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SHORT REPORT

The self-harm inventory: A meta-analysis of its relationship to the personality diagnostic questionnaire-4 as a measure of borderline personality disorder

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Abstract

Objective. The purpose of the present study was to further examine the efficacy of the Self-Harm Inventory (SHI) as a proxy measure in diagnosing borderline personality disorder, with the comparison measure being the Personality Diagnostic Questionnaire-4 (PDQ-4). *Methods.* We undertook a meta-analysis of data from our previous studies of psychiatric inpatients ($N = 270$) and internal medicine outpatients ($N = 2587$), all of whom completed both the SHI and the PDQ-4. *Results.* Scores on the SHI and PDQ-4 were strongly correlated, especially after correcting for attenuation due to measurement unreliability (0.78 in the compiled inpatient psychiatry sample and 0.83 in the compiled internal medicine sample). Moreover, the SHI demonstrated statistically significantly greater reliability coefficients relative to the PDQ-4. *Conclusions.* Based upon comparison with the PDQ-4, the SHI appears to be an efficacious proxy measure of borderline personality symptomatology in both psychiatric inpatient samples and primary care outpatient samples.

Key words: Borderline personality, borderline personality disorder, personality diagnostic questionnaire-4, PDQ-4, self-harm, s-harm inventory, SHI

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Objective

The Self-Harm Inventory (SHI) is a measure that was originally designed to catalog common self-harm behaviors and to screen for borderline personality disorder (BPD; Sansone et al. 1998). The inventory underwent initial development in the early 1990 s, was copyrighted in 1995, and was published in 1998 (Sansone et al. 1998). At the outset, the concept for the SHI evolved from the evidential association between self-harm behavior and BPD (e.g., Black et al. 2004; Cerutti et al. 2012; Mack 1975; Oumaya et al. 2008; Zanarini et al. 2001). In clinical support of this association, one of the diagnostic criteria for BPD in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (*DSM-5*; American Psychiatric Association 2013) is "recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior."

At the outset, the pilot version of the SHI contained 41 items that were derived from (a) behaviors described in the literature, (b) our clinical experience with patients suffering from BPD, and (c) feedback that was solicited from clinicians during our meetings with multidisciplinary treatment teams. These 41 items were then assembled into a list and preceded by the stem, "Have you ever on purpose, or intentionally," to reinforce the context of deliberate and conscious action. Each item was then preceded by a "yes" or "no" response option.

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The 41-item pilot inventory was next examined among study participants who had undergone diagnostic assessment with the Diagnostic Interview for Borderlines (DIB; Kolb and Gunderson 1980), which was at the time considered the benchmark for the assessment of BPD in research settings. Through subsequent analyses, we selected those SHI items that demonstrated the strongest correlations with the DIB total score, resulting in a final version of the SHI consisting of 22 items. Accordingly, total scores on the SHI (i.e., summation of "yes" responses) range from 0 to 22. In diagnosing BPD according to the DIB criterion, the 22-item SHI demonstrated accuracy in diagnosis of 84% at a cut-off score of 5, and 85% and 88% at cut-off scores of 6 and 7, respectively (Sansone et al. 1998). In keeping with the initial SHI version, each endorsement was intended to indicate lifetime prevalence (i.e., "Have you ever…").

During development, the SHI was also initially examined in relationship to the Personality Diagnostic Questionnaire-Revised (PDQ-R; Hyler and Rieder 1987), a self-report version of the diagnostic criteria for BPD as described in the Diagnostic and Statistical Manual of Mental Disorders, *third edition, revised* (*DSM-III-R*; American Psychiatric Association 1987). Results indicated a correlation between the SHI and the PDQ-R of 0.73 ($p < .001$).

Since the inception of the SHI, we have used the measure in conjunction with a more recent version of the PDQ, the PDQ-4 (Hyler 1994), in surveys of both psychiatric inpatients and internal medicine outpatients. In an effort to further elucidate the clinical potential of the SHI as a proxy

measure for BPD (i.e., a measure that does not directly or comprehensively assess BPD criteria but assesses one clinical aspect strongly associated with BPD, namely self-harm behavior), we conducted the current meta-analysis of the relationship between scores on the SHI and PDQ-4.

Method

Participants

Psychiatric inpatient samples. The compiled sample of psychiatric inpatients came from two studies comprising 270 patients (55 males and 215 females, ages 18–74 years)—all from the same clinical site (a psychiatric unit located in a Midwestern US hospital). Each candidate was approached and enlisted during a given study duration by a single recruiter, who also informally screened for exclusionary criteria (i.e., intellectual, medical, psychiatric, and/or cognitive impairment of a severity to preclude the successful completion of a survey).

Internal medicine outpatient samples. The compiled sample of primary care outpatients came from nine studies comprising 2587 patients (814 males and 1773 females, ages 18–92 years) all from the same site: an internal medicine outpatient clinic located in a Midwestern US state where resident physicians provide the majority of care. Each candidate was approached and enlisted during a given study by a single recruiter, who also informally screened for exclusionary criteria (i.e., intellectual, medical, psychiatric, and/or cognitive impairment of a severity to preclude the successful completion of a survey).

Measures

All participants in these analyses completed the SHI and the PDQ-4. The PDQ-4 (Hyler, 1994) is a 9-item, true/false, self-report measure that screens for BPD based upon the diagnostic criteria for the disorder that are listed in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV; American Psychiatric Association 2013). These criteria have remained unchanged in the current fifth edition, the DSM-5 (American Psychiatric Association 2013). A score of 5 or higher on the PDQ-4 is highly suggestive of the diagnosis of BPD. Various versions of the PDQ have been found to be useful screening tools for BPD in both clinical (Dubro et al. 1988, Hyler et al. 1990) and non-clinical samples (Johnson and Bornstein 1992), including the use of the freestanding BPD scale (Patrick et al. 1995).

Results

Comparisons of the SHI and PDQ across the described samples are presented in Table I. Within the two psychiatric inpatient samples, the mean weighted and unweighted Cronbach's alpha for the SHI was statistically significantly greater than the corresponding Cronbach's alpha for the PDQ-4, $X^2(df = 1) = 46.46$, $p < .0001$. Scores on the two measures were strongly correlated ($r = .78$) after that correlation was corrected for attenuation due to unreliability of each measure.

Within the nine internal medicine outpatient samples, the mean weighted [, $X^2(df = 1) = 271.54$, $p < .0001$] and unweighted [$X^2(df = 1) = 163.12$, $p < .0001$] Cronbach's alpha for the SHI was statistically significantly greater than the corresponding Cronbach's alpha for the PDQ-4. Scores on the two measures were strongly correlated ($r = .83$) after that correlation was corrected for attenuation due to unreliability of each measure. The uncorrected correlation coefficient for the psychiatric inpatient samples ($r = .61$) and the primary care outpatient samples ($r = .68$) were not statistically significantly different, $Z = 1.87$, $p < .06$. However, the corrected correlation coefficient for the psychiatric inpatient samples ($r = .78$) and the primary care outpatient samples ($r = .83$) were statistically significantly different, $Z = 2.22$, $p < .03$.

Table I. Scale reliabilities of, and correlations between, scores on the SHI and PDQ-4 by sample type.

Samples	*N*	SHI Alpha	PDQ Alpha	*r*	Cor. *r*
Psychiatric Inpatient Samples (*N* = 270)					
Sansone et al. 2010a	126	.88	.69	.60	.77
Sellbom et al. 2015	144	.84	.74	.62	.79
Mean		.86	.72	.61	.78
Weighted Mean		.86	.72	.61	.78
Internal Medicine Outpatient Samples (*N* = 2587)					
Sansone et al. 2015	278	.85	.78	.70	.86
Sansone et al. 2011a	407	.83	.75	.65	.82
Sansone et al. 2012a	345	.85	.76	.67	.83
Sansone et al. 2010b	419	.86	.76	.66	.82
Sansone et al. 2012b	399	.88	.78	.64	.77
Sansone et al. 2013a	346	.87	.75	.71	.88
Sansone et al. 2010c	80	.73	.81	.63	.82
Sansone et al. 2013b	243	.88	.86	.79	.91
Sansone et al. 2010c	70	.90	.75	.63	.77
Mean		.85	.78	.68	.83
Weighted Mean		.86	.77	.68	.83

Alpha, Cronbach's Alpha, and index of internal consistency reliability; Cor. *r*, correlation between SHI and PDQ scores corrected for attenuation due to unreliability of each measure; PDQ-4, Personality Diagnostic Questionnaire-4 (Hyler 1994); SHI, Self-Harm Inventory (Sansone et al. 1998); Weighted Mean, weighted by sample size.

In summary, scores on the SHI and PDQ-4 were strongly correlated, especially after correcting for attenuation due to measurement unreliability, and the corrected correlation coefficient was statistically significantly greater among the internal medicine outpatient samples compared with the psychiatric inpatient samples. Also, the SHI demonstrated greater reliability coefficients relative to the PDQ-4.

Discussion

According to the findings of the present study, the SHI appears to be a viable proxy measure for borderline personality symptomatology as assessed with the PDQ-4. While previous *individual* studies have demonstrated relatively high correlations between the SHI and versions of the PDQ, this is the first study to undertake a meta-analysis of *multiple* studies using these two measures. Such an analysis indicates further confidence when using the SHI as a proxy measure for BPD. This finding is particularly interesting given that the SHI is based on self-harm behaviors, whereas the PDQ-4 is more psychologically based, covering cognitive, behavioral,

emotional, and interpersonal aspects of BPD. The results of the current meta-analysis may speak to the central position of self-harm behavior in the phenomenology of BPD.

The correlation coefficients representing the relationships between scores on the SHI and PDQ-4 were very similar in the psychiatric inpatient samples and the primary care outpatient samples. Still, these relationships were slightly stronger in the non-psychiatric samples. One possible explanation is that, in non-psychiatric samples, with their lower incidences of BPD, each measure of BPD is more likely to evidence an elevated score when psychopathology is present. In psychiatric inpatient samples by contrast, there is likely serious comorbidity, and with their emphases on different aspects of experience, the respective scores on SHI and PDQ-4 are then more likely to be influenced by comorbid conditions. Unfortunately, the current data do not allow for examination of the relative specificity of the SHI and PDQ-4 as measures of BPD.

Of note, while there are a number of measures for the assessment of self-harm or self-injurious behavior, with the exception of the SHI, *none* of these measures has been correlated with measures of BPD. In this regard, the SHI functions as a unique assessment tool for both self-harm behavior and BPD.

In terms of assessing BPD, when faced with the choice of the SHI or the PDQ-4 as a brief, self-report measure of BPD, which should one choose? One advantage of using the SHI is that it simultaneously assesses specific self-harm behaviors, which may require therapeutic focus. Indeed, the more specific behavioral focus of the SHI may partially explain its greater internal consistency coefficients relative to the PDQ-4, as does its greater number of items. From a practical standpoint, greater measurement reliability translates into a greater likelihood of generating the same results should the same measure be administered to the same individual at multiple points in time.

Beyond detecting common self-harm behaviors and functioning as a proxy measure screening for BPD, the SHI has been associated with a number of clinical predictors. For example, higher scores on the SHI have been associated with greater (a) mental health care utilization (Sansone et al. 2005; Sansone et al. 2008); (b) somatic preoccupation (Sansone et al. 2011b); (c) number of different sexual partners (Sansone et al. 2011c); (d) number of different types of self-reported illegal behaviors (Sansone et al. 2012b); (e) number of different types of externalized aggressive behaviors (Sansone et al. 2013a); and (f) perceptions of pain at the point of assessment, during the past week, and during the past year as well as pain catastrophizing (Sansone et al. 2013b).

The potential limitations of the present study include the relatively small inpatient psychiatric sample, lack of correlation with an interview-based measure for BPD, and the self-report nature of the data. However, findings suggest that the SHI may be a more advantageous measure than the PDQ-4 for the screening of BPD, as it not only assesses borderline personality symptomatology, but also identifies various self-harm behaviors—a potential advantage for clinicians seeking a broader screening measure.

Key points

- The Self-Harm Inventory (SHI) was originally developed to catalog self-harm behaviors and screen for borderline personality disorder. In initial testing, in comparison with the Diagnostic Interview for Borderlines, the SHI demonstrated an accuracy in diagnosis of 84% at a cut-off score of 5, and 85% and 88% at cut-off scores of 6 and 7, respectively; in addition, the correlation between the SHI and the Personality Diagnostic Questionnaire-Revised (PDQ-R) was determined to be 0.73 ($p < 0.01$).
- To further examine the clinical efficacy of the SHI as a proxy measure for borderline personality, in the present meta-analytic study we investigated the correlation coefficients between the SHI and the Personality Diagnostic Questionnaire-4 (PDQ-4) among samples of psychiatric inpatients ($N = 270$) and internal medicine outpatients ($N = 2587$).
- Across samples, scores on the SHI demonstrated strong correlations with scores on the PDQ-4 after correcting for attenuation due to measurement unreliability (0.78–0.83). Also, the SHI demonstrated statistically significantly greater Cronbach's alpha coefficients as a measure of reliability compared with the PDQ-4.

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Statement of interest

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