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Testing Shneidman's model of suicidality in incarcerated offenders and in undergraduates

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ABSTRACT

Suicidality constitutes a major health issue for society in general and incarcerated populations in particular. Shneidman's model of suicide proposes that psychache (i.e., intense psychological pain) is the pre-eminent psychological cause of suicidality and mediates the influence of all other psychological correlates such as depression or hopelessness. The current research evaluates Shneidman's model for samples of 73 male federal offenders, 80 male undergraduates, and 80 female undergraduates. Consistent with Shneidman's theory, psychache was both a significant and a more important statistical predictor of reported self-harming ideation and action than was either depression or hopelessness. Further, this relatively greater importance of psychache for the statistical prediction of suicidality was not moderated either by offender status or by sex. Overall, findings support the applicability of Shneidman's model of suicidality to incarcerated individuals and indicate the model's generalizability across sex and offender status.

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1. Introduction

As one of the leading causes of death, suicide annually accounts for almost one million deaths globally (World Health Organization, 2000). Further, for every death by suicide, there are many times more suicide attempts resulting in hospitalization (Holley, Fick, & Love, 1998) and an even larger number of suicide attempts not involving inpatient admission (Pagliaro, 1995). As such, suicide and self-harm constitute extensive mental health issues in society.

For incarcerated populations, death by suicide is a relatively more common occurrence than for non-incarcerated individuals. McKenzie and Keane (2007), for example, indicate that suicide rates in British prisons are approximately 10 times higher than those in the general public. Further, in a US national study, Hayes (1989) summarizes that the rate for death by suicide in jails is nine times that of the general population. Indeed, suicide is a compelling concern for correctional facilities and agencies.

Among risk factors for suicide, although a previous suicide attempt and male sex are the most consistent predictors for subsequent death by suicide, these historical or demographic variables are not subject to control or intervention. Consequently, recent research has emphasized the identification of psychological risk factors for suicidal behaviour because such factors are believed to be

more amenable to therapeutic change (Brown, Beck, Steer, & Grisham, 2000). Prominent among psychological factors associated with suicidal manifestations are the constructs of depression, hopelessness, and psychache.

Depression has a long history as a recognized risk factor for suicide. In his cognitive theory of depression, Beck (1987) indicates that depression is caused by a triad of negative cognitions about the self, the world, and the future, and that suicide may be related to some specific aspects of this negative triad. In particular, a negative view of the future (i.e., hopelessness) is notable for its replicable ability to predict subsequent death by suicide (Beck, Brown, Berchick, Stewart, & Steer, 1990; Beck, Brown, & Steer, 1989; Beck, Steer, Kovacs, & Garrison, 1985; Brown et al., 2000). For example, Brown et al., in a 20-year longitudinal study following over 6000 psychiatric outpatients, found that patients scoring above a specific cut-score for hopelessness at initial assessment time were four times more likely to die by suicide subsequently than those patients who scored below the cut-score. Thus, depression and, in particular, a hopelessness subtype of depression are implicated as psychological factors relevant to suicide.

Distinct from cognitive theories, Shneidman (1993) states that suicide is caused by psychache or internal perturbations (i.e., intense psychological pain, anguish, hurt). As defined by Shneidman, psychache is a chronic, free-floating, nonsituation-specific psychological pain. This affective state is conceptually distinct from any specific psychiatric disorders such as depression, and psychache is posited by Shneidman to be caused by the presence of

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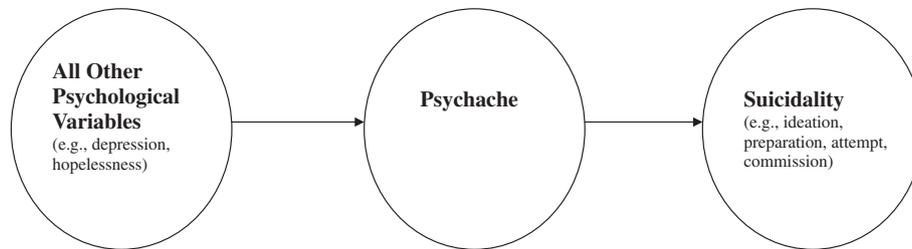


Fig. 1. Psychache as a mediator between all other psychological variables and suicidality.

unfulfilled, frustrated, or thwarted psychological needs. According to Shneidman, psychache is the most proximal cause of suicide and all other psychological factors are relevant for suicide only as they relate to psychache (Fig. 1). Although recognizing the relevance of pain, perturbation, and psychological press (Shneidman, 2005) and the consideration of other factors (e.g., life stressors, genetics, cognitive constriction), Shneidman (1993) asserted that “Suicide is caused by psychache” (p. 145), and further that “there is almost no suicide without a great deal of psychological pain” (Shneidman, 2005, p. 9). As such, psychache is regarded as a necessary condition for suicide. Recent findings support this priority for psychache in links between perfectionism and suicidality (Flamenbaum & Holden, 2007) and between alexithymia and suicidality (Keefer, Holden, & Gillis, 2009). Furthermore, empirical evidence indicates that psychache or internal perturbation explains unique variance in the statistical prediction of suicidality, when controlling for depression and hopelessness (Berlim et al., 2003; DeLisle & Holden, 2004; Holden, Kerr, Mendonca, & Velamoor, 1998; Holden & Kroner, 2003; Holden & McLeod, 2000; Holden, Mehta, Cunningham, & McLeod, 2001; Johns & Holden, 1997).

Are depression, hopelessness, and psychache truly distinct constructs or do they comprise common variance that is merely labeled differentially according to different theories? Factor analytic evidence (DeLisle & Holden, 2009) indicates that depression, hopelessness, and psychache constitute three correlated, but separate, dimensions. Furthermore, using exploratory and confirmatory factor analyses, Troister and Holden (2010) also demonstrate the distinctiveness, and the convergent and discriminant validity of measures of depression, hopelessness, and psychache. In addition, canonical analysis focusing on construct overlap establishes that psychache accounts for more variance in depression and hopelessness than these latter two variables account for in psychache (DeLisle & Holden, 2009). Finally, Mills, Green, and Reddon (2005) find that, although related to depression, hopelessness, and anxiety, psychache is neither conceptually nor empirically redundant with these constructs.

With Shneidman’s model of suicide emphasizing psychache’s relative importance over other psychological factors for understanding suicide and given recent research identifying psychache’s unique and relative contribution to the statistical prediction of suicide manifestations, the current study tested the robustness of Shneidman’s model by evaluating its applicability in samples drawn from quite diverse populations: incarcerated offenders and undergraduate university students. Although our samples varied substantially with regard to age and sex distribution, factors related to the predictors and suicide-related behaviours (Beck, Steer, & Brown, 1996; Holden & Fekken, 1988) measured in this study, Shneidman’s perspective does not indicate that psychache’s relevance for understanding suicidality is moderated by either age or sex or any other demographic feature. Consequently, based on Shneidman’s model of suicide indicating the pre-eminence of psychache as the cause of suicide and suicide-related behaviour,

and in consideration of suicide as a particularly relevant issue for incarcerated offenders, our hypotheses were:

1. Offenders would score higher on measures of suicidality and suicide risk factors than non-offenders.
2. Psychache would have validity for statistically predicting suicide manifestations.
3. Psychache would be more important than depression or hopelessness for statistically predicting suicidality.
4. In regressing suicidality simultaneously on psychache, depression, and hopelessness, because psychache mediates the association between all other factors and suicidality, regression coefficients for depression and hopelessness would not be statistically significant.

2. Method

2.1. Participants and procedure

This research was approved by a University Research Ethics Board and participants were treated in accordance with board ethical guidelines. Participants consisted of three samples. Sample 1 included 73 male federal inmates from a Canadian minimum security correctional institution. As a minimum security facility, these participants comprised a combination of offenders at low security risk (based on the nature of their offenses) and offenders with longer sentences who were preparing for release and, thus, had been moving down through security levels. Mean age of this sample was 44.89 years ($SD = 9.94$; range from 25 to 71). This sample was over 85% Caucasian and consisted of consecutive referrals for a preliminary mental status assessment. Participation occurred within a few days of arrival at the institution and was part of a clinical intake conducted by the institution’s psychology department.

Sample 2 included 80 male undergraduate university students with a mean age of 19.04 years ($SD = 1.62$; range from 18 to 24) and Sample 3 consisted of 80 female undergraduates with a mean age of 19.55 years ($SD = 1.63$; range from 17 to 25). These participants were recruited through email advertisements, in-class requests for volunteers, and an introductory psychology course subject pool. Participation involved groups of 3–10 participants individually completing the measures. Credit toward a psychology course was given for these undergraduate volunteer participants.

2.2. Measures

2.2.1. Statistical predictors

Three scales assessed constructs of psychache, depression, and hopelessness, with higher scores on each scale indicating higher scores on the corresponding construct. The Psychache Scale (Holden et al., 2001) is a 13-item (e.g., “My soul aches”) self-report scale designed to measure psychache according to Shneidman’s (1993) definition of psychological pain. Items are answered on a

5-point Likert rating. The Psychache Scale has strong psychometric properties in university undergraduates and prison inmates, with alpha reliability coefficients generally exceeding .90 (Holden et al., 2001; Mills et al., 2005). The scale can distinguish suicide attempters from non-attempters, and has been shown to statistically predict suicidality when the effects of depression and hopelessness have been controlled (DeLisle & Holden, 2004; Holden et al., 2001).

The Depression and Hopelessness scales of the Depression, Hopelessness, and Suicide Screening Form (DHS; Mills & Kroner, 2004) comprise 17 and 10 true/false items, respectively. Sample items include, "I feel sad most of the time" (Depression scale) and "My future seems bleak" (Hopelessness scale). Previous research has supported the internal consistency, factor structure, and construct validity of these two scales for use with offenders (Mills & Kroner, 2004).

2.2.2. Suicidality criteria

Three self-report indices of self-destructive behaviour were used as suicidality criteria. For each index, higher scores were indicative of greater suicidality. The 10 true/false items representing cognitive suicide indicators (e.g., "If circumstances get too bad, suicide is always an option"), current ideation indicators (e.g., "I have a plan to hurt myself"), and historical suicide indicators (e.g., "I have had serious thoughts of suicide in the past") from the Depression, Hopelessness, and Suicide Screening Form (DHS; Mills & Kroner, 2004) were summed to create a suicidality index. Mills and Kroner (2005) provide evidence that suicide risk as assessed on the DHS has validity for indicating interview-based and file review suicide-relevant information.

In addition to this suicidality index, two additional items were asked and each scored separately: (a) "How many times in the past have you had thoughts of self-harm that DID NOT result in self-harm or a suicide attempt?"; and (b) "How many times in the past have you harmed yourself or attempted suicide?". These were designated as measures of self-harming ideation and self-harming action, respectively. Based on observed distributions, these two measures were scored dichotomously, either 0 (never) or 1 (at least once).

3. Results

For continuous variables, Table 1 presents scale means, standard deviations, and coefficient alpha reliabilities as a function of offender status and gender. One-way analyses of variance indicated significant group differences in means on all variables. In support of Hypothesis 1, post hoc analyses with Tukey's HSD to control the family-wise error rate indicated that for psychache, depression, hopelessness, and suicidality, the offender sample scored significantly higher than the other two samples which did not differ between themselves. When age was covaried out, however, significant differences among groups remained only for depression and suicidality.

Correlations among the continuous variables are displayed in Table 2 and were used to evaluate whether psychache had validity for predicting suicide manifestations. Of note, all statistical predictors were highly correlated. In support of Hypothesis 2 and congruent with Shneidman's model of suicide, psychache correlated significantly with suicidality with a large effect size for each of the three samples.

To evaluate the relative importance of statistical predictors, scores on the suicidality index were regressed simultaneously onto psychache, depression, and hopelessness scores (Table 3). In undertaking these regressions, although statistical predictors were strongly correlated, the presence of tolerances all greater than .35

Table 1
Scale statistics as a function of group membership.

	Male Offenders (n = 73)	Male Undergraduates (n = 80)	Female Undergraduates (n = 80)	ANOVA F- ratio	ANCOVA F- ratio
<i>Psychache</i>					
M	26.76 ^a	19.47 ^b	22.25 ^b	9.35 ^{**}	1.39
SD	11.03	9.20	9.86		
Alpha reliability	0.94	0.96	0.96		
<i>Depression</i>					
M	7.56 ^a	4.26 ^b	4.60 ^b	14.43 ^{**}	4.05 [*]
SD	4.89	3.67	3.85		
Alpha reliability	0.88	0.85	0.85		
<i>Hopelessness</i>					
M	2.62 ^a	0.94 ^b	1.09 ^b	18.07 ^{**}	0.95
SD	2.44	1.46	1.70		
Alpha reliability	0.76	0.68	0.75		
<i>Suicidality index</i>					
M	2.45 ^a	0.75 ^b	0.80 ^b	20.34 ^{**}	4.04 [*]
SD	2.53	1.41	1.50		
Alpha reliability	0.81	0.74	0.77		

Note. Mean scores that share a superscript, do not significantly differ from one another. ANCOVA controls for age.

* $p < .05$.

** $p < .01$.

Table 2
Scale correlations as a function of group membership.

Scale measures	Male Offenders	Male Undergraduates	Female Undergraduates
Suicidality and psychache	.52	.62	.64
Suicidality and depression	.45	.53	.54
Suicidality and hopelessness	.52	.56	.45
Psychache and depression	.61	.74	.71
Psychache and hopelessness	.66	.76	.67
Depression and hopelessness	.66	.73	.64

Note. All correlations are significant at the $p < .01$ level, two-tailed. Correlations of .10, .30, and .50 correspond to small, medium, and large effect sizes, respectively.

Table 3
Regression coefficients for predicting suicidality index.

R ²	Male Offenders		Male Undergraduates		Female Undergraduates	
	b	β	b	β	b	β
	-.51		-.85		-1.34	
Psychache	.07	.32 [*]	.07	.44 [*]	.09	.56 ^{**}
Depression	.07	.15	.03	.08	.06	.14
Hopelessness	.18	.17	.16	.16	-.03	-.03

Note. Two-tailed. For each sample, simultaneous multiple regression was employed.

* $p < .05$.

** $p < .01$.

and conditioning indexes all less than 8.84 indicated that multicollinearity was not problematic. Interestingly, although offender status (offender vs. non-offender) differences on scale scores existed, additional multiple regressions found that the relationship between suicidality and the statistical predictors was not moderated by either offender status or sex. In support of Hypothesis 3 and in agreement with Shneidman's model of suicide, for each individual

Table 4
Scale statistics as a function of personal history (total sample).

Scales	Self-harming ideation			Self-harming action		
	No history	Past history	<i>t</i> -Test	No history	Past history	<i>t</i> -Test
<i>Psychache</i>						
<i>N</i>	143	72		173	43	
<i>M</i>	19.93	27.82	5.61**	20.47	30.99	6.50**
<i>SD</i>	9.08	10.90		8.81	11.90	
Effect size <i>d</i>		0.81			1.10	
<i>Depression</i>						
<i>N</i>	147	77		180	45	
<i>M</i>	5.00	6.71	2.85**	5.10	7.62	3.58**
<i>SD</i>	4.28	4.25		4.21	4.26	
Effect size <i>d</i>		0.40			0.59	
<i>Hopelessness</i>						
<i>N</i>	147	77		180	45	
<i>M</i>	1.35	1.99	2.24*	1.28	2.73	4.45*
<i>SD</i>	1.92	2.23		1.81	2.51	
Effect size <i>d</i>		0.31			0.74	

Note. Indicating significantly different means as a function of history. Values for *d* of .20, .50, and .80 correspond to Cohen's small, medium, and large effect sizes, respectively. *N*s do not sum to 233 because of missing data.

* $p < .05$.

** $p < .01$.

Table 5
Summary of logistic regression analysis for variables predicting self-harm.

Predictor	Self-harming ideation			Self-harming action		
	<i>B</i>	<i>SE B</i>	e^{β}	<i>B</i>	<i>SE B</i>	e^{β}
Constant	−3.11**	.49	0.05	−3.64**	.54	0.03
Psychache	.13**	.03	1.14	.10**	.03	1.11
Depression	−.01	.06	0.99	−.05	.07	0.95
Hopelessness	−.34*	.14	0.71	.02	.13	1.02
χ^2		35.72**			32.64**	
df		3			3	
R^2 (Cox and Snell)		.15			.14	
R^2 (Nagelkerke)		.21			.22	

* $p < .05$.

** $p < .01$.

sample, psychache represented the most important (i.e., had the largest standardized regression coefficient, β) and only statistically significant predictor. Thus, when controlling for depression and hopelessness, psychache retained its significant associations with suicidality. Further, in support of Hypothesis 4, in none of six instances, did regression coefficients for either depression or hopelessness retain statistical significance when psychache was statistically controlled for.

Based on all samples, Table 4 presents statistics on the statistical predictor variables as a function of level of the dichotomous variables of self-harming ideation and self-harming action.¹ For both measures of a history of self-harming, the presence of this history was associated with significantly higher scores on each statistical predictor. Whereas for depression and hopelessness significant results of medium effect sizes emerged, for psychache, in support of Shneidman's model of suicide and Hypothesis 2, significant differences constituted large effect sizes.

To further articulate the relative importance of psychache, each of the dichotomous variables of self-harming ideation and self-harming action was regressed simultaneously on to psychache, depression, and hopelessness. Logistic regression was used because outcome variables were dichotomous (Table 5). For each of the two

self-harming variables, psychache was not only a unique significant contributor but, in support of Hypothesis 3 and Shneidman's model of suicide, psychache was also the strongest predictor, as evidenced by it having the largest odds ratio (e^{β}).

4. Discussion

Although recognizing suicide as a complex phenomenon comprising biological, sociological, psychological, epidemiological, and philosophical components, Shneidman (1993) has asserted that the most proximal cause of suicide is psychache. Psychache is a state of psychological pain based in shame, guilt, humiliation, loneliness, fear, angst, dread, anguish, etc., that when it exceeds an individual's ability to endure, will cause suicidal behaviour. Present findings offer some support for Shneidman's model. Using three different measures of suicidality, psychache demonstrated significant associations with each such measure. In addition, these associations remained significant even when controlling for two pre-eminent psychological risk factors for suicide, depression and hopelessness. Further, these findings emerged regardless of participants' incarceration status, age, or sex. Across measures, control variables, and quite diverse samples drawn from populations distinct in sex, age, and offender status, the significant association between suicidality and psychache was robust. In empirically demonstrating this generalizability of Shneidman's model across incarceration status, age, and sex, the present research builds upon earlier support for the model in undergraduates (DeLisle & Holden, 2004; Johns & Holden, 1997), psychiatric patients in crisis (Holden et al., 1998), and suicide attempters (Flynn & Holden, 2007).

Potential implications arise from this confirmed link between psychache and suicidality. In terms of mental health issues at the individual level, the identification by significant others of an individual's internal pain is an important initial step in understanding suicidality. Often, significant others such as family members and mental health professionals may be unaware of the individual's psychological perturbations (Holden et al., 1998). Present findings indicate that the Psychache Scale is a structured quantification relevant for suicidality. In addition, once the extent of psychache is established, Shneidman (1993) indicates that the focus of suicide prevention should be on the alleviation of the thwarted psychological needs that are compelling the individual toward suicide. Shneidman (2001) highlighted seven needs as most central for

¹ For self-harming ideation, its presence for offenders (24 of 71) was not significantly different from that for non-offenders (53 of 153), χ^2 (1, $N = 224$) = 0.00, $p > .05$. For self-harming action, its presence for offenders (17 of 72) was not significantly different from that for non-offenders (28 of 153), χ^2 (1, $N = 225$) = 0.56, $p > .05$.

psychache: achievement (the need to experience challenges); affiliation (the need to rely on friends for support); autonomy (the need for independence and freedom from restraint); counteraction (the need to make up for a loss by restricting); infavoidance (the need to avoid shame or embarrassment); order (the need for organization among things and ideas); and succorance (the need to be loved and cared for). Particular frustrated needs will vary among individuals driven toward suicide and the therapeutic task will be to identify the specifically relevant blocked need and to tailor an intervention addressing that need for that client. The merits of such proposed interventions do, however, await further empirical support.

Applied to a correctional environment, current results have potential institutional applications in three areas. First, psychache should routinely be covered in suicide protocols. The use of systematic protocols and screening procedures are the standard (Correia, 2000; White, 1999) and once there is an indication of suicidality, screening procedures have been demanded by the courts (Gray vs. City of Detroit, 2005). In White's systematic assessment, the HELPER acronym stands for historical factors, environmental factors, lethality of suicidal thinking and behaviour, psychological factors, evaluation, and reporting risk. Psychache would be covered under the psychological factors. The use of such a protocol is defensible in court.

Second, the use of psychache provides correctional healthcare practitioners with an additional and relatively independent area to address with offenders who are suicidal. Psychache is conceptually and clinically different from hopelessness and depression. In assessment situations where a true positive outcome (suicide) is very costly, having an additional area to address may prove beneficial. This is not to say that every suicidal offender will have psychache issues, but given its prominence relative to hopelessness and depression, it makes sound therapeutic practice to rule out the presence of psychache.

Third, knowing that psychache and its relationship with suicidality replicates across various populations indicates that psychache should have relevance in a variety of correctional settings. It is expected that these basic findings will hold for segregation, intake assessments, and change in security assessments.

The current research has potential limitations. First, the design was cross-sectional. Longitudinal investigations are required to permit drawing stronger inferences about causal direction. Although causality implies correlation, correlation does not necessarily imply causality. Thus, although present results support Shneidman's causal model, it is also possible that suicidality causes psychache, depression, and hopelessness. Alternatively, third variables could be the causes of suicidality and of the three psychological constructs assessed in this research.

Second, death by suicide was not examined in this study. Instead, other manifestations of suicidality were the focus. Nevertheless, although the importance of psychache for suicidal ideation and non-fatal action may or may not generalize to actual death by suicide, suicidal ideation and non-fatal self-harming action are mental health concerns, in of themselves, for healthcare professionals.

Third, data were collected using self-report with some information being retrospective. Although the impact of response biases cannot be dismissed, the use of well-validated instruments and the similarity of present findings to those from other populations reduces concerns about method variance. Further, consider that whereas the suicidality index and both the Depression and Hopelessness scales were from the same inventory (i.e., the DHS) and shared a common response option format, the Psychache Scale was from a distinct instrument with a different response option format. Nonetheless, it was psychache rather than depression or hopelessness that more strongly associated with suicidality.

Fourth, participants in this research were predominantly Canadian Caucasians. Although Shneidman's model has now been shown to be robust across undergraduate, forensic, and psychiatric samples of both sexes and varying ages (see also DeLisle & Holden, 2009; Flamenbaum & Holden, 2007; Holden et al., 1998; Troister & Holden, 2010), its applicability across ethnicities and cultures remains an avenue for future research.

In conclusion, findings for the current investigation were:

1. Relative to non-offenders, incarcerated offenders score higher on measures of suicidality and psychological risk factors for suicide.
2. Psychache is a valid statistical predictor of suicidality in offenders and non-offenders. The relationship between psychache and suicidality is not moderated by either offender status or sex.
3. Psychache was more important than either depression or hopelessness as a statistical predictor of suicidality. This relative importance is congruent with Shneidman's view that psychache is the proximal cause of suicide.

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