participants were recruited between 2018 and 2019 and had reported a lifetime history of suicidal thoughts or behavior; item 1 from

Suicide Behaviors Questionnaire – Revised (SBQ-R; Osman et al., 2001) was used for this screening.

The final sample comprised 3,947 participants, with an age range from 18 to 83 years. For 287 participants (7.3%) data were missing for some PSSQ items, mental illness stigma or suicidality and therefore the *N* in the different analyses are noted with the results. No data imputation was used. Compared to NSW and ACT general population data from the 2016 Australian census (Australian Bureau of Statistics, 2017), the median age of our sample (*Mdn* = 42; *M* = 41.92, *SD* = 13.94) was slightly higher compared to the median age of the population (*Mdn* = 38). Our sample had a higher proportion of females (62%; *n* = 2,449) assigned female at birth (18 did not wish to disclose this information), a slightly lower proportion of married (37.9%) and employed (44.4%) people, although approximately equal proportions of people in de facto relationships (15.7%) and those in part-time work (24.6%) compared to the general population. Similar to ACT and NSW general population estimates, almost 4% (154, 3.9%) of participants identified as Aborigine and Torres Strait Islander. We report all data exclusions, manipulations, and measures in the study.

A total of 2,320 participants were administered the PSSQ in its original form, that is, no NA category. Of these, 65.9% (*n* = 1,522) were assigned female at birth [*n* = 9 (0.4%) did not wish to disclose this information]. Their age range was 18–82 years, mean age of 40.83 (*SD* = 13.89). One thousand six hundred twenty-seven participants were administered the PSSQ with NA as a response option for each item. Of these, 57.3% (*n* = 927) were assigned female at birth [*n* = 9 (0.6%) did not wish to disclose this information]. Their age range was 18–83 years, mean age of 43.46 (*SD* = 13.87).

Measures

The PSSQ (Rimkeviciene et al., 2019) is a 16-item scale. Each item is rated on a 5-point Likert scale from 1 = *never* to 5 = *very often*, with total scores ranging from 16 to 80; higher scores indicate higher stigma. The scale is suggested to have three subscales: Rejection (items 1–4 and 6; e.g., "I have been shunned or avoided when others found out about my suicidal thoughts or behavior"), Minimization (items 5, 7–9; e.g., "Other people think I am just silly for thinking about suicide or attempting suicide"), and Self-Blame (items 10–16; e.g., "I blame myself for my suicidal thoughts or behavior") (for full scale see Electronic Supplementary Material, ESM 1: PSSQ).

Past-month psychological distress was assessed with the Distress Questionnaire – 5 (DQ5, Batterham et al., 2016). Cronbach α of the scale in the present sample was α = .89. Past-month severity of suicidal ideation was assessed with the Suicidal Ideation Attributes Scale (SIDAS; van Spijker et al., 2014), a 5-item scale. Cronbach's α of the scale in the present sample was α = .81. Those without past-month suicidal thoughts responded only to the first item in SIDAS and received a score of zero. Large variable skew (1.297, *SE* = 0.039) created by a large number of those scoring zero violated variable normality assumptions (Tabachnick & Fidell, 2013). To allow the use of parametric statistical tests, only those with past-month suicidal thoughts were included in the analysis using this scale (*n* = 2,075). Slightly more males than females tended to have past-month suicidal thoughts (55.7% vs. 51.5%, χ^2 = 6.42 (*df* = 1), $p < .05$), and they were younger (M_{age} = 39.25, *SD* = 13.7) compared to those without past-month suicidal thoughts (M_{age} = 44.9, *SD* = 13.6, $p < .001$). The mean score for SIDAS was 16.8 (*SD* = 11.85) in this sample, with variable skew 0.64 (*SE* = 0.05) and kurtosis −0.4 (*SE* = 0.11).

History of suicidal behavior was assessed using the first item from the Suicide Behaviors Questionnaire – Revised (SBQ-R; Osman et al., 2001). This item was also used to screen participants who had experienced suicidal thoughts or behaviors during their lifetime ("Have you ever thought about or attempted to kill yourself?"). Those who responded with "Never" were not presented with the PSSQ and were excluded from the present study. The responses to the first SBQ-R item indicate the severity of suicidal behavior history: Suicidal thoughts (past-year), suicide plan without intent to die, suicide plan with intent to die, suicide attempt without intent to die, and suicide attempt with intent to die.

Procedure

Participants completed the questionnaires as part of an anonymous online survey. The study was approved by the Hunter New England Human Research Ethics Committee (ref 16/09/21/4.05) and all participants indicated consent before completing the survey.

Data Analysis

We analyzed, separately, the PSSQ as originally published (i.e., with five response options) and the PSSQ as modified by the addition of the NA option, and then attempted comparison of the construct with the two formats of the test. All CFAs were conducted using Mplus. The weighted least square mean and variance adjusted (WLSMV) estimator was used because item scores were ordered categorical variables.

Two models were tested for the PSSQ item set as originally published. The first was a three-factor model, where items 1–4 and 6 forms a Rejection factor, items 5 and 7–9 form a Minimization factor, and items 10–16 form a Self-Blame factor, as found in the previous study (Rimkeviciene et al., 2019). The second was a higher-order model in which

a general Personal Stigma factor influences the three first-order factors, again as found in the previous study. In testing the models, factors were set as latent variables, and the items corresponding to those factors were set as observable indicators. The residuals were set as uncorrelated in all models.

Five indices were used to evaluate model fit: chi-square (χ^2), the ratio of chi-square to degrees of freedom (χ^2/df), root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) (Jackson et al., 2009). Model fit is considered acceptable when χ^2 is not significant, CFI > .95, TLI > .95, RMSEA < .06 (Hu & Bentler, 1999). The recommended acceptable level of χ^2/df varies according to researchers from 1 to 5 (Schumacker & Lomax, 2004). Because the χ^2 tests are known to be sensitive to sample size (Brown, 2006), the other fit indices are generally preferred. Even though these cut-offs were developed for maximum likelihood estimation, and Xia and Yang (2019) have questioned the applicability with WLSMV estimation, other, more applicable indices of fit have yet to be developed and therefore the above-mentioned cut-offs are used. The other commonly used fit index, standardized root mean square residuals (SRMR), is not available with WLSMV estimation in Mplus.

Measurement Invariance (MI) for the standard PSSQ was tested across males and females and across old and young, with the sample split, in the latter case, into the two groups at the median age for the total sample (*Mdn* = 42.0 years). The model was estimated for males (n = 789) and females (n = 1,522) separately. Participants who did not wish to disclose their gender at birth (n = 18) were excluded from this analysis. MI testing proceeded by first examining the model in each group to check fit and that the number of factors and the pattern of item loadings was the same (structural invariance), and then proceeding to sequential group comparisons: First, with factor loadings, item thresholds, and item residuals freely estimated (configural invariance); second, with factor loadings equal in the two groups and item thresholds and item residuals freely estimated (metric invariance); third, with factor loadings and item thresholds equal in the two groups, and item residuals freely estimated (scalar invariance). Comparisons of models used the χ^2 difference tests provided in Mplus for multigroup model comparison and incremental fit indices, ΔCFI and ΔTLI. Because the large sample size renders the χ^2 test overly sensitive, incremental changes in other fit indices have been recommended. A decrease of less than $\Delta CFI \leq -.01$ or $\Delta TLI \leq .015$ is currently used as a criterion for MI (Putnick & Bornstein, 2016).

For the PSSQ with the NA addition, the fit of the higher-order model was tested comparing two datasets: where the NA option was available but was not used, and where the NA option was used. In the case of the latter, endorsement of the NA option was treated as missing data. The higher-order solution was compared for the latter group with that for the original PSSQ to test for invariance across the two formats of the test. The second type of analysis was conducted with the dataset for the PSSQ where the NA option was used. This involved generating dummy variables, one for each item, indicating whether or not the NA option had been selected for the item, and then including these variables in a CFA of item scores. This included the higher-order model for the items and a single factor influencing the 16 dummy variables. A correlation between the higher-order Personal Stigma factor and the general dummy variable factor was subsequently included to check whether the use of the NA option was related to the general Personal Stigma factor.

We examined the reliability of total score and subscale scores using the SPSS scale procedure. Because the value of α as a reliability estimate has been questioned (Revelle & Zinbarg, 2009; Sijtsma, 2009), alternative estimates, omega and split-half, were calculated using Revelle's (2008) *psych* package running under R. Omega total (ω_T) is similar to α, although with less restrictive assumptions, in that it estimates the reliability of a multidimensional total score. Omega hierarchical (ω_H), on the other hand, estimates the degree to which scores reflect a single latent variable. Omega is still not widely used and general guidelines for interpreting it, similar to those for interpreting α, are not available, although the use of such guidelines has itself been questioned (Cho & Kim, 2015). Reise et al. (2013) suggested that, as a minimum for ω_H, values greater than .50 be expected, and that values closer to .75 be preferred. Watkins (2017) re-analyzed the data for the standardized sample for the Wechsler Adult Intelligence Scale 4th edition (WAIS-IV), a highly regarded individual test of intelligence, and reported ω_H for the Full-Scale IQ score as .84. Revelle et al. (2021) reported reliabilities for the Big-Five personality factors for a sample of 4,000 participants. Cronbach αs for the scales varied from .84 to .90, whereas ω_T varied between .89 and .93, and ω_H varied from .61 to .72. We expected α values of at least .9 and omega hierarchical of at least .75.

SPSS 23 was used for the estimation of descriptive statistics and remaining statistical tests. For categorical variables, group differences were estimated using χ^2 and column proportions were compared using the Bonferroni method to adjust p-values, while for interval variables one-way analysis of variance (ANOVA) was used. Pearson and Spearman's correlations were used to examine the level of relation between variables, accordingly for interval and ordinal variables. Comparison of correlation coefficients was done using the Fisher r-to-z transformation.

Hierarchical regression was used to estimate the extent to which distress levels are related to PSSQ scores when

other variables are accounted for. DQ5 scores were entered as a dependent variable. In the first model age and gender was added in the first step, the history of suicidality in the second, total PSSQ score in the third step. In the second model, the first and third steps were the same, but past-week suicidal ideation was added in addition to the history of suicidality in the second step. In the third model, the first two steps were the same as the second model, but the scores of the three subscales (Minimization, Rejection, and Self-Blame) were entered in the third step instead of the total PSSQ score. In all models, only those with full data (no missing values) are included in the analysis. In the estimation of the second model, only those with past-month csuicidal ideation are included to avoid violating data normality assumptions, as described in the Measures section. All SPSS and MPplus syntax and output files are included in the ESM 2–5.

Results

Univariate normality was examined for the self-report measures. A ratio of the skewness and kurtosis statistics to their standard errors of greater than 3 was taken as the index of departure from normality. On this criterion, SIDAS showed both positive skew and negative kurtosis and DQ5 showed negative skew. The PSSQ items, with the exception of item 13, showed positive skew, and, with the exception of item 4, showed negative kurtosis. No transformations were applied.

Factor Structure

A total of 2,320 participants were administered the PSSQ in its original form, that is, no NA category provided in the response options for each item. With this subsample, the first model fitted to the item data was the three-factor solution, with item patterns as found in the previous study. The result was a good fit by two of the criteria (CFI = .989; TLI = .986), but did not meet the criterion (< .06) in the case of a third (RMSEA = .072, 90% CI [.069, .076]). The χ^2-test was also statistically significant (χ^2 = 1,327.602, df = 101, p < .001; χ^2/df = 13.14), suggesting poor fit, but as noted above this was expected given sample size. The three factors were highly correlated (range: .714–.843) and hence a higher-order solution was fit, with a general factor influencing the three first-order factors. This did not change the goodness of fit statistics (Brown, 2006). The standardized model is shown in Figure 1.

MI tests were conducted using the second-order model. Fit statistics are shown in Table 1. Scalar invariance was achieved for both sex and age.

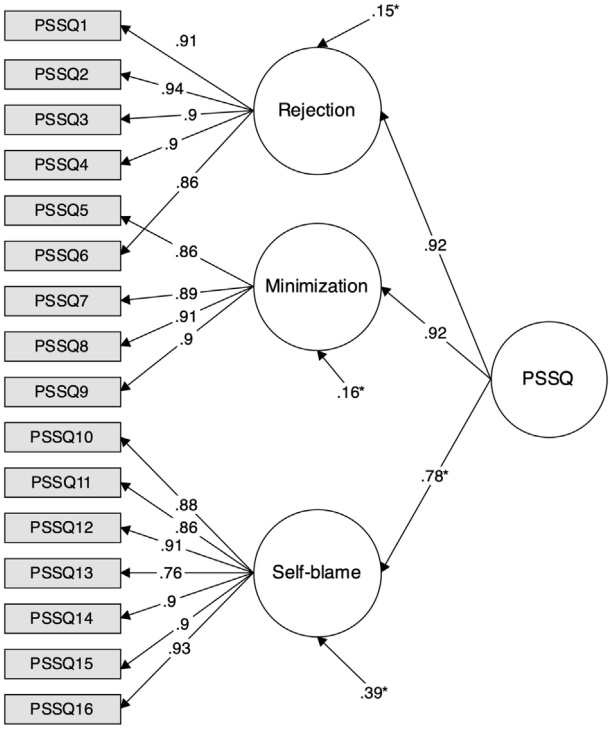

Figure 1. CFA results. The standardized higher-order model fit the dataset. PSSQ = Personal Suicide Stigma Questionnaire; all standardized coefficients significant at p < .01 level, those marked with * at p < .05 level.

Compared to males, females tended to have higher Rejection scores [9.29, SD = 4.97 vs. 10.36, SD = 5.56, F(1, 2,187) = 19.64, p < .001] and Minimization scores [9.26, SD = 4.71 vs. 10.46, SD = 5.04, F(1, 2,194) = 29.34, p < .001], but similar Self-Blame scores [18.03, SD = 8.2 vs. 18.22, SD = 8.58, F(1, 2,199) = 0.65, p = .422]. The total PSSQ score was lower for males compared to females [36.66, SD = 15.64, F(1, 2,131) = 11.34, p < .001]. The relationship between total PSSQ score and age was inverse, indicating younger participants reported higher stigma (r = −.25, p < .001). The correlation with age was highest for the Self-Blame factor (r = −.27, p < .001). For the other two factors the correlations with age were lower at a statistically significant level: between age and Rejection factor [r = −.2, p < .001, compared to Self-Blame and age, z = −2.52, p < .05 (two-tailed)]; between age and Minimization factor [r = −.17, p < .001; compared to Self-Blame and age, z = −3.58 p < .01 (two-tailed)].

Cronbach α was estimated to be .96 for the total score, and for the Rejection, Minimisation, and Self-Blame subscales to be .94, .93, and .94, respectively. The general factor saturation, or ω_H (i.e., the proportion of test variance due to a general factor), was .82 for the total score on the PSSQ and .53, .70, and .76 for the Rejection, Minimisation, and Self-Blame subscales, respectively. The proportion of test variance due to all common factors, or ω_T, was .97

Table 1. Fit indices for multigroup analyses of gender, age, and format differences

	Overall fit indices				
	$\chi^2(df)$	CFI	TLI	RMSEA [90% CI]	Comparative χ^2 diff. testing
Gender					
Configural	1,454.849 (207), p < .001	.989	.987	.072 [.069, .076]	
Metric	1,193.592 (220), p < .001	.991	.990	.062 [.058, .065]	26.582 (13), p = .014
Scalar	1,011.835 (284), p = .001	.993	.994	.047 [.044, .050]	167.505 (64), p = .001
Age					
Configural	1,485.544 (207), p < .001	.988	.986	.073 [.070, .077]	
Metric	1,232.370 (220), p < .001	.990	.989	.063 [.060, .067]	21.514 (13), p = .063
Scalar	2,232.661 (284), p < .001	.981	.984	.077 [.074, .084]	834.619 (64), p < .001
Format					
Configural	679.392 (207), p < .001	.992	.991	.055 [.051, .060]	
Metric	622.896 (220), p < .001	.993	.993	.049 [.045. .054]	25.559 (13), p = .019
Scalar	763.804 (284), p < .001	.992	.993	.047 [.043, .052]	193.831 (64), p < .001

for the total score and .94, .93, .91 for the Rejection, Minimisation, and Self-Blame subscales, respectively. The maximum split-half reliability for the total score was .97 and the minimum was .84. Alpha calculated with the *psych* package for total score was .95, with a 95% CI from .95 to .96.

Exploration of the Not Applicable Option

A total of 1,627 participants were administered the PSSQ with NA as a response option for each item. Of this subsample, 833 did not use the NA option and have no missing data on any of the PSSQ items, 778 used the NA option at least once, and further 16 (0.98%) did not respond to at least one of the PSSQ items, even though the NA option was provided. The second-order model was first fit to the item data for those not using the NA option. This provided reasonably good fit (χ^2 = 473.373, df = 101, p < .001; CFI = .990; TLI = .989; RMSEA = .067, 90% CI [.061, .073]). The second-order model was then fit to the item data for those who used the NA option, with NA responses treated as missing data. There were 90 cases where NA was used for all 16 items. The fit was again good (χ^2 = 253.661, df = 101, p < .001; CFI = .992, TLI = .990; RMSEA = .046, 90% CI [.039, .053]).

MI was tested for participants not given the NA option and those who were and who used it. Because of the difference in sample size, a random sample of 794 cases was drawn from the subsample not receiving the NA option to match that of those who used the option, using SPSS. The results are included in Table 1. Scalar invariance was achieved.

A further examination of the use of the NA option was undertaken by adding a dummy variable for each item which coded whether NA was (dummy variable = 1) or was not (dummy variable = 0) endorsed. These dummy variables were included in a second-order solution of the item data, with a general factor (D) influencing the 16 dummy variables and correlated with the general personal stigma factor. The fit was reasonable (χ^2 = 2,781.572, df = 460. p < .001; CFI = .956, TLI = .953; RMSEA = .08, 90% CI [.077, .083]). The correlation between the general Personal Stigma factor and D was −.174, indicating a weak inverse correlation between the strength of the stigma factor and use of the NA option. A count of the number of times the NA option was used across items for each participant, when added to the model, correlated −.194 with general Personal Stigma.

NA option was least used in the Self-Blame subscale [no NA option used n = 1,210 (74.4%)]; 967 participants (59.4%) did not use it for any Rejection items, and 1,003 (61.6%) for any Minimization items (Table E2 in ESM 6 lists the use of NA option for separate items).

The relation between NA use and level of lifetime suicidality was significant, (χ^2 = 242.17, df = 8, p < .001; see Table E1 in ESM 6). Comparison of column proportions indicated that those who have attempted suicide (with or without clear intent to die) and those who have had a plan to suicide with clear intent were significantly less likely to choose the NA option more than 3 times, which was the opposite among those with suicidal thoughts only or a plan to suicide without clear intent to die choosing NA.

Relationship Between Personal Suicide Stigma Questionnaire and Severity of Distress and Suicidality

PSSQ score showed a large positive relation to distress (r = .64, p < .001), past-month suicidal ideation (r = .58, p < .001) and history of suicidal behavior (r_s = .6, p < .001) (see Table 2, including descriptive statistics). Of the three subscales, the relationship was highest for Self-Blame with

Table 2. Severity of personal stigma, distress, and suicidality in the present sample and their interrelationships

Scale	Mean (*SD*)	*N**	1	2	3	4	5	6
1. PSSQ Rejection	10.33 (5.58)	3,148	(.93)					
2. PSSQ Minimization	10.45 (4.99)	3,200	.74	(.91)				
3. PSSQ Blame	18.69 (8.49)	3,408	.64	.64	(.94)			
4. PSSQ Total	39.4 (16.91)	2,974	.87	.86	.91	(.96)		
5. DQ5	15.15 (4.63)	3,916	.47	.47	.66	.64	(.89)	
6. SIDAS	16.8 (11.85)	2,068	.43	.40	.60	.58	.59	(.81)
7. History of suicidal behavior[1]	–	3,947	.57	.50	.51	.60	.39	.44

Note. For all correlations $p < .001$; *N** for whom full data on the scales available, for SIDAS those who denied having suicidal thoughts in the last month were excluded. Cronbach αs presented in brackets. [1]Spearman r_s reported for this variable; Other – Pearson *r*. PSSQ = Personal Suicide Stigma Questionnaire; DQ5 = Distress Questionnaire – 5; SIDAS = Suicidal Ideation Attributes Scale.

distress ($r = .66$, $p < .001$) and past-month suicidal ideation ($r = .60$, $p < .001$); the difference from the other two subscales was statistically significant [for distress for both comparisons: $z = -12.51$, $p < .001$ (two-tailed); for past-month suicidal ideation, Self-Blame compared with Rejection: $z = -7.49$, $p < .001$ (two-tailed), with Minimization: $z = -8.66$, $p < .001$ (two-tailed)]. History of suicidal behavior related most to Rejection ($r = .57$, $p < .001$); the difference compared to the correlation with Minimization [$r = .5$, $p < .001$; $z = -4.36$, $p < .001$ (two-tailed)] and Self-Blame [$r = .51$, $p < .001$; $z = -3.77$, $p < .001$ (two-tailed)] was statistically significant.

Hierarchical regression was run to estimate the extent to which distress scores can be predicted by PSSQ scores independently of suicidality. Full results are reported in Table 3. In Model 1, total PSSQ scores, added in step 3, explained an additional 23.4% variance after age, gender, and history of suicidality were accounted for [$\Delta R^2 = .234$, $F(1, 2{,}922) = 1{,}182.37$, $p < .001$]. In Model 2, addition of PSSQ scores, after gender, age, history of suicidality, and past-month suicidal ideation were accounted for, explained an additional 7.5% variance [$\Delta R^2 = .075$, $F(1, 1{,}607) = 216.06$, $p < .001$]. In Model 3, addition of separate PSSQ subscale scores instead of the total score, after gender, age, history of suicidality, and past-month suicidal ideation were accounted for, explained an additional 9.3% variance [$\Delta R^2 = .093$, $F(3, 1{,}605) = 91.96$, $p < .001$]. In Model 3, only the Self-Blame, but not Minimization or Rejection subscales of PSSQ, was a significant predictor of distress severity.

Discussion

This study adds further evidence for the construct validity of the PSSQ, a measure of suicide stigma for those who have been suicidal. The factor solution found for the PSSQ in an earlier study (Rimkeviciene et al., 2019) was confirmed in the present study, with a much larger sample including males and females. A general factor of Personal Stigma was found to influence three correlated factors labeled Minimisation, Rejection, and Self-Blame that in turn influenced independent sets of the 16 items. This result was found in CFAs using those participants who completed the original form of the PSSQ without an NA option for each item and those who completed the test with an NA option. For both samples, CFI and TLI indices met the criteria for a good fit. The χ^2 values did not, but this was not surprising given the sample sizes involved. The strict criterion set for RMSEA (< .06) was not met in either subsample, but in both cases, the upper limits of the 90% CI on the index were within the upper bound of .08 suggested for applied research (Brown, 2006). Given the agreement of fit indices and the fact that the two subsamples can be considered replications of the earlier finding, we can have some confidence that the second-order model is a good description of the PSSQ.

In evaluating the reliability estimates obtained for total score on the PSSQ and its subscales, reliability of .90 should be considered a "minimum" and .95 should be considered "desirable", with .80 acceptable for research settings (Nunnally, 1978) The α values obtained in the present study meet the desirable standard for total score on the PSSQ and the minimum standard for the subscale scores. The estimate for ω_T (the contribution of all common factors to test score) and the maximum split-half reliability are consistent with the findings for α for the total score. For ω_H, the value is lower than for α but is better than the level recommended for this statistic by Reise et al. (2013) and compares well with that found for the WAIS-IV and the Big-Five measures. It shows that 85% of the reliable variance (.82/.97) in the total score is due to the single underlying trait, thus indicating the separate subscale scores add limited information. The subscale reliability estimates, however, allow them to be used in further research in addition to the full PSSQ score.

Scalar invariance was demonstrated with the original version of the PSSQ for both sex and age. This implies that scores on the PSSQ are assessing the same underlying construct across groups and that any differences between groups are due to true score differences rather than an error. Younger participants reported higher levels of personal

Table 3. Results of the hierarchical regression for the prediction of the intensity of distress (DQ5 score)

Variable	R^2	*b*	*SE B*	β	*p*
	Model 1 (*n* = 2,927)				
Step 1	.086				
Constant		19.87	.33		< .001
Age		−0.10	.01	−.29	< .001
Gender		−0.43	.17	−.05	< .05
Step 2	.187				
Constant		16.15	.37		< .001
Age		−0.08	.01	−.22	< .001
Gender		−0.39	.16	−.04	< .05
History of suicidality		1.02	.05	.32	< .001
Step 3	.421				
Constant		10.99	.34		< .001
Age		−0.05	.01	−.14	< .001
Gender		−0.15	.14	−.02	.27
History of suicidality		−0.2	.05	−.01	.68
PSSQ		0.17	.01	.6	< .001
	Model 2 (*n* = 1,613)				
Step 1	.046				
Constant		20.57	.36		< .001
Age		−0.05	.01	−.18	< .001
Gender		−0.65	.2	−.08	< .01
Step 2	.366				
Constant		16.02	.37		< .001
Age		−0.02	.01	−.08	< .001
Gender		−0.71	.16	−.09	< .001
History of suicidality		0.8	.06	.03	.19
SIDAS		0.18	.01	.56	< .001
Step 3	.441				
Constant		13.25	.4		< .001
Age		−0.02	.01	−.01	< .01
Gender		−0.44	.15	−.06	< .01
History of suicidality		−0.22	.06	−.08	< .001
SIDAS		0.13	.01	.4	< .001
PSSQ		0.09	.01	.36	< .001
	Model 3 (*n* = 1,613)				
Step 1	.046				
Constant		20.57	.36		< .001
Age		−0.05	.01	−.18	< .001
Gender		−0.65	.2	−.08	< .01
Step 2	.366				
Constant		16.02	.37		< .001
Age		−0.02	.01	−.08	< .001
Gender		−0.71	.16	−.09	< .001
History of suicidality		0.8	.06	.03	.19
SIDAS		0.18	.01	.56	< .001
Step 3	.459				
Constant		12.8	.4		< .001
Age		−0.02	.01	−.06	< .01
Gender		−0.51	.15	−.06	< .001
History of suicidality		−0.18	.06	−.07	< .01
SIDAS		0.12	.01	.36	< .001
PSSQ Minimization		0.03	.02	.04	.12
PSSQ Rejection		0.04	.02	.04	.09
PSSQ Self-Blame		0.17	.01	.35	< .001

Note. In all models, only those for whom PSSQ scores can be calculated (no missing data) are included in the analysis. In Model 2 and Model 3 only those with past-month suicidal ideation are included to avoid violating data normality assumptions, as described in the Measures section. DQ5 = Distress Questionnaire – 5; SIDAS = Suicidal Ideation Attributes Scale

suicide stigma, this was especially pertinent for the Self-Blame subscale. While Self-Blame subscale scores were similar in both genders, females reported higher levels of overall Personal Stigma, as well as Rejection and Minimization. This contradicts public suicide stigma research indicating that males tend to have more stigmatizing attitudes toward suicide and a slightly higher tendency to glorify suicidal behavior, while females more frequently view suicidal individuals as isolated and depressed (Williams et al., 2018). The findings in the present study thus suggest that gender differences in public stigma do not directly translate into differences in personal stigma, and further highlight the need to study both levels separately.

The addition of the NA option did not affect the factor structure of the scale, as indicated by the achievement of scalar invariance when the model for those using the NA option as compared with that for those not given this option. This finding indicates that scores obtained with the NA option can be interpreted in the same way as those without an NA option. However, a third of the participants used the NA option more than 3 times (for over 20% of the items), which creates a large amount of missing data, and such use was more frequent among participants with suicidal ideation, but no suicide plans. In addition, the correlation between the number of NA option used and the scores on available PSSQ items, although statistically significant, was small, indicating that frequent NA option use is not necessarily related to lower stigma. Therefore, the NA option should be added with caution, potentially only to the Minimization and Rejection factors and for those participants who indicate they have not disclosed their suicidality to others because items in these two subscales assess experienced and perceived stigma and are difficult to respond to if the person has not disclosed suicidality to at least one person.

PSSQ explained variance in distress beyond that explained by suicidality alone, either the highest level of lifetime suicidality or past-month suicidal ideation. This adds to the validity of PSSQ as a measure of personal suicide stigma rather than being only a proxy measure for

suicidality. In addition, this study adds to the literature suggesting that there are higher levels of distress and suicidality among those with higher personal suicide stigma (Scocco et al., 2016). The three subscales had a slightly different pattern of relation to other constructs. When both the history of suicidality and past-month suicidal ideation were accounted for, only Self-Blame was a significant predictor of distress. However, the severity of the history of suicidal behavior is related most to the Rejection subscale, indicating experiences and perceptions of rejection may be more pertinent to those with a more severe history of suicidality (behaviors rather than only ideation). These findings are in line with Corrigan and colleagues' (2006) theory that the effects of stigmatization on the person's well-being are largely through self-stigmatization. They also suggest the severity of suicidal history is directly linked to experiences and perceptions of rejection and minimization, but not to the same extent to self-stigmatization via self-blame. Further studies evaluating mediators between perceptions and experiences of suicide stigma and self-stigma could provide valuable insight into ways to mitigate the effects of stigmatization at the individual level.

Limitations

The present study indicates the metric invariance of PSSQ for age. However, only the median split for age was used and further studies should consider metric invariance across different generations (e.g., millennial, boomer, etc.). Further studies using the PSSQ with clinical samples are necessary because the present study used a community sample similar to that used in earlier research (Rimkeviciene et al., 2019). Additionally, looking into the utility of the subscales in terms of information added is an important research question, given that the majority of the variance in the PSSQ items is explained by a unitary factor. Because the present study was correlational, the relations identified cannot be interpreted as the impact of stigma on distress levels; an alternative explanation that higher levels of distress lead to higher stigma is also possible. Therefore, further longitudinal studies examining the impact of stigma levels are needed to illuminate the effects of personal suicide stigma on the individual's well-being. However, the present study responded to a number of limitations present in the earlier PSSQ study (Rimkeviciene et al., 2019) and adds confidence in the validity of the PSSQ.

Electronic Supplementary Materials

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1027/1015-5759/a000635

ESM 1. PSSQ items
ESM 2. Syntax for Mplus
ESM 3. Output files Mplus
ESM 4. SPSS syntax
ESM 5. Final output SPSS
ESM 6. PSSQ supplementary tables

References

Australian Bureau of Statistics. (2017). *2016 census community profiles*. https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/communityprofile/1?opendocument

Batterham, P. J., Calear, A. L., & Christensen, H. (2013). The Stigma of Suicide Scale: Psychometric properties and correlates of the stigma of suicide. *Crisis, 34*(1), 13–21. https://doi.org/10.1027/0227-5910/a000156

Batterham, P. J., Sunderland, M., Carragher, N., Calear, A. L., Mackinnon, A. J., & Slade, T. (2016). The Distress Questionnaire – 5: Population screener for psychological distress was more accurate than the K6/K10. *Journal of Clinical Epidemiology, 71*, 35–42. https://doi.org/10.1016/j.jclinepi.2015.10.005

Brohan, E., Slade, M., Clement, S., & Thornicroft, G. (2010). Experiences of mental illness stigma, prejudice and discrimination: A review of measures. *BMC Health Services Research, 10*(1), 1–11. https://doi.org/10.1186/1472-6963-10-80

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford Press.

Cho, E., & Kim, S. (2015). Cronbach's coefficient alpha: Well known but poorly understood. *Organizational Research Methods, 18*(2), 207–230. https://doi.org/10.1177/1094428114555994

Corrigan, P. W., Kerr, A., & Knudsen, L. (2005). The stigma of mental illness: Explanatory models and methods for change. *Applied and Preventive Psychology, 11*(3), 179–190. https://doi.org/10.1016/j.appsy.2005.07.001

Corrigan, P. W., Sheehan, L. Al-Khouja, M. A., & The Stigma of Suicide Research Team. (2017). Making sense of the public stigma of suicide: Factor analyses of its stereotypes, prejudices, and discriminations. *Crisis, 38*(5), 351–359. https://doi.org/10.1027/0227-5910/a000456

Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self-stigma of mental illness: Implications for self-esteem and self-efficacy. *Journal of Social and Clinical Psychology, 25*(8), 875–884. https://doi.org/10.1521/jscp.2006.25.8.875

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

IASP. (2013). *Stigma: A major barrier to suicide prevention*. https://www.iasp.info/resources/detail/stigma-a-major-barrier-to-suicide-prevention-1470.htm

Jackson, D. L., Gillaspy, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods, 14*(1), 6–23. https://doi.org/10.1037/a0014694

LeBel, T. P. (2008). Perceptions of and responses to stigma. *Sociology Compass, 2*(2), 409–432. https://doi.org/10.1111/j.1751-9020.2007.00081.x

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*, 363–385. https://doi.org/10.2307/2678626

Livingston, J. D., & Boyd, J. E. (2010). Correlates and consequences of internalized stigma for people living with mental illness: A systematic review and meta-analysis. *Social Science*

& Medicine, 71(12), 2150–2161. https://doi.org/10.1016/j.socscimed.2010.09.030

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed). McGraw Hill.

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire – Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment, 8*(4), 443–454. https://doi.org/10.1177/107319110100800409

Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review, 41*, 71–90. https://doi.org/10.1016/j.dr.2016.06.004

Reise, S. P., Bonifay, W. E., & Haviland, M. G. (2013). Scoring and modelling psychological measures in the presence of multidimensionality. *Journal of Personality Assessment, 95*(2), 129–140. https://doi.org/10.1080/00223891.2012.725437

Revelle, W. (2008). *psych: Procedures for personality and psychological research* (R package version 1.0–51). https://CRAN.R-project.org/package=psych

Revelle, W., Dworak, E. M., & Condon, D. M. (2021). Exploring the persome: The power of the item in understanding personality structure. *Personality and Individual Differences, 169*, Article 109905. https://doi.org/10.1016/j.paid.2020.109905

Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on Sijtsma. *Psychometrika, 74*(1), 145–154. https://doi.org/10.1007/s11336-008-9102-z

Rimkeviciene, J., Hawgood, J., O'Gorman, J., & De Leo, D. (2015). Personal stigma in suicide attempters. *Death Studies, 39*(10), 592–599. https://doi.org/10.1080/07481187.2015.1037972

Rimkeviciene, J., O'Gorman, J., Hawgood, J., & De Leo, D. (2019). Development and validity of the Personal Suicide Stigma Questionnaire (PSSQ): A new tool to assess stigmatization among those who are suicidal. *Crisis, 40*(5), 317–325. https://doi.org/10.1027/0227-5910/a000567

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*. Psychology Press.

Scocco, P., Castriotta, C., Toffol, E., & Preti, A. (2012). Stigma of Suicide Attempt (STOSA) scale and Stigma of Suicide and Suicide Survivor (STOSASS) scale: Two new assessment tools. *Psychiatry Research, 200*(2–3), 872–878. https://doi.org/10.1016/j.psychres.2012.06.033

Scocco, P., Toffol, E., & Preti, A. (2016). Psychological distress increases perceived stigma toward attempted suicide among those with a history of past attempted suicide. *The Journal of Nervous and Mental Disease, 204*(3), 194–202. https://doi.org/10.1097/NMD.0000000000000457

Sheehan, L., Dubke, R., & Corrigan, P. W. (2017). The specificity of public stigma: A comparison of suicide and depression-related stigma. *Psychiatry Research, 256*, 40–45. https://doi.org/10.1016/j.psychres.2017.06.015

Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika, 74*(1), 107–120. https://doi.org/10.1007/s11336-008-9101-0

Skruibis, P., Geležėlytė, O., & Dadašev, S. (2015). The stigma of suicidal behaviour. In D. Gailienė (Ed.), *Lithuanian faces after transition. Psychological consequences of cultural trauma* (pp. 217–233). Eugrimas Publishing House.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

van Spijker, B. A. J., Batterham, P. J., Calear, A. L., Farrer, L., Christensen, H., Reynolds, J., & Kerkhof, A. J. F. M. (2014). The Suicidal Ideation Attributes Scale (SIDAS): Community-based validation study of a new scale for the measurement of suicidal ideation. *Suicide and Life-Threatening Behavior, 44*(4), 408–419. https://doi.org/10.1111/sltb.12084

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4–70. https://doi.org/10.1177/109442810031002

Watkins, M. W. (2017). The reliability of multidimensional neuropsychological measures: From alpha to omega. *The Clinical Neuropsychologist, 31*(6–7), 1113–1126. https://doi.org/10.1080/13854046.2017.1317364

Williams, C., Cero, I., Gauthier, J. M., & Witte, T. K. (2018). Examination of the latent factor structure and construct validity of the stigma of Suicide Scale – Short Form. *Death Studies, 42*(10), 616–626. https://doi.org/10.1080/07481187.2017.1416431

Xia, Y., & Yang, Y. (2019). RMSEA, CFI, and TLI in structural equation modeling with ordered categorical data: The story they tell depends on the estimation methods. *Behavior Research Methods, 51*, 409–428. https://doi.org/10.3758/s13428-018-1055-2

History
Received April 5, 2020
Revision received November 20, 2020
Accepted November 25, 2020
Published online March 2, 2021
EJPA Section / Category Clinical Psychology

Conflict of Interest
No interests to declare.

Publication Ethics
The study was approved by the Hunter New England Human Research Ethics Committee (ref 16/09/21/4.05) and all participants indicated consent before completing the survey.

ORCID
Jurgita Rimkeviciene
https://orcid.org/0000-0003-4091-8214

Jurgita Rimkeviciene
Institute of Psychology
Suicide Research Center
Vilnius University
06124 Vilnius
Lithuania
jurgita.rimkeviciene@gmail.com

