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Editorial
Suicide and suicidal behaviors in the four corners of the Word

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"*He who is different from me does not impoverish me - he enriches me.*
Our unity is constituted in something higher than ourselves - in Man...
For no man seeks to hear his own echo, or to find his reflection in the glass."
Antoine de Saint-Exupéry

"*The plague of mankind is the fear and rejection of diversity:*
monotheism, monarchy, monogamy and, in our age, monomedicine.
The belief that there is only one right way to live,
only one right way to regulate religious, political, sexual, medical affairs
is the root cause of the greatest threat to man:
members of his own species, bent on ensuring his salvation, security, and sanity. "
Thomas Szasz

"*... without consciousness, we cannot say Thou...*"
Simone Weil

Suicide is a global phenomenon in all regions of the world. Around 800,000 people worldwide die by suicide every year, accounting for 1·4% of all annual deaths, while 1,500,000 attempt suicide (WHO). Regrettably, comparisons among suicide rates is hindered by the extreme variability in suicide reports and mortality records across countries.

Nonetheless, suicide and suicidal behaviors are not the same in different cultural contexts, albeit it is not clear what is it underlying these differences. There is likely no single answer to this complex question, and several hypotheses have been suggested, including physiological, genetic, psychological, psychiatric, and societal differences, as well as differences in social composition, availability of methods, and cultural influences on the motives underlying suicidal behavior (Lester D, 2008). Starting from Durkheim's sociological framework (Durkheim E, 1897), the nature of suicide as a fundamentally social act,

suffused with personal and collective meaning has been often underscored (Colucci E, Lester D, 2013). The cultural background influences the concept and views of suicide, and end-of-life issues are not considered the same way in western and eastern cultures. While the former has typically associated suicide and suicidal behaviour with fearfulness and embarrassment, the latter considers suicide as an act of nobility and self-sacrifice (Wu et al., 2015).

A practical consequence of a socio-culturally informed perspective is that the conventional biomedical models alone may not be sufficient for a thorough understanding – and hence for an effective prevention – of suicidal behaviors. A careful consideration of the social and cultural meaning of suicide is warranted, also as a way towards the development of more effective prevention strategies (Chu et al., 2010; Colucci, 2006; Lester, 2011; Leong & Leach, 2008; Colucci, 2013).

Currently, several studies and also clinical practice have focused on the identification of cultural correlates and suicidal risk factors associated with various ethnic groups (Leong & Leach, 2008). Data concerning cultural group variations in suicide, suicidal behaviors, risk factors, and choice of methods confirm that differences in culture may play a significant role in determining the nature of suicidal behaviors (Lester, 2011). Nonetheless, more research efforts are needed, with a specific focus on suicide and suicidal behaviors, within the cultural context in which they occur (Lester, 2008), to allow a deeper understanding of the effect of cultural meanings (Colucci, 2006), and of the meaning of suicide and of what is considered acceptable to motivate suicide in different cultures (Chu et al., 2010).

This issue of SOL is consistent with the need for an ethno-cultural approach to suicide, offering an original overview of non-Western cultures (Brazil, Ghana, Israel, India, South Africa), with a further focus on rather unexplored fields such as the study of dermatoglyphics in suicidal populations (Ivanenko, 2011), and birthday blues (Williams et al. 2011).

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Original Research

Thwarted Needs And Suicidality: A Comparison Of Two Theoretical Models

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Abstract: The aim of the present study is to compare the needs proposed by the interpersonal-psychological theory of suicide (IPTS) and the suicide as psychache (SAP) theory in their ability to predict lethal suicidal behavior. Utilizing a sample of 38 suicide notes from both fatal and non-fatal suicides, graduate student raters examined the presence of the thwarted needs proposed by both theories. None of the needs proposed by SAP, nor their average, were significantly related to suicide lethality. The needs proposed by the IPTS (i.e., perceived burdensomeness and thwarted belongingness) were marginally predictive of suicide lethality.

Keywords: suicide, suicide notes, thwarted needs, lethality

In 2014, suicide claimed 42,773 lives in the US, making it the 10th leading cause of death overall and the third leading cause of death in the young (Drapeau & McIntosh, 2015). Estimates also indicate that over one million suicide attempts are made annually in the United States. With these numbers in mind, it is crucial that research continues to explore the motivations and emotions associated with suicide. Multiple theories have already been developed in an attempt to explain suicidal behavior. However, this study will focus its attention on two such theories: the Interpersonal-Psychological Theory of Suicide (IPTS; Joiner, 2005; Van Orden, et al., 2010) and Shneidman's Suicide as Psychache (SAP) theory (Shneidman, 1996; 1999; 2005). Although the IPTS and SAP are both prominent in the field of suicide research, neither study has ever been compared for their ability to predict suicidal behavior.

The IPTS, developed by Joiner and his colleagues (Joiner, 2005; Van Orden et al., 2010), proposes that suicidal behavior occurs when three elements are present: thwarted belonging, perceived burdensomeness, and the acquired capability for suicide. Thwarted belonging is a perceived, or actual, lack of strong social ties, feelings of loneliness, and feeling as though one does not belong. Perceived burdensomeness is a feeling as though one is a burden on those around them and feeling that others would be better off without them. Finally, the acquired capability for suicide is the ability to enact lethal self-harm. Self-injury is hard, especially fatal self-injury, and only through exposure to pain does one become habituated to the fear of that pain and of death. Once habituated, a person is at increased risk of suicide. Only when these three elements are present is a person at increased risk of death by suicide.

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However, the IPTS is not the only theory of suicide that discusses the role of thwarted needs. The SAP, which preceded the development of the IPTS, was put forth by Shneidman (1996; 1999; 2005) and based on Murray's (1938) theory of personality. The SAP stipulates that suicidal behavior, at least in Western cultures, is caused by psychological pain, which Shneidman calls psychache. Psychache is caused by the deprivation of vital needs and these needs are drawn directly from Murray's (1938) theory of personality. These needs include the need to be affiliated (similar to the need to belong) and the need for aggression. When psychache becomes unbearable, suicide will occur (Shneidman, 2005).

These theories were chosen for analysis for a number of reasons. These two theories both discuss thwarted or deprived needs, with the SAP theory discussing a large number of potential thwarted needs and the IPTS focused on two specific needs (perceived burdensomeness and thwarted belonging). Furthermore, no study, until now, has compared the effective of the IPTS and SAP in predicting lethal suicidal behavior. Given the importance of having a solid theoretical backing to explain a behavior, it is of vital importance that competing theories be evaluated in an effort to establish which are most helpful in explaining the phenomena of suicide.

The use of suicide notes in studying suicidal behavior has a long history in suicidology (e.g., Shneidman & Farberow, 1957; Osgood & Walker, 1959). In a large sample of suicide victims in Japan, Kuwabara, and colleagues (2006) found a note-writing incidence rate of over 30 percent and found few differences between those who wrote a note and those who did not. Those who lived alone were more likely to be female and use more lethal methods of suicide. In a defense of the use of suicide notes in the study of suicide, Leenaars (2002) discussed the importance of suicide notes in understanding the suicidal mind and getting a glimpse at the motivations behind suicide. While suicide notes have their limitations, they provide a unique glimpse at what motivates a suicide.

In the present study, we aim to determine which theory is more predictive of death by suicide using a sample of suicide notes from attempted and completed suicides. We hypothesize that the IPTS theory will be more predictive of death by suicide than will SAP. The IPTS is explicit in its focus on lethal or near-lethal suicide, while the SAP is a general theory focusing on all suicidal behavior. Given this, it is expected that the IPTS will be better at distinguishing lethal suicide notes from non-lethal notes. This study investigates the elements of the IPTS and SAP through the use of suicide notes, which are commonly employed in suicidology (e.g., Joiner et al., 2002; Pettit et al., 2002; Gunn & Lester, 2012).

Methods

Participants

Suicide Notes' Authors. Forty suicide notes collected by a police officer from a town in Arizona were obtained. Two notes were discarded from the analysis reported in this paper because the writers of these notes made no suicide attempts. Prior research has been published using this sample (e.g. Joiner et al., 2002; Pettit et al., 2002; Handelman & Lester, 2007).

Graduate Student Raters. Two students were selected from the graduate program in psychology at Rutgers, The State University of New Jersey (Camden Campus), to serve as raters. Both raters were recruited via an email sent to the first-year graduate students explaining the opportunity to partake in the study for a small monetary incentive (a $50 gift-card for each rater). The raters were blind to the purpose of the study and were not familiar with the theories of suicidal behaviors. We felt that the use of graduate students would increase the likelihood of accurate ratings due to more experience with psychological studies. Graduate students have been used as raters for suicide notes in prior research (e.g., Joiner et al., 2002). Raters were blind to the conditions of the study and were not informed which notes were accompanied by completed or attempted suicides. By keeping the raters blind to the specific goals of the study we hoped to limit the likelihood of biasing the ratings. No more than two raters are commonly utilized in research studies involving suicide notes (e.g. Leenaars, DeWilde, Wenckstern, & Kral, 2001; Gunn & Lester, 2012). Raters were Caucasian, one woman (age 23) and one man (age 24).

Materials

Rating Instrument. The rating instrument for this study was adapted from Shneidman's Psychological Pain Assessment Scale (PPAS; Shneidman, 1996; 1999) and the criteria used to assess thwarted belonging and perceived burdensomeness in Gunn and Lester (2012). Leenaars and Lester (2004; 2005) found that the PPAS had high test-retest reliability and modest validity. However, initial pilot testing in our lab of the PPAS section of the rating scale revealed that raters would rate the degree to which the need was present. Because the PPAS is specifically meant to test the degree to which these needs are being thwarted, or unfulfilled, the words "as thwarted" were added to the end of every item. Raters in the pilot test indicated that this made the rating process easier and served as a reminder that scoring was based on the need being thwarted

(the presence of or reference to the need did not meet the rating criteria). This change was therefore made to the wording of the PPAS in order to make the scale better suited to be used for rating the suicide notes.

Procedures

Due to the large number of ratings for each note, the rating process was done over the span of one week (Monday-Friday). Each session was approximately two hours long. The first session was used to train the raters on the rating process and to introduce them the scales. For training, notes were drawn from Leenaars (1988) and were not included in the analysis of the current study. The remaining four sessions were used to rate the notes being examined in this study. Discrepancies in the ratings were discussed and resolved by the raters themselves. The researcher was present and only intervened in discussing these discrepancies when absolutely necessary (i.e., when no agreement could be reached).

During each of the latter four sessions, raters were given copies of ten of the forty suicide notes and a copy of the rating instrument for each. The notes were presented in a randomized order (i.e., non-lethal and lethal notes were drawn at random) that was the same for each rater. Raters were asked to read through the suicide notes carefully and were informed that they could look back at the notes at any time throughout the rating process. This was done to increase the accuracy of the ratings, as raters could rely on the content of the note rather than their memory of it.

Following the rating sessions, inter-rater reliability was assessed using Krippendorf's alpha. While several methods were available for assessing inter-rater reliability, Krippendorf's alpha was chosen because it is effective for use with relatively small sample sizes and because, unlike correlational techniques, it takes as its criterion 1 to 1 agreement not simply relative agreement; it is sensitive to rank order. Table 1 shows the results of the Krippendorf's alpha analyses. As can be seen, across the whole of the questionnaire there was insufficient agreement (as measured against a criterion of alpha = .70 or higher). Due to this, it was necessary to meet again and resolve all discrepancies across the ratings. Both raters and the researcher met again, two weeks after the conclusion of the original rating session, and went through each rating scale on which there was a discrepancy, and its corresponding note, in the same order they had originally rated them, in three two-hour sessions. As with the initial training session, raters were asked to discuss their discrepancies amongst themselves and resolve them. The researcher adjudicated disagreements only when no

resolution could be reached between both raters. The resolution process typically began with each rater (starting with the one with the highest rating) explaining the rationale for the rating he or she gave. The vast majority of the time, one rater would then concede to the argument of the other, but a few times (7.3% of cases) a longer discussion was needed in which both raters would make their point for why they gave the rating they gave. The majority of the time this happened, one of the raters would concede to the argument of the other, however on several occasions it was necessary for the researcher to adjudicate disagreements (.79%).

Statistical Analysis

All analyses were executed using IBM SPSS Statistics 19. Although SPSS does not have the option to run Krippendorf's alpha, macros were obtained for the purposes of assessing inter-rater reliability from an online source (http://www.afhayes.com/). Several of the analyses involved the removal of predictors that had very high p values. In order to be consistent throughout, the cutoff for the removal of a predictor was if the p value exceeded .35. This cutoff allowed us to remove predictors from the models that were not highly related to suicide lethality, and thereby afforded us the clearest picture of what was predictive of suicide lethality.

Results

The mean age for the sample of 38 authors was 36.9 years (SD = 14.1). Of the 38 authors, 20 completed suicides (M = 37.4 years, SD = 14.3) and 18 attempted suicides (M = 36.3 years, SD = 14.2). There were 18 women and 20 men in the full sample. No data were collected on ethnicity. Of the note-writers, 15 (39.5%) used a gun, 8 (21.1%) took pills, 4 (10.5%) used hanging, 2 (5.3%) used a razor, 1 (2.6%) used car exhaust, 1 (2.6%) drank Drano and cut their wrists, 1 (2.6%) used the smoke from a charcoal fire in an enclosed space, 1 (2.6%) used a car wreck, and 5 (13.2%) were unknown. Table 1 shows the results of our test of inter-rater reliability. Prior to analyses, raters met again and resolved all discrepancies. Final rating agreement was 100 percent.

Table 1: Results of Krippendorf's Alpha Assessment of Inter-Rater Agreement

Variable Name	α	95% C.I.	
		Lower	Upper
The need to achieve difficult goals as thwarted	.15	-.19	.48
The need to be loved by another person as thwarted	.70*	.48	.89
The need to belong or to be affiliated as thwarted	.51	.21	.77

The need to overcome opposition as thwarted	.11	-.21	.39
The need to be free of social confinement as thwarted	-.02	-.51	.45
The need to make up for past failures as thwarted	.54	.32	.75
The need to defend the self against others as thwarted	-.11	-.46	.23
The need to influence and control others as thwarted	.36	-.03	.72
The need to receive attention from others as thwarted	.34	-.02	.65
The need to avoid pain or injury as thwarted	.29	-.01	.55
The need to avoid shame or humiliation as thwarted	.32	-.07	.68
The need to protect the author's psychological space as thwarted	.05	-.29	.37
The need to nurture or take care of another person as thwarted	.32	.03	.58
The need to keep things or ideas in good order as thwarted	.23	-.10	.54
The need to enjoy sensuous experiences as thwarted	-.02	-.53	.44
The need to be taken care of by another person as thwarted	.52	.22	.78
The need to understand certain hows and whys as thwarted	.41	.10	.68
The need to belittle the self as thwarted	-.21	-.74	.29
The need to admire, support, or emulate a superior as thwarted	.00	-1.00	.00
The need to act for fun as thwarted	.25	-.19	.66
The need to exclude, banish, jilt or expel another person as thwarted	.22	-.42	.75
The author was experiencing a thwarted need to be in a relationship with someone	.74*	.56	.90
The author was experiencing a feeling of being disconnected from others	.43	.14	.67
The author was experiencing a feeling of isolation from other people	.27	-.06	.59
The author was experiencing a feeling of isolation from other people	.57	.17	.90
The author felt he or she was a burden on others	.78*	.63	.91
He or she felt that others would be better off without the author	.54	.26	.79

*indicates acceptable levels of inter-rater agreement

Cronbach's alpha was utilized to test the internal consistency of the rating scales. The PPAS consisted of 18 items and had acceptable internal consistency (α = .77) while the IPTS sub-scale consisted of 6 items and had poor internal consistency (α = .53). However, upon closer inspection of the IPTS sub-scale, we found that the IPTS sub-scale's poor internal consistency was a byproduct of it being made up of two theoretically different elements. When the sub-scale was divided into the IPTS's two elements, the thwarted belonging sub-scale (α = .75) had acceptable internal consistency and the perceived burdensomeness sub-scale (α = .94) had excellent internal consistency.

In order to test the hypothesis that the IPTS needs would be more predictive of fatal suicide than the SAP needs, several logistic regressions were run predicting suicide lethality. In the first logistic regression, the Average Shneidman Need Index (the average rated intensity across all needs) and the IPTS Need Index (the interaction score, calculated by multiplying the thwarted belonging index by the perceived burdensomeness index) were entered into the logistic regression predicting suicide lethality. We averaged the Shneidman needs because under the SAP not all needs must be present for psychache to occur. The deprivation of a single need can lead to psychache, and through psychache to suicide. However, the IPTS scores were made into an interaction score, because IPTS explains suicidal behavior through the presence of both thwarted belonging and perceived burdensomeness. Both must be present for the motivation for suicide to exist. The results of this analysis can be seen in Table 2. The model was not significant, X2 (2, N = 38) = 3.55, p = .17 indicating that the model that included both predictors was unable to distinguish non-lethal suicide notes from lethal suicide notes. However, as can be seen from Table 2, the IPTS Needs Index was marginally significant (p = .08) in predicting suicide lethality and was associated with a 1.72 times increase in the likelihood of the note having been written by a lethal suicide, consistent with our hypotheses.

The second logistic regression examined the ability of thwarted belonging and perceived burdensomeness, two elements of the IPTS, to predict suicide lethality. In this logistic regression the Thwarted Belonging Index (the averaged score across all thwarted belonging items) and the Perceived Burdensomeness Index (the averaged score across all perceived burdensomeness items) were entered into the logistic regression predicting suicide lethality. The results of this logistic regression can be seen in Table 3. The model was not significant, X2 (2, N = 38) = 4.04, p = .13, indicating that the model was not able to distinguish non-lethal suicide notes from lethal suicide notes. However, the Perceived Burdensomeness Index was marginally significant (p = .10), indicating that perceived burdensomeness was associated with a 1.84 times increase in the likelihood that the note was written by a lethal suicide.

The results of the final logistic regression used to test the hypothesis of this study can be seen in Table 4. This model used the IPTS Needs Index and the highest thwarted Shneidman need rating to predict suicide lethality. This model was significant,

$X2$ (2, N = 38) = 4.92, p = .09, indicating that the model was able to distinguish non-lethal suicide notes from lethal suicide notes. As can be seen, the IPTS Index was marginally significant (p =.06) at predicting suicide lethality and was associated with a

1.78 times increase in the likelihood of the note being written by a lethal suicide. This once again showed partial support for the hypothesis of this study.

Table 2: Logistic Regression Predicting Suicide Lethality with Average Shneidman Needs Index and IPTS Needs Index from Ratings

	B	S.E.	Wald	Df	p	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Average Shneidman Needs Index	-1.27	1.38	.85	1	.36	.28	.02	4.19
IPTS Needs Index	.54	.31	3.00	1	.08†	1.72	.93	3.18

†p<.10
*p<.05
**p<.01

Table 3: Logistic Regression Predicting Suicide Lethality with Thwarted Belonging Index and Perceived Burdensomeness Index from Raters

	B	S.E.	Wald	Df	p	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Thwarted Belonging Index	.64	.55	1.31	1	.25	1.89	.64	5.58
Perceived Burdensomeness Index	.61	.38	2.66	1	.10†	1.84	.88	3.84

†p<.10
*p<.05
**p<.01

Table 4: Logistic Regression Predicting Suicide Lethality with Highest Shneidman Ratings and IPTS Needs Index from Raters

	B	S.E.	Wald	Df	p	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Computed Shneidman Score Indicating Highest Thwarted Need Rating	-.53	.37	2.03	1	.15	.59	.9	1.22
IPTS Index	.58	.31	3.50	1	.06†	1.78	.97	3.26

†p<.10
*p<.05
**p<.01

Discussion

The purpose of this study was to compare two theories about the role of thwarted needs in suicidal behavior. Specifically, we hypothesized that the Interpersonal-Psychological Theory of Suicide would be more predictive of completed suicide than attempted suicide and that it would be more successful in predicting completed suicide than would the SAP.

None of the needs, neither Shneidman's nor Joiner's, were found to be related to lethality based solely on the Pearson correlations. However, the results of the more precise and informative logistic regressions were more promising. There was a trend for the IPTS Needs Index to be associated with an increased likelihood of the note being written by a lethal (rather than nonlethal) suicide. In addition, when the IPTS needs were examined individually, it was found that the Perceived Burdensomeness Index was marginally significant in predicting lethality and was associated with an increased likelihood of the note being written by a lethal suicide. However, given that none of the models were significant, but that the predictors were, we caution interpretations based solely on these results.

What is a potential explanation for why perceived burdensomeness was found to be predictive while thwarted belonging was not? This finding may be a byproduct of using suicide notes to investigate this theory. Suicide notes, written typically to another person, may make the presence of certain themes more common than others. For example, because the notes are typically written to another person, the authors may be more motivated to write about how the other person will be "better off without them." In contrast, explaining to the person they are writing to that they do not feel as though they belong, or that they are lonely may not be as present, because they are in fact writing to another person and not necessarily expressing how they feel in this regard. In a recent essay (Yang & Lester, 2011), it was argued that suicide notes, while potentially giving insight into suicidal behavior, may also represent a way of presenting the self to significant others. Given this argument, perhaps the authors of suicide notes are more prone to portray themselves as doing something beneficial to their significant others rather than portraying themselves as being lonely, or as having poor relationships.

Of particular concern is the finding that one of the perceived burdensomeness items, feeling that others would be better off without them, was not significantly related to lethality, though it was in the predicted direction. This finding contradicts that of Joiner et al. (2002), in which the authors measured perceived burdensomeness by the degree to which each passage implied the idea that "my loved ones I will be better off when I'm gone." On the other hand, one of the perceived burdensomeness items of this study evaluated the degree to which the note implied that (at the time the author wrote the note) he or she felt that others would be better off without the author." While Joiner and colleagues (2002) focused on "loved ones" our wording focused instead on "others." Additionally, while Joiner focused on the idea being implied we focused on specifically at the time the author had written the note. These differences may explain the non-significant relationship of this item and lethality in this study. If we had focused on whether they were a burden solely on their loved ones, and allowed for interpretation about a time other than when the note was being written, perhaps our raters would have replicated the results of Joiner et al. (2002). However, as the IPTS does not stipulate that the perceived burden has to be on a loved one, the wording we used is still a valid, and previously used, means of testing this theory (Gunn, Lester, Haines, & Williams, 2012). It is also important to note, that while ours was not significant, both correlations, that of this study and of Joiner et al., were similar, pr = .26, pr = .33, respectively.

There are several limitations that must be taken into consideration when examining the results of this study. Perhaps the most obvious limitation was the decision to use lethality as our dependent variable. Although previous research has examined some of the variables with lethality as the outcome variable (e.g., Joiner et al., 2002), the use of lethality as an outcome variable may have affected the results of this study. Perhaps the failure of Shneidman's needs to predict suicide lethality can be due to the fact that the needs are present in both fatal and non-fatal suicidal behavior. By using lethality, we fail to address this concern. Additionally, when lethality is used as the dependent variable, there is always the problem of suicidal intent. It is possible that some of those who survived their attempt were in fact highly suicidal, while those who died by theirs were less so. Consider the case of woman A, who takes an overdose of medication at 4:45pm to teach her husband a lesson, fully expecting him to return home at 5:00pm and save her. However, traffic delays his return and she dies as a result. Now, consider the case of a woman B who jumps off the Golden Gate Bridge (a suicide hotspot in the US and a highly fatal drop) but survives, but with significant trauma and damage to her body.

Woman A is a lethal suicide, while woman B is a non-lethal; however the intent to die was much more present in woman B. Due to this, the use of lethality as a dependent variable is often a limitation. Future research should compare both theories outside of the contexts of lethality.

Another limitation of this study was the use of suicide notes, which are not always present with suicidal behaviors. Extant research has found that between 10-30% of those who die by suicide leave a note, with most estimates indicating around 20% (Ho, Yip, Chiu, Halliday 1998). However, regardless of the small percentages of those who leave notes, previous research has shown that those who leave notes are similar to those who do not (Callanan & Davis, 2009) and others have shown some differences in note leaving by sex and age (Heim & Lester, 1990). Suicide notes are often one of the few windows into the suicidal mind that are left to us; however they are subject to several limitations. Furthermore, finding that certain thwarted needs are present does not necessarily mean that the others are not. It could be the case that certain thwarted needs are often themes in suicide notes (e.g., perceived burdensomeness) while other thwarted needs are present in the development of suicidal behavior but are not present in the notes (e.g., thwarted belonging), especially if the notes are in fact written to portray the self in a favorable way (Yang & Lester, 2011). Finally, by examining suicide notes, we lack a control with which to compare them. Future research may be able to utilize such controls to determine if the thwarted needs are a product of suicidal behavior or an accompanying psychopathology. For example, a comparison of the letters of someone who died by suicide with someone who had depression with the absence of suicidal intent would allow us to theorize about what thwarted needs are associated with the suicidal behavior and which are a product of the psychopathology. Given the fact that suicidal behavior is rare, even among those with a diagnosed mental illness, it would be beneficial to learn more about what specific predictors are relevant to suicidal behavior among those with a diagnosed mental illness, so that assessment and prevention can be implemented more effectively. Prospective studies could compare depressed patients with high suicide risk (e.g., determined by psychological assessment of risk factors or physiological measures such as serotonin metabolites in cerebrospinal fluid) with those with low suicide risk (Asberg, Traskman, & Thoren, 1976; Mann, Malone, Sweeney, Brown, Linnoila, Stanley, & Stanley, 1996).

An additional limitation is the relatively small sample of notes. While previous research (e.g., Joiner et al., 2002) has utilized this same sample of notes, the small number of notes (n=38) may have affected the results. In fact, given the number of marginal findings, a larger sample of notes may lead to more robust findings. Inter-rater reliability was also generally poor. After the initial rating sessions, raters had to undergo two additional sessions of disagreement resolution. However, while this may be considered a limitation, it may also be viewed as beneficial to this study. By having both raters meet again and go over the rating scales and the notes in more detail, they were able to reach 100% agreement. Due to this, the dataset that was utilized for the final analyses was the product of a lot of deliberation and discussion on the part of both raters.

Several of the current findings can be discussed in terms of their implications. While the majority of the results regarding the IPTS were only marginally significant, they did implicate the role of these needs in suicidal behavior over those of Shneidman's theory. However, an important caveat of this is that Shneidman's PPAS was developed to assess thwarted needs among suicidal persons and was given to them directly. The raters in the present study described having difficulties getting from the notes whether or not the needs were thwarted. As the scale was developed to be administered to suicidal persons and was adapted to be used by raters, this may not have been an adequate means of testing this theory.

The IPTS results do suggest implications for assessment and treatment. If a clinician is working with a patient who perceives the self to be a burden on those around them (especially loved ones), this may be a sign that individual is at increased risk of suicide and in need of more immediate treatment or intervention. Marginal support was shown for our hypothesis, however we must urge caution in interpretation of these findings as they were only trending towards significance. However, regardless of this the present study represents the first comparison of the IPTS and SAP.

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Original Research

Fearlessness about death and perceived capability to die by suicide in seventh, eighth and ninth graders

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Abstract: The interpersonal theory of suicide postulates that, for a serious suicide attempt or a suicide one has to possess a desire to die and the capability to die by suicide. The capability is proposed to be acquired over time by repeated experiences with painful and provocative events. Aim of the present study was to examine linear trends in two facets of acquired capability (fearlessness about death, perceived capability to kill oneself) across seventh, eighth and ninth grade (N=373). Results indicate that boys showed a linear increase in fearlessness about death, whereas girls showed a linear increase in perceived capability. The study generally supports assumptions of the interpersonal theory.

Keywords: suicide, fearlessness about death, interpersonal theory of suicide, adolescence

Suicide is a significant public health concern with about one million people worldwide dying from suicide each year (WHO, 2014). Global figures for suicide show that it is the second most common cause of death for individuals aged 10-24 years old. Lifetime adolescent suicide attempt rates range from 4 to 23%, with a medium rate of 10.5% in European countries (Kokkevi et al., 2012) and 6.5 to 9% in ninth graders in Germany (Donath et al., 2014; Plener et al., 2009). In general, girls report suicide attempts more often than boys (Nock et al., 2013), whereas boys are more likely to die by suicide than girls (WHO, 2014). Age-at-onset curves show that the lifetime prevalence of suicide attempts remains low through 12 years of age and increases in a roughly linear

fashion through 15 years of age (Nock et al., 2013). Known risk factors for adolescent attempted suicide and suicide include mental disorder, prior suicidal behavior, nonsuicidal self-injury, suicidal ideation and childhood abuse (Esposito-Smythers et al., 2014).

According to the interpersonal theory of suicide (Joiner, 2005), three risk factors must be present in order for a person to both desire and to be capable of suicide: the simultaneous presence of thwarted belongingness, the experience that one is not an integral part of a valued group and perceived burdensomeness, the view that one's existence burdens family and friends, is said to cause a suicidal wish. Yet, Joiner (2005) claims that desire to die by suicide alone is not sufficient to lead to lethal suicidal behavior. Rather, individuals must have developed both fearlessness of death as well as sufficient pain tolerance to be capable to act on the desire for suicide. According to Joiner's theory, the so-called acquired capability for suicide comprises elevated

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pain tolerance and fearlessness of death – with the latter being the main focus of the current study. Joiner (2005) proposes that the most direct route to acquire the capability for suicide is by engaging in suicidal behavior, either through suicide attempts, or practicing and preparing for suicidal behavior. However, Joiner (2005) points to the fact, that one can also become less fearful of pain, injury and death by experiences other than suicide attempts, (e.g., painful and provocative events like childhood abuse, combat exposure, physical fights, promiscuous sex or playing contact sports). Joiner (2005) proposes that the mechanisms whereby individuals acquire the capability for lethal self-injury are habituation and strengthening of opponent processes in response to fear and pain (Solomon & Corbit, 1974). Accordingly, Joiner (2005) describes the acquired capability for suicide as a rather static process increasing incrementally as painful and provocative events are experienced.

Evidence for the validity of the Interpersonal Theory of Suicide is accruing, with a growing number of studies demonstrating associations between the theory's key variables and suicide ideation/suicide attempts (see Ma et al., 2016 for a review). Studies testing the acquired capability construct have found that individuals with a history of suicide attempts exhibit higher levels of the acquired capability than individuals with no history of suicide attempts (Smith et al., 2010), and that acquired capability predicts suicide attempts and suicide (Anestis & Joiner, 2011; Bryan et al., 2012; Nademin et al., 2008; Van Orden et al., 2008).

In accordance with the theoretical assumptions, higher levels of painful and provocative experiences significantly predict higher levels of acquired capability (Anestis & Joiner, 2012; Bryan & Cukrowicz, 2011; Smith et al., 2013; Van Orden et al., 2008). Further studies have revealed that combat experiences (Bryan et al., 2013), violent video gaming (Gauthier et al., 2014) and euthanasia exposure in veterinarians (Witte et al., 2013) is associated with heightened fearlessness about death. Also, non-suicidal self-injury (Willoughby et al., 2015) and over-exercise associated with disordered eating (Smith et al., 2013) predict acquired capability. In general, men exhibit higher levels of fearlessness about death (Ribeiro et al., 2014; Witte et al., 2012), which converges with the higher rate of death by suicide among men compared to women (WHO, 2014). In an attempt to explain this gender difference, Witte et al. (2012) found that sensation-seeking accounted for the positive association between gender and fearlessness of death; i.e., men demonstrate greater levels of fearlessness about death, because they show a greater propensity toward behaviors that involve risk.

In accord with the increase in suicidal behavior during adolescence (Nock et al., 2013), there is also an age-related increase in various forms of risk-taking behavior, including alcohol and illicit drug use (SAMHSA, 2013), as well as delinquent behavior (Mofitt, 1993), and non-suicidal self-injury. For example, Sourander et al. (2006) found a significant increase in self-reported self-harm from age 12 to 15, especially in girls (see also Patton et al., 2007).

Taken together, not only suicidal behaviors, but also various kinds of painful and provocative events seem to increase rapidly during the early teenage years. Yet, there are significant gender differences: Violence-related behaviors (such as physical fights), alcohol and drug related behaviors and risky sexual behavior have been shown to be more common in boys, whereas girls are more likely to report experiences of forced sexual intercourse and physical dating violence (CDC, 2014). Furthermore, girls in seventh and ninth grade have been found to report non-suicidal self-injury twice as frequently as boys (Patton et al., 2007; Plener et al., 2009), which corresponds with girls suffering more often from suicide ideation, suicide plans and suicide attempts than boys (Nock et al., 2013).

Viewed through the lens of the Interpersonal Theory of Suicide, one would expect that fearlessness about death increases as experience with different kinds of painful and provocative events and the rate of suicide attempts increase. Therefore, aim of the current study was to investigate whether there is an age-related increase in fearlessness about death and perceived capability to die by suicide in a sample of 12 to 16 year olds, respectively seventh to ninth graders. Taken together, we expected that suicide ideation/behavior, non-suicidal self-injury and experiences with painful and provocative events increase in a linear fashion through seventh, eighth and ninth grade and hypothesized that ninth graders of both sexes would report the lowest fear of death, eighth-graders of both sexes would score in the middle and seventh graders of both sexes would report the highest fear of death. In addition, we expected to replicate well-delineated gender differences regarding fearlessness about death, suicidal ideation/behavior, non-suicidal self-injury and painful and provocative events.

Methods

Participants

The sample consisted of N = 373 students, of which 54.2% (n = 202) were girls and 45.8% (n = 171) were boys. Age ranged from 12 to 16 years with a mean of 13.88 (SD = 1.10). One hundred fifty-four ninth-graders (41.3%; age: M = 14.82 (SD = 0.64); boys: n = 81, girls: n = 73), 108 eighth-graders (28%; age: M = 13.78 (SD = 0.66); girls: n = 63, boys: n = 45) and 111

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seventh-graders (29.8%; age: M = 12.67 (SD = 0.62); girls: n = 66, boys: n = 45). All participants were Caucasian.

Two-hundred fifty students (67.0%) attended an academic high-school, 106 (28.4%) a comprehensive school and the remaining 17 students (4.6%) a junior high school/lower secondary school. High affluence, as assessed with the Family Affluence Scale (Boyce et al., 2006) was reported by three-quarters of the sample (77.6%, n = 281).

Procedures

Participants were recruited in schools in the Ruhr region in Germany (n = 2 academic high schools, n = 2 comprehensive schools, n = 1 junior high school). Recruitment took place between October 2013 and May 2014. Once a school indicated agreement to participate, the responsible teachers were informed about the purpose of the study and forms for active parental consent and adolescent assent were distributed. Adolescents were reminded that participation was voluntary and anonymous. All assessment scales were handed out in the classroom, in sealed envelopes, to those who presented a signed parental consent and adolescent assent form. One of the researchers was present and available in each classroom to answer questions. After students had completed the assessment they placed their forms back in the envelopes and sealed them. Completing the packet took about 30-35 minutes. To ensure safety, each participating student received a "contact card" that included (1.) general contact information on helplines and (2.) contact details of the study coordinator and two cooperating psychotherapists.

The study and its procedures were approved by the Ethics Committee of the Faculty of Psychology at the Ruhr-Universität Bochum.

Measures
Acquired Capability for Suicide

Fearlessness of death was assessed with the 5-item fearlessness of death subscale of the German Capability for Suicide Questionnaire (GCSQ; Wachtel et al., 2014: e.g. "I am very much afraid to die"; "The prospect of my own death arouses anxiety in me"). All items are answered on a 5-point Likert scale ranging from 1 (I fully agree) to 5 (I do not agree at all), with higher scores indicating lower fear of death and dying. The fearlessness of death subscale is very similar to the Acquired Capability for Suicide Scale presented by Ribeiro and colleagues (2014) and has been shown to have good internal consistency (a = 0.90; Wachtel et al, 2014). Accordingly, internal consistency was good in the current sample: a = 0.88. Perceived capability for suicide was measured by one item ("I could kill myself if I wanted to"), that was

drawn from the original Acquired Capability for Suicide Scale (Van Orden et al., 2008) and is also part of the GSCQ. In a recent study this signature item differentiated between suicide attempters and non-attempters (Wachtel et al., 2014). Evidence of discriminant validity is that this item did not load onto the fearlessness of death factor of the GCSQ (Wachtel et al., 2014).

Suicide ideation and behavior

Lifetime suicide ideation, suicide plans and suicide attempts were assessed using Item 1 ("Have you ever thought about or attempted to kill yourself?") of the Suicidal Behaviors Questionnaire – Revised (SBQ-R; Osman et al., 2001). This item has been recommended for screening purposes and has repeatedly been used in clinical and non-clinical adolescent samples (Osman et al., 2001). A cutoff score of 2 in the SBQ-R Item 1 has been shown to be most useful in differentiating between suicidal and nonsuicidal adolescents (Osman et al., 2001).

Painful and Provocative Events

Painful and provocative events were assessed using an adapted 16-item version of the Painful and Provocative Events Scale (PPES; Bender et al., 2007). The scale asks individuals to report how many times they have experienced certain events leading to acquired capability for suicide according to the interpersonal theory (e.g., broken a bone, got a piercing, been in a car accident, shot a gun, intentionally hurt animals, participated in physical fights, jumped from high places, became a victim of physical abuse). All items are rated on a 5-point Likert scale ranging from 1 (never) to 5 (more often than 20). Some of the original items had to be dropped because of restraints of the cooperating principals (e.g., "Have you been a victim/a witness of sexual abuse?"), because they seemed inappropriate for a sample of young adolescents (e.g., "Have you used intravenous drugs") or because they are confounded with suicidal behavior ("Have you tied a noose?"). Internal consistency of the PPES was rather modest in the current study: α = 0.69. However, moderate consistency (α < 0.70) has repeatedly been reported for the PPES and is commonly attributed to the fact that the measure is comprised of a list of disparate behavioral experiences (Anestis & Joiner, 2012; Pennings & Anestis, 2013; Ribeiro et al., 2014).

Nonsuicidal self-injury

Nonsuicidal self-injury was assessed using four items from the Impulsivity Scale (IS-27; Kröger & Kosfelder, 2011). The items were: "In the last month … I hurt myself by burning myself", "… I hurt myself by cutting

myself deeply", "… I hurt myself by superficially cutting or scratching myself", "… I hurt myself by consciously knocking my head, my arm or other parts of my body against something." All items were rated on a 5-point Likert Scale ranging from 0 (never) to 4 (several times a day). Present internal consistency was α = 0.85.

Results
Descriptive data: Suicide ideation and behavior
Two-hundred ninety-nine students (80.2%) had never planned or attempted suicide (SBQ-R Item 1 ≤ 2), whereas 19.8% (n = 74) had experience with suicide ideation and/or behavior (SBQ-R Item 1 > 2). SBQ-R data were missing from two persons. As can be seen from Table 1, sixteen participants had attempted suicide in their lifetime. Suicide attempts were more common in ninth graders than in eighth and seven graders.

Table 1: Distribution of reponses to Item 1 of the SBQ-R

Have you ever thought about or attempted to kill yourself?"	7th graders % (n)	8th graders % (n)	9th graders % (n)
(1.) Never	66.4 (73)	66.7 (72)	55.6 (85)
(2.) It was just a brief passing thought	19.1 (21)	14.8 (16)	19.6 (30)
(3.) I have had a plan at least once to kill myself but did not try to do it	10.9 (12)	10.2 (11)	13.1 (20)
4.) I have had a plan at least once to kill myself and really wanted to die	1.8 (2)	5.6 (6)	4.6 (7)
(5.) I have attempted to kill myself, but did not want to die	0 (0)	0 (0)	0.7 (1)
(6.) I have attempted to kill myself, and really hoped to die.	1.8 (2)	2.7 (3)	6.5 (10)

Note: SBQ-R = Suicide Behavior Questionnaire - Revised

Gender differences in suicide-related thoughts and behaviors, non-suicidal self-injury, painful and provocative events, fearlessness of death and perceived capability
Irrespective of grade level, boys reported more experiences with painful and provocative events, F(1, 343) = 25.31, p < 0.001, than girls. However, girls reported a trend towards more nonsuicidal self-injury, F(1, 360) = 3.67, p = 0.057, and more suicide ideation/behavior, F(1, 369) = 4.57, p = 0.033. Suicide attempts were reported by 5.9% of the girls (n = 12) and by 2.3% (n = 4) of the boys. In line with previous studies (Ribeiro et al., 2014; Witte et al., 2012), boys reported greater fearlessness about death, F(1, 350) = 18.53, p < 0.001, than girls, yet boys and girls did not differ in perceived capability, F(1, 361) = 0.03, p = 0.851.
In both girls and boys suicide ideation/behavior was significantly associated with nonsuicidal self-injury, experiences with painful and provocative events and

perceived capability (see Table 2). Fearlessness of death was unrelated to suicide ideation/behavior.

Linear trends in suicide-related thoughts and behaviors, nonsuicidal self-injury as well as painful and provocative events
Linear trends across ninth-, eighth- and seventh grade were examined using linear contrast analyses with the following contrast weights: seventh graders = -1, eighth graders = 0, ninth graders = 1. As can be seen in Table 3, ninth graders scored the highest regarding suicide ideation/behavior, nonsuicidal self-injury as well as experiences with painful and provocative events, eighth graders scored in the middle, and seventh graders scored the lowest. Closer inspection revealed that girls, but not boys, showed a linear increase in suicide ideation/behavior and experiences with painful and provocative events, whereas boys only showed a linear increase in nonsuicidal self-injury.

Table 2: Correlations between study variables

	Suicide ideation/behavior	Nonsuicidal self-injury	Painful/ provocative events	Fearlessness about death	Perceived capability
Suicide ideation/behavior	-	0.55**	0.31**	-0.12	0.37**
Nonsuicidal self-injury	0.60***	-	0.52**	0.00	0.09
Painful/ provocative events	0.30**	0.39**	-	-0.02	0.12
Fearlessness about death	0.12	0.08	0.09	-	0.00
Perceived capability	0.56**	0.47**	0.38**	0.24**	-

Note: Correlations for boys are reported above the diagonal and for girls below the diagonal.

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 3: Means, standard deviations and summary of linear contrast analyses

Measure	Sample	Group			*F*-Statistics	*P*
		7th graders M (SD)	8th graders M (SD)	9th graders M (SD)		
Suicide ideation/ behavior	**Total**	**0.58 (1.12)**	**0.71 (1.39)**	**1.03 (1.65)**	**$F(1, 368) = 6.11$**	**0.014**
	Girls	0.64 (1.31)	0.92 (1.66)	1.26 (1.79)	$F(1, 198) = 5.26$	0.023
	Boys	0.50 (0.73)	0.42 (0.84)	0.81 (1.50)	$F(1, 167) = 1.99$	0.159
Nonsuicidal self-injury	**Total**	**0.23 (0.66)**	**0.71 (2.11)**	**0.72 (2.00)**	**$F(1, 359) = 4.95$**	**0.027**
	Girls	0.28 (0.78)	1.17 (2.68)	0.77 (2.00)	$F(1, 191) = 2.09$	0.150
	Boys	0.16 (0.42)	0.08 (0.35)	0.68 (2.02)	$F(2, 165) = 4.79$	0.030
Painful/ provocative events	**Total**	**7.39 (5.53)**	**8.18 (5.63)**	**9.83 (7.17)**	**$F(1, 342) = 8.90$**	**0.003**
	Girls	6.15 (5.26)	6.61 (4.62)	8.41 (5.73)	$F(1, 187) = 5.99$	0.015
	Boys	9.21 (5.46)	10.42 (6.23)	11.22 (8.13)	$F(1, 152) = 2.13$	0.147
Fearlessness abouth death	**Total**	**3.15 (1.20)**	**3.37 (1.12)**	**3.47 (1.16)**	**$F(1, 349) = 4.81$**	**0.029**
	Girls	3.08 (1.13)	3.07 (1.15)	3.15 (1.20)	$F(1, 183) = 0.10$	0.748
	Boys	3.24 (1.29)	3.79 (0.95)	3.75 (1.05)	$F(1, 163) = 6.19$	0.014
Perceived capability	**Total**	**2.10 (1.46)**	**2.12 (1.50)**	**2.46 (1.64)**	**$F(1, 360) = 3.22$**	**0.074**
	Girls	2.04 (1.45)	2.12 (1.51)	2.60 (1.63)	$F(1, 193) = 4.26$	0.040
	Boys	2.18 (1.50)	2.11 (1.51)	2.33 (1.64)	$F(1, 164) = 0.25$	0.621

Linear trends in fearlessness about death and perceived capability

As expected, linear contrast analysis revealed that ninth graders showed the most fearlessness about death, followed by eighth graders, and then by seventh graders. This pattern was found in the total sample and in the boys' sample, but not in the girls sample. However, in the girls' sample there was a linear increase in perceived capability, which was not seen in the boys sample (see Table 3).

Discussion

This study examined whether there is a linear increase in fearlessness about death and perceived

capability to die by suicide through seventh, eighth and ninth grade. There were three main findings: (1.) A linear increase in fearlessness about death was demonstrated. Yet, profound gender differences were found with boys showing a linear increase in fearlessness about death but not in perceived capability for suicide, whereas girls showed a linear increase in perceived capability for suicide but not in fearlessness about death. (2.) Gender differences were found regarding the other study variables, with girls demonstrating an age-related increase in suicide ideation/behavior as well as painful and provocative events, whereas boys showed a linear increase only in non-suicidal self-injury. (3.) In line with previous studies, boys

reported greater fearlessness about death as well as painful and provocative events, whereas girls showed a trend towards higher endorsement in non-suicidal self-injury as well as more suicide ideation and suicide attempts. Supporting the validity of the current data, the rate of students reporting lifetime suicide attempts in the current study (6.5% in ninth graders) was nearly identical to previous studies showing that between 6.5 to 7.9% of German ninth graders report lifetime suicide attempts (Plener et al., 2009).

In accordance with assumptions of the interpersonal theory of suicide (Joiner, 2005), fearlessness about death was more common in higher grades, much the same as experiences with painful and provocative events, non-suicidal self-injury and suicidal behavior become more common during the early teenage years. Yet, contrary to our expectations, profound gender differences were found with only boys showing the expected increase in fearlessness about death. This is particularly puzzling since girls only showed an increase in painful and provocative events and suicide ideation/behavior across grades (Joiner, 2005). At the same time, this finding points to a general matter of vagueness: Why do girls and women report lower fearlessness about death than boys and men (Ribeiro et al., 2014; Witte et al., 2012), although they are more likely to conduct non-suicidal and suicidal self-injury (Nock et al., 2013)? As has been mentioned already, Witte et al (2012) found greater sensation seeking to account for the positive association between male gender and fearlessness of death. Still, this does not explain why higher rates of nonsuicidal- and suicidal self-injury do not translate into less fearlessness about death in women. In general, relatively little is known about (a.) the specific pathways by which people become fearless about death, (b.) moderating factors (e.g., intensity and frequency of provocative events, personality traits, genetic factors) in the acquisition of fearlessness about death and (c.) the relative influence of different types of painful and provocative events in acquiring capability. Future studies are needed to clarify these issues and by association gender specific pathways to fearlessness about death.

In this regard, it may also be that girls' experiences with non-suicidal and suicidal self-injury may not lead to an increase in general fearlessness about death (as assessed with the fearlessness about death subscale of the GCSQ), but to a specific self-ascribed capability to die by suicide. Thus, girls showed an increase in perceived capability to die by suicide in the current study (whereas boys did not), although they did not show an increase in general fearlessness about death. Due to a lack of pertinent studies it is so far unknown whether fearlessness about death or perceived capability to die by suicide is more relevant to (future) suicidal behavior. However, in previous studies as well as in the current study only the one item measuring perceived capability for suicide was significantly associated with suicidality measured by the SBQ-R (Spangenberg et al., 2016) or past suicide attempts (Wachtel et al., 2014). Therefore, it may well be that the item assessing perceived capability is especially sensitive to changes in non-suicidal and suicidal self-injury. Future work is needed to clarify this issue.

Different limitations have to be considered when interpreting the results of this preliminary study. First, since the entire sample was Caucasian, it is possible that the findings will not generalize to students with other ethnic backgrounds. Second, due to the cross-sectional study design we cannot draw conclusions about developmental trajectories of fearlessness about death and perceived capability to die by suicide. Future studies should therefore make use of a longitudinal, prospective design. Third, due to low internal consistencies of the pain tolerance scale of the German Capability Questionnaire (Wachtel et al., 2014) it was not possible to investigate this facet of the acquired capability construct in the current study. However, longitudinal and cross sectional studies have already shown that children between 6 and 16 become less sensitive to painful stimuli with advancing age (Blankenburg et al., 2010; Hirschfeld et al., 2012). Finally, the SBQ-R item used in the current study does not allow a separate analysis of suicide ideation and suicidal behaviors. It is therefore possible that the linear trend found in girls is explained either by suicidal ideation or by suicidal behaviors.

The findings from this study have modest implications for clinical assessments of suicide risk. Given that Joiner (2005) describes the acquired capability for suicide as a fairly stable quality and not very malleable, it is probably not a promising target for prevention. Nonetheless, school-based suicide prevention programs may integrate fearlessness about death and perceived capability to commit suicide as a screening focus either in self-report screening tools or in gatekeeper trainings, focused on qualifying school staff in recognizing at-risk students (Katz et al., 2013). However, future work testing the temporality and causality between painful and provocative events, fearlessness about death and suicidal behavior in adolescence is critical before making a strong claim towards taking acquired capability into account within school prevention efforts.

To our knowledge, this investigation is the first study on facets of acquired capability for suicide in young adolescents. The results generally support assumptions of the interpersonal model. Yet, results were affected by participant's gender. Therefore, future studies on the interpersonal theory should take gender differences into account. Since suicidal behavior is a major concern in children and adolescents, it is indispensable to refine our understanding of the importance of acquired capability for suicide in this age group and the role of potential predictors and moderators relevant to its development.

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Original Research

Association of Non-Suicidal Self-Injury and Suicide Attempts in Psychiatric Inpatients with High Suicidal Risk

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Abstract: Non-suicidal self–injury (NSSI), suicide ideation, and attempted suicide are closely linked to psychiatric disorders. However, there is paucity of literature about the relationship between NSSI and suicide attempts among psychiatric patients with high suicidal risk. This study examines the relationship between NSSI and suicide attempts in psychiatric inpatients with high suicidal risk. Towards this, 120 consecutive psychiatric patients with high suicidal risk, aged 17-60, were systematically evaluated for depression severity, hopelessness, suicide ideations, suicide intent, and past attempts (both suicidal and NSSI) by using valid tools. Lifetime history of suicide attempts and NSSI was found to be 96.7% (116/120), and 36.7% (44/120), respectively. The number of lifetime suicide attempts ranged from 0 to 6 (M = 2.26, SD = 1.226), and frequency of NSSI ranged from 0 to 3 (M = 0.48, SD = 0.745). In patients with or without NSSI, there were no significant differences in depression severity, hopelessness, and suicide intent. However, the frequency of NSSI was positively correlated with the number of suicide attempts (r = 0.318, p < .05) independent of depression severity, hopelessness, and suicidal intent. To, conclude, NSSI frequency appears to be an independent factor for increased suicide risk among psychiatric patients given that it has a positive association with the number of suicide attempts.

Keywords: non-suicidal self-injury, suicide attempts, psychiatric patients

Non-suicidal self-injury (NSSI) is most commonly described as the direct and deliberate destruction or alteration of body tissue without conscious suicidal intent (Favazza, 1998; Pattison & Kahan, 1983; Weierich & Nock, 2008), for instance, deliberately cutting or burning of the skin. NSSI may be considered to be prevalent along a continuum of self-harm in a place of lesser severity than suicide attempts (Brausch & Gutierrez, 2010). The most important distinction between NSSI and suicide is that NSSI is intended to injure the body without causing death (Nock & Mendes, 2008).

Several researchers (Brown, Comtois, & Linehan, 2002; Muehlenkamp & Gutierrez, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Whitlock, Eckenrode, & Silverman, 2006) have found a link between self-injurious behaviour and, suicidal ideation and suicide attempts at a later date. Up to 16% to 70% of individuals with a history of NSSI also reported at least one previous

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nonlethal suicide attempt (Jacobson, Muehlenkamp, Miller, & Turner, 2008; Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein., 2006; Wilcox, Arria, Caldeira, Vincent, Pinchevsky, & O'Grady, 2012).

Previous self-harm has been identified as a risk factor for current suicidal ideation (Brausch & Muehlenkamp, 2007). Suicidal ideation is more prevalent among those who engage in NSSI and have a history of suicide attempts than in those who resort to NSSI alone (Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009).

At the same time, NSSI is a significant predictor of subsequent NSSI and subsequent suicide attempts (Wilkinson, Kelvin, Roberts, Dubicka, & Goodyer, 2011). Because attempted suicide and NSSI commonly co-occur (Andover, Morris, Wren, & Bruzzese, 2012), NSSI behavior has implications for future suicide attempts. Research suggests that as compared to individuals without a history of NSSI, individuals with a history of NSSI were over nine times more likely to report suicide attempts; seven times more likely to report a suicide gesture; and, nearly six times more likely to report a suicide plan (Whitlock & Knox, 2007).

The interpersonal-psychological theory of attempted and completed suicide theorizes that NSSI may habituate an individual to physical and emotional pain and to the very act of self-injury (Joiner, 2005, Joiner et al., 2005, Van Orden, Merrill, & Joiner, 2005). Joiner and colleagues (2005) suggest that the frequency of NSSI episodes might be more important for predicting suicide than the mere presence of NSSI because, the more the number of NSSI episodes an individual engages in, the more is the opportunity for habituation to physical and emotional pain, and to acquire the ability to self-injure, and thereby this behavior puts the individual to a greater risk of suicide in future. A recent study by Anestis, Knorr, Tull, Lavender, & Gratz, (2013), shows that distress tolerance moderates the relationship between NSSI frequency and suicide. High levels of distress tolerance facilitate suicidal behavior in at-risk populations and suggest that the capacity to tolerate aversive physiological and affective arousal might be vital to engagement in serious or lethal suicidal behavior.

A study by Andover & Gibb (2010), examined the relationship between NSSI and suicide attempts among 117 psychiatric patients in a general hospital in the United States. The authors found that a large proportion of the sample (45.3%) reported a history of NSSI; the lifetime frequency of NSSI ranged from 0 to over 1000 episodes; two-thirds of the patients (63.2%) reported a history of suicide attempts; and, the frequency of lifetime

suicide attempts ranged from 0 to 25. Further, the study found that the presence and frequency of past NSSI was strongly associated with suicide attempts and suicide ideations rather than with hopelessness, depression severity, and symptoms of borderline personality. Also, those with a history of NSSI had made more lethal suicide attempts than those without a history of NSSI. Similarly, frequency of NSSI exhibits a stronger relationship with suicidal behavior than depression, borderline personality disorder (BPD), anxiety, and impulsivity (Klonsky, May, & Glenn, 2013). Earlier studies evaluating the relationship between NSSI and suicide have been primarily from adolescent populations and use community based samples. Very few studies have evaluated the relationship between NSSI and suicide attempts among patients with primary psychiatric illnesses. There is also lack of research on the association of NSSI and suicide attempts in patients with psychiatric illnesses with respect to established predictors of suicide, such as depression, hopelessness, and suicidal ideation. In the Indian context, these areas have yet to be investigated. This study attempts to bridge this research gap. It examines the relationship between NSSI and suicide attempts in psychiatrically ill patients presenting with high suicidal risk at the time of admission to a tertiary health care center in India. The study also investigates the relationship between NSSI and suicide attempts in the context of established predictors of suicide in psychiatric inpatients with high suicide risk.

Method

Participants
The study is based on a sample of psychiatric patients with high suicide risk who were admitted to the Emergency Psychiatry and Acute Care (EPAC) Service at the National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, Karnataka, India. All psychiatric patients presenting to the EPAC Service of NIMHANS from June 2011 to May 2012, with identified high suicide risk, and who were aged between 17-60, were approached to participate in the study. Patients with dementia, mental retardation, and organic mental disorders such as head injury, tumors, CNS infections, catatonia, and those with acute psychotic symptoms, which interfere with the understanding of procedures and/or tools, were excluded from the study. Accordingly, 120 consecutive psychiatric patients with high suicidal risk who satisfied the inclusion criteria for the study were evaluated.

Procedures and Measures

All assessments were done within 48 hours of in-patient care to avoid factors which would have reduced the patients' symptomatic severity. Approval from the Institute Ethics Committee of NIMHANS was obtained before initiating the study. Written informed consent was obtained from the patients. Assessments included a structured intake proforma to document socio-demographic and clinical information. The psychiatric diagnosis of these 120 patients was made by using the Mini-International Neuropsychiatric Interview (M.I.N.I). Patients with a M.I.N.I. score for suicidality ≥17 were classified as being at high suicidal risk. M.I.N.I is a short structured clinical interview, which was designed for epidemiological studies and multicenter clinical trials (Sheehan et al.,1998). The patients were systematically evaluated for depression severity, hopelessness, suicide ideations, suicide intent, past attempts (both suicidal and NSSI) by using the Beck Depression Inventory (BDI) (Beck, Steer, & Brown, 1996), Beck Hopelessness Scale (BHS) (Beck & Steer, 1993), Scale for Suicide Ideation (SSI) (Beck, Kovacs, & Weissman, 1979), Suicide Intent Scale (SIS) (Beck, Schuyler, &Herman, 1974), and Suicidal Behaviors Questionnaire (Linehan, 1981), respectively.

Statistical tools

Chi-square test was used to establish a relationship between history of NSSI and the number of suicide attempts. Mann-Whitney test and Independent Sample t-test was applied to compare the mean values of BDI, BHS, SSI, and SIS scores in patients with or without a history of NSSI. Kolmogorov-Smirnov test was used to test for normality of all variables. Variables that were found to be skewed, such as frequency of NSSI, number of suicide attempts, and BHS scores, were transformed into a logarithm scale. Bivariate correlation analysis, by using Pearson's correlation, was used for examining the correlation between different variables such as frequency of NSSI, number of suicide attempts, BDI, BHS, SSI, and SIS scores. Step-wise regression analysis was performed to identify the independent predictors of suicide attempts.

Results

The mean age of the 120 patients admitted with high suicidal risk was 32.83 (SD ± 9.988), with 50% aged 18-30 years. . Of the total sample, 92.5% (111/120) were admitted after having attempted suicide, 96.7% (116/120) had a life time history of attempted suicide (including the present attempt), and 36.7% (44/120) had a lifetime history of NSSI.

Among the 111 (96.7%) patients, who had been admitted after having attempted suicide, 41 (37.3%) had a lifetime history of NSSI. Among the 9 (7.5%) non-attempters, 3 (33.3%) had a lifetime history of NSSI. No statistically significant difference was found between suicide attempters and non-attempters with regard to the presence of NSSI (see Table 1).

Table 1 Suicide Attempts and NSSI among the Participants

Lifetime history of NSSI	Whether admitted for attempted suicide Number (%)		
	No	Yes	p value
No	6 (66.7)	70 (63.1)	p = 1
Yes	3 (33.3)	41 (36.9)	

Of the 44 patients who had a lifetime history of NSSI, the most frequently used method for NSSI was cutting the wrist with sharp objects, 10 (22.7) cases. The other methods used were, in order of importance, manual strangulation, 9 (20.5%) swallowing poison/caustic or hitting one's head/biting oneself, 8 (18.2%) in each case; taking an overdose of pills, 7 (15.9%); burning one-self, 4 (9.1%); jumping from a height or drowning in shallow water, 1 (2.3%) in each case.

Among those who were admitted after having attempted suicide (111), the number of lifetime suicide attempts ranged from 1 to 6 (M = 2.26, SD = 1.226). Among those who had engaged in NSSI behavior (44), the frequency of NSSI ranged from 1 to 3 (M = 0.48 SD = 0.745).

Of the 44 patients with a history of NSSI, 77.3% (34) engaged in NSSI once, 13.6% (6) twice, and 9.1% (4) thrice.

Table 2 shows that among patients with or without NSSI, there were no significant differences in depression severity (p = .324), hopelessness (p = .405), suicide ideation (p = .255), and suicide intent (p = .118).

The frequency of NSSI was found to be positively correlated with the number of suicide attempts (r = 0.318, p = < .05) and was independent of depression severity, hopelessness, and suicidal intent (see Table 3). A multiple linear regression analysis was done by taking the log values of the number of suicide attempts as the dependent

variable and the frequency of NSSI, BDI, BHS, SSI, and SIS scores as the independent variables. The step-wise regression analysis indicates that the frequency of NSSI and SIS   scores is the significant variable (R^2 = 0.26, F change = 17.97, F

= 19.05) in this linear model. On the other hand, total BDI, BHS, and SSI are non-significant variables. The frequency of NSSI was a contributing factor to the suicide attempts.

Table 2 Illness Parameters of Those With or Without NSSI

	NSSI		
	With	Without	
	$M \pm SD$	$M \pm SD$	
Variable	(n = 76)	(n = 44)	Statistic
BDI score	34.88 ± 15.148	32.68 ± 14.582	p = 0.324
BHS score	13.25 ± 6.206	12.66 ± 5.536	p = 0.405
SSI score	16.3684 ± 9.001	14.20 ± 6.79	p = 0.255
SIS score	32.71 ± 5.478	30.98 ± 5.846	p = 0.118

Note. BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; SSI: Scale for Suicide Ideation; SIS: Suicide Intent Scale

Table 3 Correlation between Frequency of NSSI and the Relevant Variables

Variable	SA[@]	Frequency of NSSI[@]	BDI	BHS[@]	SSI	SIS
SA[@]	1					
Frequency of NSSI[@]	**0.318***	1				
BDI	0.175	0.200	1			
BHS[@]	0.123	0.163	0.352*	1		
SSI	0.198	0.121	0.442	0.427[**]	1	
SIS	0.371**	0.193	0.302**	0.185	0.291	1

Notes. SA: number of suicide attempts; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; SSI: Scale for Suicide Ideation; SIS: Suicide Intent Scale
*p < .05 **p < .01.
[@]: Log transformation of skewed variables

Discussion

The findings of various studies on NSSI among adolescent psychiatric inpatients suggest that the prevalence rate for NSSI varies in the range of 30 to 40% (Darche 1990; Jacobson, Muehlenkamp, Miller, & Turner, 2008). In case of adult psychiatric patients (aged 17-73 years) it was found to be 45.3% (Andover & Gibb, 2010). As compared to this, in our study the rate of NSSI in adult psychiatric inpatients (aged 17-60 years) at 36.7% is on the lower side. This is probably due to cultural factors in India where family ties and social support are strong in times of emotional distress and illness.

The number of lifetime suicide attempts in our study is much lower than those found by Andover and Gibb (2010). In our study, the number of lifetime suicide attempts for all the 120 patients ranged from 0 to 6 as against 0 to 25 reported by Andover and Gibb. Further, the lifetime frequency of NSSI among suicide attempters too was much lower in our study. In our study the lifetime frequency of NSSI ranged from 0 to 3 episodes as against 0 to over 1000 episodes reported by Andover and Gibb. These differences can again be explained by cultural factors such as strong family bonds and a social structure that provides emotional and physical support to a psychiatrically ill person in India. However the lower number of NSSI and past suicide attempts in psychiatrically ill patients in India could be due to under reporting, as there is a stigma attached to illness, or due to lack of awareness of psychiatric illnesses in the particular region of the country. These factors might have influenced the relationship between NSSI and suicide, and needs to be explored through further studies.

As observed by Whitlock, Eckenrode, and Silverman (2006) and Andover and Gibb (2010), we find that the most common form of NSSI was self-cutting.

Our results support Joiner et al. (2005) who suggest that the frequency of NSSI episodes might be more important for predicting suicide than the mere presence of NSSI because of habituation to physical and emotional pain as a result of NSSI behavior and the acquired ability to self-injure.

In our study, the frequency of NSSI appears to be an independent factor for increased suicide risk among psychiatric patients given the fact that it has a positive and significant association with the number of suicide attempts. As theorized by Joiner and colleagues (2005) and supporting the findings of Andover and Gibb (2010) our study observes that the frequency of NSSI was positively correlated with the number of suicide attempts (r = 0.313, p = < .01), and was independent of depression severity, hopelessness, or suicidal intent.

Our findings have important implications while assessing suicide attempters, with a history of both NSSI behavior and suicide attempts, for suicide risk. The implications for clinical practice are important as well, in that NSSI, especially when found to be frequently prevalent, might increase the risk of suicide attempts. Hence, NSSI behavior by itself is a cause for concern in clinical practice, even when there is no evidence of other factors such as suicide ideations.

Our study observes that the majority of suicide attempters (63%) did not have a history of NSSI (see Table 1). Therefore, while assessing patients for suicide it would be clinically relevant to assess them for the other established risk factors of suicide as well, rather than relying merely on the presence of an NSSI history.

Our study has a few limitations, the first one being that it is a cross-sectional study, whereas a longitudinal study might have given a better idea about the pattern of suicide among highly suicidal patients. Another limitation of the study is that it relies on retrospective self-reports of the patients on past NSSI and suicide attempts. Given the retrospective bias of reporting, several instances might have been classified as NSSI based on the patient's report rather than on the basis of the method used. Lastly, the findings of the study cannot be generalized because the study is based on a sample of psychiatric inpatients with suicidal risk in a tertiary care center and thus might not reflect the real clinical prevalence of NSSI in a community based sample of the Indian population. Notwithstanding the important implications of this study for clinical practice, many important questions about NSSI and its relationship to suicide attempts need explanation through further research, such as why individuals who engage in NSSI are at a greater risk for attempted suicide. Do individuals with a greater frequency of NSSI and duration of NSSI behavior have a higher rate of lifetime suicide attempts as compared to individuals who have no history of NSSI?

There is a need for continued research in NSSI and its relation to attempted suicide by taking larger samples to further reinforce the findings of this study. Future longitudinal studies are necessary to investigate the presence and frequency of NSSI as a risk factor for suicide attempts. Research comparing the relationship of NSSI and suicide attempts in the general population with that in the severely ill psychiatric population would help in developing appropriate interventions for reducing the risk of suicide in the general population.

This study emphasizes the need for developing culture specific awareness and preventive measures to identify and intervene in case of individuals with a history of NSSI, so that risk of future suicide can be minimized.

Conflict of Interest

The author(s) declare that they have no competing interests.

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Original Research

The quality of life in the regions of Brazil and suicide and homicide rates

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Abstract: This study examined the associations between two indices of the quality of life and suicide and homicide rates in the 27 Brazilian states and in the 26 Brazilian capital cities. The results indicated a positive association between the quality of life and suicide rates, replicating previous research on nations and on the American states, but homicide rates were not consistently associated with the quality of life in the Brazilian states. No associations were found, however, for the capital cities.
Keywords: quality of life, suicide, homicide, Brazil

Henry and Short's (1954) theory of suicide assumes that the basic and primary target of aggression is another person rather than the self. What enables the child to develop so that his primary response to frustration, that of other-oriented aggression, is seen as legitimate, while other children develop in such a way that this primary response is inhibited and self-directed aggression becomes legitimate? Sociologically, Henry and Short proposed that the strength of external restraint was the primary basis for the legitimization of other-oriented aggression. When behavior is required to conform rigidly to the demands and expectations of others, the share of others in the responsibility for the consequences of the behavior increases, thereby legitimizing other-oriented aggression. When external restraints are weak, the self must bear the responsibility for the frustration generated, and other-oriented aggression fails to be legitimized.

Common sense suggests that, as we improve conditions in the world, people should be much happier. If we can eliminate poverty and oppression (such as sexism and racism), if we clean up the environment, if we improve the educational and cultural offerings for our citizens, if we do all this, then we should be much happier. Then, as the quality of life increases, life should be more worth living and suicide less common.

However, from Henry and Short's theory, it can be argued that when external conditions are bad, we have a clear source to blame for our own misery, and this makes us outwardly angry rather than inwardly angry or depressed. When times are good, there is no clear external source of blame for our misery, and so we are more likely to become inwardly angry or depressed and less likely to be outwardly angry. Henry and Short would argue that a higher quality of life would lead to higher rates of suicide and lower rates of homicide, whereas a lower quality of life would lead to lower rates of suicide and higher rates of homicide. Lester (1989) reviewed several studies he had

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conducted which supported the hypothesis derived from Henry and Short's theory.

Another obvious prediction from Henry and Short's theory is that suicide and murder are opposite behaviors. Societies with high rates of one of the behaviors should have low rates of the other. Lester (1987) reviewed research on the sociological correlations between suicide and homicide rates, and several studies report opposite associations between social characteristics and suicide and homicide rates. For example, societies with a higher quality of life had higher suicide rates but lower homicide rates than societies with a worse quality of life. For other variables, however, the patterns of correlations were quite different for homicide and suicide, but not opposite.

Bando et al. (2012) found a spatial cluster of high suicide rates in the southern part of Brazil, the same region with the highest income per capita. Bando and Lester (2014) found that suicide and homicide were negatively correlated in Brazil and in, a multiple regression analysis, that suicide was related to high socioeconomic status. These studies suggest that the suicide rates of regions in Brazil may be associated with the quality of life in the regions. The present study was designed to explore whether suicide and homicide rates were associated with two indicators of quality of life in Brazilian states.

Method

The present study is a cross-sectional ecological study using suicide, homicide and quality of life data in the 27 states and the 26 capitals of Brazil as the unit of analysis. Deaths considered to be suicide were those that used codes corresponding to "intentional self-harm" (X60 to X84); for homicide, the codes used were deaths due to "assault" (X85 to Y09) according to the International Classification of Diseases and Deaths (ICD-10). The mortality database utilized was that of the Ministry of Health Mortality Reporting System (DATASUS 2012). Sociodemographic data were extracted from the National Census (2010) from Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics, IBGE). We calculated the age adjusted rates of suicide and homicide using direct standardization. This approach adjusts crude rates according to the age distribution of one external, arbitrarily-defined population. In this case, Brazilian population in 2010 was used as a reference (Ahmad et al., 2001). However, these suicide rates do not control for variations across the states and capitals in sex or ethnicity.

The Brazilian Human Development Index (HDI) follows the same three dimensions of the United Nations HDI - longevity, education and income - but modifies the methodology (PNUD 2013). The second indicator of quality of life was extracted from the Federation of Industries of Rio de Janeiro (FIRJAN, 2015). The Municipal Development FIRJAN Index (MDFI) was inspired by the HDI and includes the variable employment along with the income to compose the index.

The Brazilian HDI and the MDFI assume that, to measure progress in the quality of life of a population, it is necessary to go beyond the purely economic aspect and consider other social, cultural and political influencing the quality of human life. Both indexes range from 0 (low quality of life) to 1 (high quality of life). All the data used are available with free access.

The analyses were conducted with data for the years 2000, 20005, and 2009.

We collected the indicators according to the available period, the HDI for the years 1991, 2000, 2010 and the MDFI for the years 2000, 2005, 2009. Then we calculate the respective suicide and homicide age adjusted rates.

Results and Discussion

The results are shown in Table 1. For the 27 Brazilian states, the higher the quality of life on both measures, the higher the suicide rates. The results for homicide rates were, however, inconsistent – a weak positive association in some years and a weak negative association in other years. The data for the 26 capital cities did not support an association between the quality of life and suicide or homicide rates.

		Capital cities (n=26)	States (n=27)
MDFI and			
Suicide rate	2000	-0.01	0.46*
	2005	0.12	0.32
	2009	0.02	0.29
Homicide rate	2000	-0.06	0.35#
	2005	-0.20	0.05
	2009	-0.17	-0.33#
HDI and			
Suicide rate	1991	-0.08	0.60***
	2000	0.06	0.51**
	2010	-0.14	0.31
Homicide rate	1991	-0.13	0.29
	2000	-0.03	0.35#
	2010	-0.42*	-0.37#

Table 1: Pearson correlations between the quality of life and suicide and
homicide rates in Brazil
two-tailed p < .10
* two-tailed p < .05
** two-tailed p < .01
*** two-tailed p < .001

Previous research on the association between the quality of life and suicide and homicide rates used large areas – nations and states or provinces. It may be that breaking regions down into smaller

units (in the present case, cities) eliminates these associations, although possible reasons for this are not immediately apparent. Future research should explore the role of the size of regional unit in the consistency of the associations between the quality of life and suicide rates. In addition, the present study failed to find a consistent association between the quality of life and homicide rates. Again, possible reasons for this inconsistency are difficult to discern, but the results do throw doubt on Henry and Short's thesis that suicide and homicide rates are opposed behaviors which show opposite correlations with social variables.

The present study has a limitation that is inherent to the ecological study design. An association observed between variables at the group level does not necessarily represent the association that exists at the individual level. This bias is known as the ecological fallacy. Furthermore the study was correlational in nature, and so none of the results presented should be interpreted as cause-and-effect statements since associations do not imply causality.

Declaration of interests

Daniel Bando and David Lester declare that they have no conflict of interest.

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Original research

The Birthday Blues

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Abstract: Data from 10,884 suicides, whose dates of birth and death were posted on a suicide memorial wall, were examined for whether they were more likely to die by suicide on their birthdays than expected. Sixty-three suicides died on their birthdays as compared to an expected number of 29.8, significantly more than would be expected by chance.
Keywords: birthday blues; suicide; anniversary reaction

The question of whether suicides have a tendency to choose their birthdays for their suicidal act has received a great deal of attention. Several studies have found no significant increase of suicides on birthdays: Wasserman and Stack (1994) for elderly suicides in Ohio, Panser, et al. (1995) for a small sample of suicides in Minnesota, Chuang and Huang (1996) for suicides in Taiwan, Lester (1997) for a sample of famous suicides, Lester (2005) in small sample of 74 suicides among those who played in the major leagues in the United States, and Lester (1986, 1988) for a small sample of 208 suicides in Philadelphia (USA)[1].

However, Christoffel, et al. (1988) found an excess of suicides on and around their birthdays, while Barraclough and Shepherd (1976) found that elderly suicides were more likely to die by suicide in the 60-day period around their birthday (but not so for younger suicides).

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[1] Unusually, this study had comparison groups of homicidal and natural deaths.

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Kunz (1978) found an excess of suicides in the three months after their birthday than in the three months before their birthdays. Shaffer (1974) found that children who died by suicide were more likely to do so within two weeks of their birthday. Hagnell and Rorsman (1980) found that seven of the 27 suicides in their sample died with 30 days of their birthdays.

More recently and using large samples, Jessen and Jessen (1999) analyzed 32,291 suicides in Denmark and found a decrease in suicides in the week prior to the birthday and an increase in the week after the birthday. Williams, et al. (2011) studied 50,160 suicides in England and Wales and found an excess of suicides on the individuals' birthdays among men, especially for those aged 35 years and older. Zonda, et al. (2016) analyzed all suicides (n=133,421) in Hungary for the period 1970-2002 and found that more suicides occurred on birthdays for men of all ages and for women over the age of 60. This birthday blues phenomenon was found for urban and rural suicides, for those of all marital statuses, and for both violent and nonviolent methods for suicide. In contrast, Reulbach, et al. (2007) found no birthday blues effect in 11,378 suicides in Bavaria, Germany.

The present research was designed to further examine the birthday blues effect using a large sample of over 10,000 suicides listed on a suicide memorial wall.

Method

The suicide memorial wall (www.suicidememorialwall.com) allows the significant others of those who died by suicide to post the name, age, and dates of birth and death on the wall. At the time of downloading the contents of the wall (April, 2014), there were 11,253 names on the wall. The postings were downloaded using EXCEL and transferred to an SPSS data file.

The sex of the people was checked automatically using genderchecker.com. Many names are ambiguous, and so the sex of many individuals remained unknown (11.2%). Of the remaining people, 79.3% were men and 20.7% women. The mean age was 31.4 years (SD = 13.7, range 9 to 94), median 28 and mode 18. The year of birth ranged from 1823 to 2002, with a mean of 1970 (SD = 16; median 1974 and mode 1983) and the year of death ranged from 1848 to 2014, with a mean of 2003 (SD = 8.6; median 2004 and mode 2005). Ninety percent of the dates of birth were 1949 or later, and 90% of the dates of death were 1994 or later.

All entries were checked for discrepancies, such as the age of the person not matching the distance between the dates of birth and death. Any impossibilities in the month (for example, not in the range of 1-12) were identified. A search was made for duplicate names, as well as possible reversals for date of birth and date of death. These were resolved or, when this was not possible, switched to missing data. Some of the suicides had missing data. After the data set had been cleaned, data remained for 10,884 suicides with a date of both date of birth and date of death. The majority of the suicides were from the United States, but a few were from other countries.

Results and Discussion

For the examination of how many individuals died by suicide on their birthday, data were available for 10,884 suicides. For 10,884 suicides over a long period of time, the expected number of suicides is 10,884/365.25 (using a correction for leap year) which equals 29.8. The number observed was 63 (χ^2 = 37.09, df = 1, p < .0001).

For those whose sex could be determined, 45 (81.8%) of the people who died on their birthday were men and 10 were women, not significantly different from the sample of suicides

as a whole. Similarly the mean age of the suicides occurring on birthdays (32.8) was similar to that of the sample as a whole (31.4). There seemed to be no particular age at which the birthday suicides peaked. The modal age (with only six suicides) was 23. None occurred at age 21, and only two at age 40 and one at age 50.

For month of birth and month of death separately, data were available for 11,058 suicides. There was no variation for month of birth (χ^2 = 16.05, df = 11, p = .14) but there was a significant variation over month of death (χ^2 = 26.02, df = 11, p = .005) with March having the most (8.91%) and October (7.95%) and fewest in December (7.42%), replicating the commonly reported Spring and Fall peaks in suicides (Lester, 1979).

Although the present sample of suicides is not the type of sample that is typically used for research (a consecutive series of suicides in a region of the world), the sample did show the typical pattern of a Spring and Fall peak, and a greater proportion of men. Although the birthday blues effect was found for the present sample, the fact that only 63 of the 10,884 suicides died by suicide on their birthdays (versus an expected number of 29.8) indicates that the birthday blues effect, if it exists in a population, requires a large sample for it to be detected.

Most researchers who study the birthday blues effect use the broken promise effect described by Gabennesch (1988) to explain the phenomenon. Gabennesch suggested that people typically hope that their lives will improve but, when their lives do not improve, feel let down and are more likely to choose to die by suicide. This proposed effect has been used to account for the Spring peak in suicides and the Monday peak in suicides since, when Spring comes after Winter and the new week starts, and people's lives continue to be miserable, those who are already depressed may experience increased hopelessness and be more prone to choose to die by suicide. Birthdays are often viewed as "the first day of the rest of your life" and, if life continues to be miserable, then depressed people may be at greater risk for suicide. However, although macrosociological studies have been conducted to test the broken promise effect (such as those on the birthday blues), no psychological studies of individuals have appeared that test the effect directly.

There are some data that suggest that mortality from all causes might increase on or around birthdays (e.g., Abel & Kruger, 2009), and so any peak in suicides on birthdays may be part of a broader phenomenon, perhaps the increased salience of mortality and the resulting anxiety on

ceremonial occasions, which would fit in with terror management theory (Greenberg, Pyszczynski & Solomon, 1986).

The study is limited by the fact that it was not a complete sample of all suicides in a given region in a given time period, and neither is it a random sample, but the suicides listed on the memorial wall were not placed there with the intent of testing any psychological or sociological hypothesis about suicide, and so the suicides on the memorial wall should not be biased in favor or against the hypothesis. Previous research has examined the impact of variables such as marital status and the method chosen for suicide, but these data were not posted on the memorial wall. Abel and Kruger (2006-2007) noted that official records may misstate the actual day of death. Missing data are often assigned to dates such as the 1st or 15th of the month. However, this is less likely to be the case in death dates posted by relatives of the deceased.

The inconsistencies in the results of the present study and past studies is perplexing, and more research is needed to identify the conditions under which the birthday blues phenomena for suicidal deaths is found versus those under which the effect is not found.

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Original research

Possible Biomarkers for Assessing Deliberate Self-Injury Risk
A Study in Dermatoglyphics*

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Abstract: *Background:* The term dermatoglyphics literally means skin carving. It is the scientific study of the skin configurations on the volar side of fingers, palms, toes and soles, and a branch of physical anthropology, medicine, genetics and psychobiology. Since the 1920s, numerous studies have reported that unusual and even anomalous dermatoglyphics are associated with specific medical and psychiatric disorders, but to the best of my knowledge no dermatoglyphic analysis has been undertaken in individuals who deliberately injure themselves. Since skin configurations are hereditary, and since several studies suggest that self-injurious behavior is influenced by genetic factors, dermatoglyphics may help provide clues to its detection before the very first self-harmful act is inflicted. *Methods:* Dermatoglyphic prints of fingers and palms were obtained from a sample of women who injure themselves, and compared with the dermatoglyphics of a control group of healthy women. *Results:* The results show that the research group is characterized by a distinctive set of sixteen uncommon dermatoglyphic features, and thus suggest that dermatoglyphics can contribute to the detection of women at risk for self-injury.

Keywords: dermatoglyphics, biomarkers, deliberate self-harm, non-suicidal self-injury

The psychological category "Suicidal Behavior" includes three kinds of behavior: suicide, attempted suicide and deliberate self-injury. The third sub-category includes people who intentionally injure their body, seeking immediate (and/or prolonged) tissue damage, but with no intent to die (Babiker & Arnold, 1997; Simeon & Favazza, 2001; Klonsky, 2007; Oron, 2008, 2012). It is well known that non-suicidal self-injurious behavior is manifested in a variety of forms which may lead to serious medical complications, and is

associated with increased risk of suicide and suicide attempts (Hawton et al., 2003; Cooper et al., 2005). It is known as well that the key feature of self-injury is the inability to resist or delay the impulse to hurt oneself, once the decision to self-injure has been made.

Therefore, professionals search for measures to prevent these harmful acts. At present, such measures mainly aim at preventing or alleviating relapses or sequelae to self-injury that has already occurred, since virtually nothing is known concerning effective ways of preventing the onset of this practice (i.e. primary prevention).

Since dermatoglyphic configurations are hereditary (Cummins and Midlo, 1961; Mulvihill and Smith, 1969), and since self injurious behavior is under contributory genetic factors (Maciejewski et al., 2014), I have designed this exploratory study to examine whether individuals who injure

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themselves are characterized by distinctive skin configurations on digits and palms, and thus show that dermatoglyphics can contribute to the detection of such individuals before the very first self-harming act is inflicted.

What is the rationale for this approach?

The interest in the complex configurations of ridges and creases on digits and palms probably dates to the dawn of humanity. The oldest fingerprints were found as carvings on the walls of a Neolithic burial passage on the Isle of Gavrinis in France (Cummins and Midlo, 1961). The earliest known scientific publications on fingerprints date back to the seventeenth century (conducted by anatomists in Britain, Holland and Italy), and their utility in personal identification was first published 200 years later (by a Scottish physician and by a British officer in India). In addition, since Galton (1892), a large number of studies have confirmed that ridge configurations and creases are determined by heredity.

Anthropological studies indicate that there are no population-specific dermatoglyphic configurations, but rather that population differences exist only in statistical measures of central tendency. However, since the 1920s, numerous studies have reported that unusual dermatoglyphics are associated with specific medical disorders such as chromosomal aberrations (Stocker et al., 2001), diabetes (Ziegler et al., 1993) and childhood leukemia (Purvis-Smith et al., 1973), and with psychiatric problems, including psychoses (Rosa et al., 2000), mental retardation (Vashist et al., 2010), hypertension (Floris et al., 1998) and infantile autism (Tarca and Barabolski, 2003; Stosljevic and Adamovic, 2013; Oron, 2014). An updated medical review reports on dermatoglyphic malformations in relation to seven diseases which are purely genetic disorders, and to seventeen diseases which have some genetic background (Bhant et al., 2014). With regard to psychopathology, or psychiatric conditions, quite a few papers and reviews have been published in recent years concerning the association of dermatoglyphic malformations with schizophrenia (Galembo-Smith et al., 2012), bipolar disorder (Shrivastava et al., 2016), hypertension (Wijerathne et al., 2015) and panic disorder (Sabanciogullari et al., 2010). In other words, epidermal ridges and patterns, which are fully developed by the end of the second trimester of fetal development and remain unchanged throughout the person's life-time, are considered as markers of prenatal disturbances (Rife, 1990).

Since, to the best of my knowledge, no study has been published yet concerning the association between dermatoglyphics and self-injurious behavior, the aim of this study was to conduct an exploratory search for preliminary evidence supporting such an association.

With regard to the broad category of suicidal behavior it is relevant to mention that except in Russia, no study has been published yet concerning the association between dermatoglyphics and complete suicide. Zoroastrov and colleagues (2009) found that a few foot skin patterns do characterize cadavers of male suicide victims, which differed from patterns found in the control group. (Dermatoglyphic study encompasses plantar features as well). On the other hand Ivanenko and his colleagues (2011) showed that the correlation between selected dermatoglyphic features (on fingers, palms, toes, and soles) and the predisposition to suicide is either insignificant or moderately significant.

Aim of the study

The purpose of the study was to identify specific dermatoglyphic features on fingers and palms of women who injure themselves, and compare them to healthy controls. (The study focused exclusively on women since the number of male volunteers was very small and practically useless).This study thus provides the first insight into the issue, and was intended to test the viability and feasibility of the proposition that there is an association between self-inflicted injury and specific fingerprint and handprint characteristics.

Method

Participants

The deliberate self-harm (DSH) research group was made up of sixteen females. Participants provided 160 fingerprints and 32 palmprints in total, compared to sixteen healthy control group participants, with no current or previously known medical or psychological disorders.

All DSH participants were neither inpatients nor outpatients (in the sense of being discharged for continued follow-up care), and it was unnecessary to hospitalize them after the harmful acts. The first self-harm act was done at the age of 13–16 and all the participants have been continuing the behavior ever since. The most frequent acts were cutting and scratching, and the main diagnosis for all women was borderline personality.

Measures and Procedure

Participation was voluntary. The participants were recruited through announcements in popular social networking websites and made first contact with the author by email, leaving their phone numbers for subsequent direct communication.

Each participant received an explanation regarding the purpose and procedure of the study and signed an informed consent. The research was carried out at an independent private practice setting and in full compliance with the local ethical regulations of the Psychology Licensing Law.

Dermatoglyphic prints of fingers and palms of all the participants were obtained and analyzed by the author. Qualitative analysis of the prints employed the classifications in Henry (1900, Part I), Cummins and Midlo (1961, Chaps. 4,5), Johnson and Opitz (1973), FBI (1993, Ch. II) and Bali (1994, Ch. 9). Quantitative analysis employed the method explained by Cummins and Midlo (1961).

Statistical analysis

1- Statistical tests of significance. The chi square test was used to compare the frequencies of the discrete data, and the T-test to compare the means of the quantitative features. Three levels of significance were predefined: $p \leq 0.1$, 0.05 and 0.01. (The $p \leq 0.1$ level was included since an exploratory study merits a more liberal attitude regarding the decision criteria for concluding that the results can be ascribed to factors other than chance).

2- Effect size measurements. Statistical tests of significance tell us the likelihood that research results differ from chance expectations, but even a statistically significant difference may not be practically important, and vice versa. Effect-size measurements tell us the relative magnitude of the difference between the research and control groups, which is an interpretable description of the size of an effect.

The effect size of the discrete data was calculated by the odds ratio measurement, and that of the continuing features by Cohen's d.

Results

Controlling for age: The research group was made up of sixteen females aged 19 to 37 years, mean 28.75 Std 5.31, compared to sixteen healthy control group participants in the 18-44 age range, mean 27.06 Std 8.39. No statistical age difference was found between the two groups.

Based on the analysis of the total number of 160 × 2 digits and 32 × 2 palms, sixteen dermatoglyphic characteristics were found which differentiate between the deliberate self-harm (DSH) participants and the healthy ones - six on finger tips and ten on palms. Twelve of these characteristics are more frequent in the research group than in the control group, and four are less frequent.

The common and the uncommon dermatoglyphic characteristics are described below in detail

(especially for those readers who are not familiar with the study of dermatoglyphics) and numbered consecutively.

Fingers
(n=160)

Figure 1 shows the three basic (or frequent) patterns located on the tips of the fingers (Source: Cummins and Midlo, 1961, p. 56). The ridges on the skin form these patterns. The pattern of the whorl, for example, is made up of circular ridges. In addition the whorl pattern possesses two deltas, one on the lower left side of the pattern and one on the lower right side of the pattern. A delta (triradius) indicates a meeting point of three opposing ridge systems that form a Y shape. The loop pattern possesses only one delta, and the arch none.
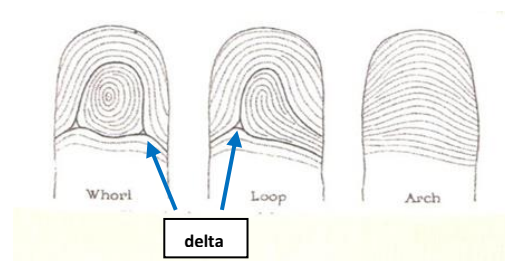

Figure 1 The three basic patterns on fingers

(1-3) The distribution of these three common patterns in the research group is opposite to the one in the control group: more whorl pattern and less loops and arches.

Three uncommon patterns were more frequent in the research group (source of figures: Henry, 1900, pp. 23,35, 39):

(4) Tented arch
An arch pattern in which horizontal ridges rise up high in the mid-axis of the transversely coursing ridges, creating a tent-like pattern. (See Figure 2).
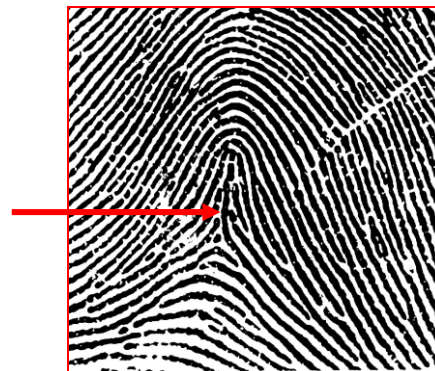

Figure 2 Tented arch
(5) Central pocket loop

An intermediate pattern between a true whorl and a pure loop, which is essentially a whorl of diminutive size (see Figure 3, the light blue outline) with only one delta (circled) lying in the interior of the "head" of a loop (the yellow outline).
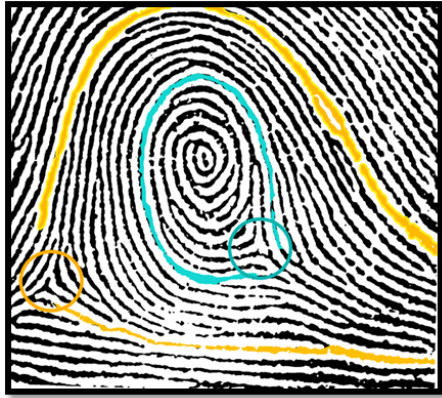

Figure 3 Central pocket loop

(6) Lateral-pocket loop
Formed when the ridges constituting the loop bend sharply downwards before recurving (Figure 4, in orange), thereby forming an interspace ("pocket"), which is filled by another loop (in green).
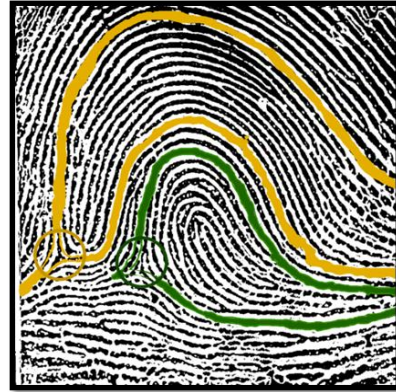
Figure 4 Lateral-pocket loop

Table 1 presents the percentage frequency of the six (qualitative) characteristics, compared with the control group. (Patterns 5 and 6 are combined as "composite", Cummins and Midlo, 1961).

Digital characteristics				
Characteristic	**DSH group** n=160	**Control group** n=160	**Significance Level**	**OR**
1. Whorl	33.8%	24.4%	p ≤ 0.03	1.58
2. Loop	36.9%	48.8%	p ≤ 0.02	1.63
3. Arch	0.6%	11.9%	p ≤ 0.0001	21.4
4. Tented arch	3.8%	0.6%	p ≤ 0.03	6.2
5-6. Composite	15.6%	8.2%	p ≤ 0.02	2.1

Table 1 Comparison of percentage frequency of digital characteristics

Palms
(n=32)

 The human palm is presented in Figure 5 (Source: Cummins and Midlo, 1961, p. 88). Usually on the palm there are five deltas (triradii): four digital deltas (marked: A, B, C and D) and an axial delta (marked by the letter:T).

As was mentioned in regard to the finger patterns, a delta indicates a meeting point of three opposing ridge systems that form a Y shape (the bold shape above each letter and beneath the letter T).
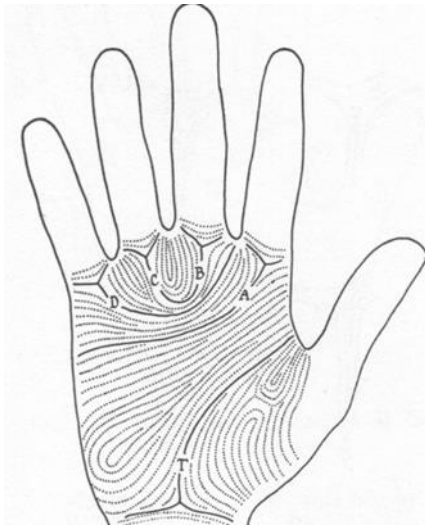
Figure 5 The human palm

On the palms, ten dermatoglyphic characteristics were observed which differentiate between the DSH participants and the healthy ones.

(7) Unsuccessful delta C
This anomalous condition takes two forms. In the first, delta C (Figure 5, embracing the fourth digit) is missing.The second is an aberrant form in which the delta is present, but its proximal radiant is not oriented toward the interior of the palm, as it is normally in all of the digital deltas (Figure 5, the bold lines beneath each letter), but instead stops running altogether.

(8) Accessory digital delta
An infrequent condition in which an extra delta is present near one or more of the digital deltas.

(9) Distal axial delta
Compared to its regular position (Figure 5, the letter T) here the axial delta is located in a distal position, at and beyond an imaginary line extending from the upper meeting point of the thumb with the palm, straight to the opposite side of the palm.

(10-11) Interdigital configurations
Ridges form configurations. A configuration is defined as a clear arrangement of ridges which separate it from the surrounding ridges (for an example see Figure 5, between the third and the fourth digits).
(A pattern is a more definite form of configuration which is composed of sharply recurved ridges, e.g. a whorl).
The DSH sample is characterized by more configurations on area IV and less on area III. (Figure 6, source: Cummins and Midlo, 1961, p.85)
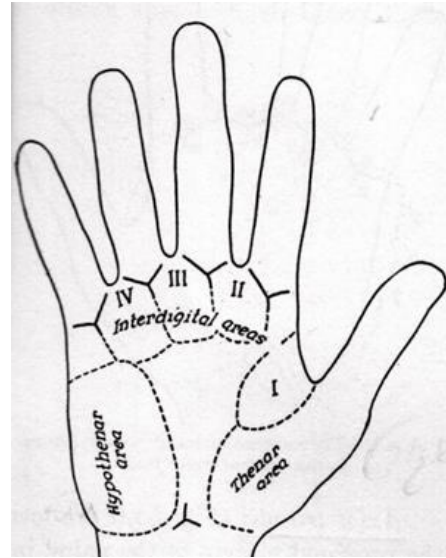

Figure 6 Interdigital areas

(12) Main line delta C
Each delta has a main line, which originates from its proximal radiant. (See Figure 5, the bold lines beneath each letter and above the letter T). In the healthy controls main line C recurves mainly distally to terminate in area III. (See Figure 6). By contrast, in the research group this line more frequently terminates in area IV.

On the human palm there are three primary creases which are constant in their locations. Two are transverse creases: the distal crease close to the four fingers, and the proximal one (Figure 7). The third is the radial longitudinal crease, which embraces the area near the thumb. In addition, on the palm there are secondary creases, which are numerous short creases distributed all over the palm (not considered here).

Figure 7 Three primary creases

(13) Separate radial starting points
Usually, the proximal transverse crease and the radial longitudinal crease have a common radial

point of origin (see Figure 7). Rarely, each of these creases has a separate starting point on the radial margin of the palm (Figure 8).

Johnson and Opitz, 1973. The right palm), sometimes the proximal crease extends to the ulnar border of the palm in a continuous straight line, or in one of its variants (Johnson and Opitz, 1973). This type of line is termed the Sydney Line (Figure 9, on the left).
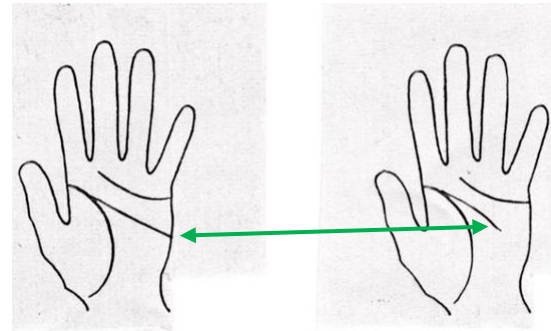

Figure 8 Separate radial starting points

Figure 9 The Sydney crease

(14) Sydney crease
In contrast to its usual form (Figure 9, source:

Table 2 shows the percentage frequency of the eight discrete (qualitative) palm characteristics, compared with the control group.

Palm characteristics				
Characteristic	**DSH group** n=32	**Control group** n=32	**Significance Level**	**OR**
7. Unsuccessful delta C	13.4%	0.0%	p ≤ 0.02	∞
8. Accessory digital deltas	21.9%	6.3%	p ≤ 0.04	4.2
9. Distal axial delta	28.1%	0.0%	p ≤ 0.0006	∞
10. Configuration area III	18.8%	62.5%	p ≤ 0.0002	7.2
11. Configuration area IV	37.5%	12.5%	p ≤ 0.01	4.2
12. Main line C	67.7%	21.9%	p ≤ 0.0001	7.5
13. Separate radial starting points	43.8%	3.1%	p ≤ 0.0001	24.1
14. Sydney crease	28.1%	3.1%	p ≤ 0.003	12.1

Table 2 Comparison of percentage frequency of palmary characteristics

(15-16) Quantitative characteristics – ridge counting
Two quantitative characteristics were observed on palms, which also differentiate between the DSH participants and the healthy ones. Ridge counts were done between deltas A and B and between deltas C and D (see Figure 5). The mean ridge count between deltas A-B in the research group

was lower than that in the healthy controls, and the mean between deltas C-D was higher compared to controls. (See Table 3).
Both results are acceptable considering the level of the effect size, the aim of this study and its potentiality for primary prevention.

Characteristic	DSH group n=32	Control group n=32	Significance Level	Cohen's d
15. RC a-b	$\bar{x}$ = 41.2 (std=5.5)	$\bar{x}$ = 42.3 (std=3.8)	n.s.	0.22
16. RC c-d	$\bar{x}$ = 37.0 (std=4.6)	$\bar{x}$ = 35.0 (std=5.9)	p ≤ 0.07	0.39

Table 3 Comparison of the mean ridge count (RC) between deltas A-B and C-D

Discussion and conclusions

The DSH sample is characterized by sixteen uncommon dermatoglyphic characteristics. Hence, the aim of the research was attained, since it provides clear support for the proposition that an association exists between dermatoglyphics and self-injurious behavior. Dermatoglyphics can therefore offer another source of information contributing to risk assessment of DSH.

Some of the dermatoglyphic characteristics observed in the current study were also found in other psychopathological conditions. In schizophrenia, for example, the a-b ridge count is less than in healthy controls (Fananas et al., 1996).The location of the axial delta in a distal position and the unsuccessful delta C were observed in individuals diagnosed with infantile autism (Tarca and Barabolski, 2003 ; Oron, 2014), as well as the separate radial starting points of the proximal and the radial creases (Oron, 2014). But take note that no single, separate dermatoglyphic feature characterizes the entire DSH sample, but rather the set of all of the distinct features observed is what differentiates it from the control group.

As to the limitations of the research, the main one is its sample size. Dermatoglyphic analysis of sixteen women limits the ability to make broader generalizations from the results to the population of self-injurious women. In addition, the results pertain exclusively to women. Nevertheless, findings are meaningful.

As mentioned, the aim of this study was to conduct an exploratory search for preliminary evidence supporting an association between dermatoglyphics and self-injurious behavior. Hence, even though it is limited in size and scope it gives a first insight into the tested issue without providing definitive support for it. To put it differently, an exploratory study does not exist on

its own. If it succeeds, it should always be followed by a main study. Thus, this small-sample research should be considered a prelude to a larger scale study. It might be worthwhile pointing out that some experts recommend a sample size of 12 participants for this kind of exploratory research (Julious, 2005), while others (Connelley, 2008) hold that it should be ten percent of the sample projected for the large study.

Therefore, the results warrant replication and refinement in larger samples of women (and men) who injure themselves seeking immediate tissue damage (i.e., cutting) or prolonged harm (i.e., anorexia nervosa). Such refinement should include examination of the levels of bilateral symmetry and asymmetry of dermatoglyphic features in right versus left fingers and palms (Cummins and Midlo, 1961). Especially so, since biological fluctuation asymmetry is considered to reflect disruptions in fetal development (Markow and Wandler,1986; Mellor,1992).

With further investigation, dermatoglyphic characteristics could lay the groundwork for a non-invasive method of identifying individuals at risk of developing self-injurious behavior, combined with psychological and medical batteries currently used for risk assessment. Since genetic and biological vulnerability is by no means deterministic in this respect, those found to be at risk could be closely monitored and encouraged to participate in psychological intervention programs.

The results of the study also imply that a dermatoglyphic study is warranted with regard to suicide and attempted suicide. Should a specific dermatoglyphic set emerge, it could be implemented in current programs for suicide prevention.

Acknowledgements

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Original research

Gender Differences in Risk and Protective factors for Resolved Plans and Preparations for Suicide among University Students

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Abstract: Background. Identifying the psychological predictors of suicide risk is essential because these variables may be amenable to change in treatment, unlike demographic or historical factors. Aims. The aim of this study was to examine the predictors of past two-week suicidal ideation for males and females separately. Method. Participants were 1184 healthy adults who completed an online survey. Results. A significant association between suicidal ideation and gender was found, such that mean levels were significantly higher in females than males. Separate regression analyses accounted for significant amounts of variance in suicide ideation, 54% for males and 68% for females. Moreover, the analyses revealed that suicide resilience Factor 2 (Emotional Stability) was a protective factor for both males and females; however, defeat, goal disengagement, and depression were independently associated with suicide ideation in males but not females. By contrast, entrapment, perceived burdensomeness, and hopelessness Factor 3 (Future Expectations) were significant risk factors only in females. Conclusions. The findings have clinical and practical implications, which may guide future practice, and supports the notion of targeted prevention and intervention strategies.

Keywords: Suicide ideation, risk and protective factors, gender differences, Integrated Motivational–Volitional Model (IMV)

Introduction

In the United Kingdom, approximately 6,000 individuals die by suicide per year (Office for National Statistics, 2013). Furthermore, it is

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estimated that for every suicide death there are approximately 25 suicide attempts (Crosby, Gfroerer, & Han *et al*., 2011). Suicide is also a leading cause of death among university students, and a significant number of students report having experienced suicidal thoughts (American Foundation for Suicide Prevention, 2010). With such a large number of people experiencing

suicidal behaviour, it is crucial that researchers and practitioners are better able to identify who is at risk in order to design effective intervention programs. Understanding of the psychological processes that underpin suicidal ideation is particularly important to inform interventions that address suicidal ideation when it first emerges, before it progresses to a suicide attempt (O'Connor & Nock, 2014).

Research consistently demonstrates that men are significantly more likely to die by suicide; whereas, the lifetime occurrence of suicidal ideation is significantly higher in women (e.g., Hawton, 2000). Despite this, gender has been largely neglected in prior research. Given that suicide is understood as a function of both emotional and cognitive vulnerabilities and that past studies revealed significant sex differences in emotionality (e.g., Kring & Gordon, 1998) and coping (see Tamres, Janicki, & Helgeson, 2002 for a review), it appears that pathways to suicidal ideation will likely differ for the two genders. To date, however, few studies have examined the factors that contribute to suicide ideation separately for males and females.

According to Joiner (2005), the desire to die by suicide is affected by two distinct psychological states, namely perceived burdensomeness and thwarted belongingness. While some research has found perceived burdensomeness to be a suicide risk factor for both genders (e.g., Donker, Batterham, & Van Orden *et al.*, 2014; Lamis & Lester, 2013), in a recent study, thwarted belongingness was associated with suicidal ideation only in females (Donker *et al.*, 2014). Evidence of gender-specific suicide risk factors was also provided by Lamis and Lester (2013) in their study of college students. Specifically, depression was found to be a significant suicide risk factor only in females, while alcohol-related problems and social support from family predicted suicidal ideation in males, but not in females. Similarly, Vasiliadis, Gagné, and Préville (2012) found that younger age, daily life stressors, chronic conditions, and antidepressant use were independently associated with suicide ideation in females but not males. By contrast, older age was significantly related to suicide ideation in males.

While the above studies are informative, most have included only a small number of variables, and have not drawn on theoretical models of suicide to guide variable selection. Thus, the use of a conceptual framework for organising known risk factors and for guiding a comprehensive examination of potential gender differences in

suicide risk and protective factors is likely to be advantageous. One such theoretical model is the integrated motivational-volitional model (IVM) of suicidal behavior (O'Connor, 2011).

The IMV model seeks to elucidate the complex interplay between factors leading to the formation of suicidal ideation and explains how such thoughts are translated into suicidal behaviour. The framework consists of three phases: premotivational, motivational, and volitional. The motivational phase is concerned with the factors related to the formation of suicidal thoughts and intention to end one's life. The IVM proposes that suicidal thoughts derive from feelings of entrapment where suicidal behaviour is seen as the salient solution to life circumstances. Feelings of entrapment, in turn, arise as a response to defeat/humiliation appraisals. Feelings of entrapment are exacerbated by specific state moderators (e.g., brooding rumination, poor problem solving, and attribution biases). In the presence of motivational moderators such as interpersonal states (i.e., perceived burdensomeness and thwarted belongingness), impaired subjective goals, and disrupted future positive thinking, such appraisals lead to suicidal ideation.

Method
The current study
The aim of the present study is to examine the predictive power of putative risk factors for suicidal ideation identified in the IMV model of suicidal behaviour. Important within this study is our focus on a theoretical model of suicidal behaviour and past 2-week suicide ideation. Previous studies have tended to look at risk factor in isolation (Van Orden *et al.*, 2010) and lifetime or past year history of suicidal ideation (e.g., Donker *et al.*, 2014; Vasiliadis *et al.*, 2012). We hypothesise that variables predicting suicidal ideation would differ between the sexes but make no specific hypotheses about the nature of these differences due to the paucity of literature in this area.

Participants
Participants were 1184 university students (657 females and 527 males) recruited from each of the seven faculties in a large UK university. Participants were aged between 18 and 63 years (*M* = 27.72; *SD* = 10.08). Most students identified themselves as White (81.8%), were currently in a relationship (54.5%), and described their sexual orientation as heterosexual/straight (78.4%).

Measures

Perceived burdensomeness and thwarted belongingness. Perceived burdensomeness and thwarted belongingness were measured with the 12-item version of the Interpersonal Needs Questionnaire (INQ; Van Orden, Witte, & Gordon *et al.*, 2008). The INQ assesses respondent's current beliefs about feeling connected to others and feeling like a burden on the people in their lives. Items are rated on a seven-point Likert scale. Internal consistency coefficients were found to be very good for both the burdensomeness (α = .93) and the belongingness items (α = .86).

Brooding rumination. Brooding, defined as the extent to which individuals passively focus on the reasons for their distress, was measured using the five items from the Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1991). Cronbach's α was .78

Defeat. Defeat was measured by the Defeat Scale, a self-report measure of 16 questions assessing individuals' perceptions of losing rank position and failed struggle during the past seven days, e.g., "I feel defeated by life" (Gilbert & Allan, 1998). Items are rated on a five-point scale. Cronbach's α was .96.

Entrapment. The Entrapment Scale is a self-report measure of 16 questions that assess motivation to escape, e.g., "I am in a situation I feel trapped in" (Gilbert & Allan, 1998). Items are rated on a five-point scale. Cronbach's α was .96.

Goal Reengagement and Disengagement. The goal adjustment scale (GAS; Wrosch, Scheier, & Miller et al., 2003) is a 10-item instrument that consists of two subscales: (i) goal disengagement (4 items) and, (ii) goal reengagement (6 items). Goal disengagement measures one's perceived difficulty in reducing effort and relinquishing commitment toward unobtainable goals. The goal reengagement subscale taps one's perceived ability to reengage in other new goals if they face constraints on goal pursuits. Both subscales were internally consistent (Cronbach's α = .91 and .83 for reengagement and disengagement, respectively).

Anxiety and Depression. The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was employed to measure anxiety and depression. It consists of 14 questions, seven each to measure depression and anxiety. Cronbach's alphas were .83 and .83, respectively.

Hopelessness. Hopelessness was measured using the 20-item Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). Respondents are asked to indicate either agreement or disagreement with statements that assess pessimism for the future. A three-factor solution to the BHS, based on Beck's (1974) original conceptualisation, was found to be the best fit to our data (Boduszek & Dhingra, 2015). Cronbach's alphas were .88 for Factor 1 (hopelessness about the future), .80 for Factor 2 (giving up), and .73 for Factor 3 (future uncertain).

Suicide resilience. Suicide resilience was assessed with the Suicide Resilience Inventory 25 (SRI-25; Osman, Gutierrez, & Muehlenkamp *et al.*, 2004). The SRI-25 is a 25-item self-report measure used to assess factors that help defend against suicidal thoughts and behaviours. The External Protective subscale (α = .94) assesses people's positive perceptions or beliefs that they are able to seek help from those close to them should they experience suicidal thoughts; the Emotional Stability (α = .93) subscale assesses people's positive perceptions or beliefs that they are able to resist acting on suicidal thoughts when experiencing them. The Internal Protective subscale (α = .93) assesses people's satisfaction with life and positive feelings about themselves overall. Higher total scores indicating greater resilience against attempting suicide.

Resolved plans and preparations for suicide. The four-item Depressive Symptom Index – Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres, 2002) was used to resolved plans and preparations for suicide made in the past two weeks. The DSI-SS consists of 4 items that assess the extent to which an individual is thinking about suicidal behaviour, has made a tangible plan for a suicide attempt, intends to engage in suicidal behaviour, and experiences impulses to engage in a suicide attempt. Items are scored on a 0 to 3 scale, with statements of increasing severity associated with each increasing number on the scale. We opted to include this measure in order to expand upon prior work which has not focussed on resolved plans and preparations, which are conceptualised as markers of imminent risk for suicide. Cronbach's α was .92.

Suicide attempt. A single item drawn from the self-report version of the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007) was used to assess the presence of a lifetime history of suicide attempts. This items asks, "Have you ever made an actual

attempt to kill yourself in which you had at least some intent to die?").

Procedure

The research protocol was reviewed and approved by the institutional ethics panel in advance of data collection, and ethical procedures were followed throughout the study. Participants were recruited via an email invite to participate in a study examining "the relationship between interpersonal beliefs and behaviour and suicide". Within this email it was made clear to potential participants that they did not need to have experienced suicidal thoughts and behaviour to take part. Unfortunately, due to the use of a gatekeeper to distribute our recruitment email to students, it is not possible to calculate a response rate. Participants completed the survey online using Qualtrics, a Web interface that allows for secure remote data collection through the distribution of anonymous secure links to the protocol. Participants were required to consent before the survey was presented. Participation in the current study was voluntary and no inducements or obligations were used. All participants were debriefed in writing on the final page of the survey and given phone numbers for local mental health services, and telephone, postal and electronic contacts for useful support organisations. Data were collected between 2014 and 2015.

Analysis

T-tests were conducted to compare males and females on all continuous scales directly. To control for the number of comparisons, Bonferroni correction method was applied (significance set at $p < 0.003$). Following this, gender-specific multiple regression analyses were carried out to study the association between suicidal ideation and the predictor variables while controlling for age, relationship status, and sexual orientation. Pairwise deletion was used in order to deal with the missing data. All analyses were conducted in SPSS 22.

Results

Descriptive Statistics and T-tests

Of the overall sample of 1184 respondents, 230 (33.6%) reported having made at least one suicide attempt, and a score of 4 or higher on DSI-SS, which is indicative of clear elevation in suicide ideation (Joiner *et al*., 2002) was reported by 149 (22.9%) respondents. The distribution of DSI-SS suicidality scores is reported in Table 1.

Table 1. *Distribution of DSI-SS suicidality scores*

Suicide ideation score	*N*	*%*
< 4	499	77.1
4	54	8.4
5	34	5.2
6	25	3.9
7	14	2.2
8	14	2.2
9	4	.6
10	2	.3
11	2	.3

Descriptive statistics, including means (*M*) and standard deviations (*SD*) for all continuous measures are presented in Table 2. Compared to females, males reported significantly lower scores on defeat, brooding rumination, anxiety, suicide ideation, and significantly higher scores on suicide resilience factor 2 (Emotional Stability). Males in the sample were also significantly younger than female participants.

Multiple regression

To test for the main effects of the risk and protective factors on suicide ideation, the independent variables were entered into two separate gender-specific regression models (Table 3). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. A test of the full model for males containing all predictor variables against the constant-only model was statistically significant, $F(18, 478) = 17.82$, $p < .001$, and explained 54 per cent of the variance in suicide ideation. As shown in Table 2, four independent variables made a unique statistically significant contribution to the model. Specifically, greater suicide ideation was associated with higher levels of defeat and depression, and negatively related to suicide resilience factor 2 (Emotional Stability) and goal disengagement. A test of the full model for females containing all predictor variables against the constant-only model was again statistically significant, $F(18, 605) = 36.72$, $p < .001$, and explained 68 per cent of the variance in suicide ideation. As shown in Table 2, five independent variables made unique statistically significant contributions to the model. Specifically, greater suicide ideation was associated with higher levels of entrapment and perceived burdensomeness, and negatively related to suicide resilience factor 2 (Emotional Stability), hopelessness factor 3 (Future Expectations), and sexual orientation.

Table 2. *Descriptive statistics and t-test results for males (n = 527) and females (n = 657).*

Variable	Males		Females		95% CI	t	Cohen's d
	M	SD	M	SD			
Defeat	35.41	12.37	38.67	13.84	-5.27/-1.28	-3.22*	.25
Entrapment	35.80	15.48	38.53	17.96	-5.28/-.18	-2.10	
Brooding rumination	12.14	3.53	13.17	3.75	-1.58/-.48	-3.69*	.28
Goal disengagement	11.09	3.67	10.45	3.40	.11/1.18	2.36	
Goal reengagement	20.44	5.21	20.25	5.21	-.60/1.00	.48	
Suicide resilience 1	37.52	10.93	35.56	11.97	.21/3.71	2.20	
Suicide resilience 2	41.18	7.83	38.15	9.96	1.66/4.39	4.35*	.34
Suicide resilience 3	36.36	10.45	35.61	11.42	-.92/2.43	.89	
Burdensomeness	18.17	10.15	19.09	11.82	-2.62/.77	-1.07	
Belongingness	21.07	8.01	21.64	8.02	-1.81/.67	-.90	
Hopelessness 1	2.11	1.99	2.31	2.05	-.50/.10	-1.30	
Hopelessness 2	1.89	2.24	2.22	2.59	-.69/.03	-1.78	
Hopelessness 3	2.97	1.89	2.98	1.96	-.30/.28	-.06	
Anxiety	16.07	4.47	17.70	4.70	-2.33/-.93	-4.58*	.36
Depression	12.65	4.17	13.17	4.67	-1.19/.16	-1.51	
Suicide Ideation	5.27	2.09	5.90	2.65	-1.00/-.27	-3.41*	.26
Age	25.08	9.45	30.14	10.03	-6.52/-3.59	-6.79*	.52

Note: * *p* < .003 (Bonferroni correction applied), Suicide resilience 1 = Internal Protective, suicide resilience 2 = Emotional Stability, suicide resilience 3 = External Protective, Hopelessness 1 = Feelings about the Future, Hopelessness 2 = Loss of Motivation, Hopelessness 3 = Future Expectations.

Table 3: *Multiple regressions predicting suicide ideation for males and females separately.*

	Males			Females		
	β	*SE*	B (95% CI)	*β*	*SE*	B (95% CI)
Defeat	.28**	.02	.05 (.01/.08)	.14	.02	.03 (-.01/.06)
Entrapment	.13	.01	.02 (-.01/.04)	.21**	.01	.03 (.01/.05)
Brooding rumination	-.11	.04	-.07 (-.14/.01)	.01	.03	.01 (-.06/.06)
Goal disengagement	-.09*	.02	-.05 (-.10/-.01)	-.05	.03	-.04 (-.09/.02)
Goal reengagement	.07	.02	.03 (-.01/.07)	.01	.02	.01 (-.03/.04)
Suicide resilience 1	-.03	.02	-.01 (-.04/.03)	.12	.02	.03 (-.01/.06)
Suicide resilience 2	-.21***	.02	-.06 (-.09/-.03)	-.35***	.01	-.09 (-.12/-.06)
Suicide resilience 3	-.03	.01	-.01 (-.03/.02)	-.04	.01	-.01 (-.03/.13)
Burdensomeness	.10	.01	.02 (-.01/.05)	.15**	.01	.03 (.01/.06)
Belongingness	.02	.02	.01 (-.03/.04)	.10	.02	.03 (-.01/.07)
Hopelessness 1	.13	.07	.13 (-.01/.27)	.13*	.08	.17 (.02/.32)
Hopelessness 2	.01	.07	-.10 (-.25/.06)	.08	.07	.08 (-.05/.21)
Hopelessness 3	-.09	.08	-.08 (-.23/.07)	-.14*	.08	-.19 (-.34/-.05)
Anxiety	.02	.03	.01 (-.05/.07)	.03	.03	.02 (-.34/-.04)
Depression	.17*	.04	.08 (.01/.16)	.08	.03	.05 (-.01/.11)
Age	-.02	.01	-.01 (-.03/.02)	-.03	.01	-.01 (-.03/.01)
Relationship	-.01	.20	-.04 (-.43/.36)	.01	.19	.08 (-.31/.46)
Sexual orientation	.01	.23	.05 (-.39/.50)	-.16***	.22	-1.01 (-1.44/-.58)

Note: *p <.05, **p <.01, ***p <.001, Suicide resilience 1 = Internal Protective, suicide resilience 2 = Emotional Stability, suicide resilience 3 = External Protective, Hopelessness 1 = Feelings about the Future, Hopelessness 2 = Loss of Motivation, Hopelessness 3 = Future Expectation

Discussion

A considerable body of research has accumulated on the psychosocial and behavioural correlates of suicidal behaviour. However, a large proportion of previous studies have considered only a limited number of correlates or taken a gender-neutral perspective, and in doing so, assumed that the factors associated with suicide ideation are the same for males and females. The aim of the present research, therefore, was to examine potential gender differences in suicide ideation and its psychosocial correlates as implicated in the IMV model of suicidal behaviour.

Results of the univariate analysis indicated that, compared to females, males reported significantly lower scores on defeat, brooding rumination, anxiety, and significantly higher scores on suicide resilience factor 2 (Loss of Motivation). Consistent with previous research (e.g., Stephenson *et al.*, 2006), males also reported lower levels of suicide ideation than females. Multivariate analysis results revealed that suicide resilience was a protective factor (for both male and female students), which is consistent with Pietrzak, Goldstein and Malley *et al.* (2010). Importantly, and extending upon this previous research, the protective effect was specific to the Emotional Stability suicide resilience factor. This suggests that university students may not feel that they can approach or access support from others during times of suicidal crisis. Alternatively, as supported by the non-significant associations between suicide ideation and both perceived belongingness and relationship status (in both genders), a lack of connection may plays less of a role in suicide ideation in students, who are typically surrounding by their peers, than in young adults living outside of academia (Larmis & Lester, 2013).

In the present study, depression was not associated with suicidal ideation in both males and females as has been reported in previous studies (e.g., Vasiliadis *et al.*, 2012), or with females only (Larmis & Lester, 2013). Instead, depression was significantly associated with suicide ideation in males only. Although the reasons for this disparity with the existing literature are unclear, it could be because we controlled for a larger range of variables than in previous research. The non-significant association between anxiety and suicide ideation in both genders may have arisen for a similar reason. This tentatively suggests that anxiety (in both males and females) and depression (in females) are not specific enough markers to differentiate suicidal respondents from controls when they are included in a model with

more proximal suicide markers (Dhingra, Boduszek, & O'Connor, 2015; O'Connor & Nock, 2014), and supports the assertion that we need to move beyond psychiatric categories and epidemiological risk factors to identify more specific markers of suicide risk (O'Connor & Nock, 2014).

The results offer some support for Joiner's (2005) theory in that perceived burdensomeness was associated with greater suicide ideation among females. However, the strength of the association between these variables was weak (.15), suggesting that other factors (e.g., defeat in males and entrapment in females) make a greater contribution to the prediction of suicide ideation among university students. Previous research has illustrated a link between hopelessness and suicidal ideation and behaviour (e.g., Boduszek & Dhingra, 2015; Hawton, Saunders, & O'Connor, 2012). Consistent with this, hopelessness Factor 3 (Future Expectations) was related to suicide ideation among females, but not males. This supports the research that suggests that positive future thinking is particularly important in the suicidal process (MacLeod, Pankhania, Lee, & Mitchell, 1997; O'Connor, Fraser, & Whyte *et al.*, 2008). Thus, for females, if they have fewer positive future expectancies (low rescue potential), this may increase suicide risk because it increases the likelihood that they perceive themselves to be in state of entrapment which is inescapable (see O'Connor, 2003). Specifically, fewer positive future expectancies is akin to a paucity of reasons for living, which, if present may 'rescue' people from misery, despair, and psychological pain by reducing feelings of entrapment. The finding of the pre-eminence of Future Expectations in the prediction of suicidal ideation is particularly important given the widespread use of measures of global hopelessness to assess suicide risk (see Boduszek & Dhingra, 2015). The non-significant association between goal re-engagement and suicide ideation, but significant relationship between Future Expectations and suicide ideations, suggests that positive future thoughts and goal reengagement perhaps do not represent different operationalisations of the same construct (i.e., future personal goals), as suggested by O'Connor *et al.* (2012).

The inability to relinquish unattainable personal goals has been reported to be detrimental to subjective wellbeing (Wrosch *et al.*, 2003) and to predict repetition of self-harm/suicide (e.g., O'Connor *et al.*, 2009). Consistent with this, our results suggest that males, but not females, experiencing higher levels of suicide ideation do

not disengage from unattainable goals. Although consistent with this line of research, our findings conflict with O'Connor and Forgan's (2007) finding from a clinical sample that goal reengagement is a stronger, independent predictor of suicidal risk than goal disengagement. It is important, therefore, for future research to investigate how goal management processes may differ by sample and the reasons for this.

Our findings have important implications for both suicide research and clinical work with individuals experiencing suicidal thoughts. The varying mean scores by gender and the differential correlates found in the current study suggest that there may be differing underlying gendered meanings of these cognitions. Additional research is thus required to examine these unique experiences in greater detail. Another important next step for research is to test the usefulness of these factors in prospective studies among other large samples, such as those presenting to general practitioners, accident and emergency departments, and psychiatric units. The cross-cultural validity of these results will need to be examined by conducting research with international samples, from both developing and developed countries. In particular, it is recommended that studies are conducted to identify pertinent gender-specific risk factors, particularly in countries that have a marked difference in the rates of female and male suicide. Our findings suggest the need to develop and provide separate interventions for males and females aimed at different factors. For instance, for males, in situations where the goals are unrealistic or unattainable, working with the individual to disengage from such goals in a safe manner and engage with new, more realistic positive future thinking may be beneficial. For females, cognitive strategies that target feelings of entrapment and burdensomeness may be more appropriate.

The results should be interpreted in the light of the study's limitations. First, our sample consisted solely of university students and it is unknown how these results would generalise to adults who are not students, as well as to people with documented psychiatric histories. Second, we are not able to confirm causal relations using cross-sectional data. An important next step, therefore, is to test the usefulness of these factors in prospective and longitudinal studies. Third, although we found similar rates of suicide ideation and attempts to previous studies (e.g., Tyssen, Vaglum, Grønvold, & Ekeberg, 2001), there may also have been a problem with selection bias.

While individuals with a history of suicidal behaviour may have been more likely to self-select into the study, we were ethically bound to inform potential participants about that nature of the study so that their decision to participate was fully informed. Finally, the fact that participants were students limits the generalisability of the results given that students are not representative of those who die by suicide. Consequently, there is a need to replicate the findings in other populations.

Nonetheless, these limitations were offset by several strengths including the large sample of students, which afforded us the opportunity to analyse the correlates of suicide ideation separately for males and females, the focus on past two weeks of suicide ideation, and the selection of variables based on a theoretical model of suicidal behaviour. Importantly, our results suggest that the correlates of suicide ideation differ between men and women. This knowledge may improve suicide risk evaluation and guide future research on suicide assessment and prevention, and support the utility of gender-sensitive suicide assessment, prevention and intervention strategies.

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Essay

Unpacking the stigma of suicide in Ghana through the suicide-morality connection: Implications for Stigma reduction programs

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Abstract: Suicide is not only a health issue but also a moral one. It is this moral aspect of suicide that drives the deep stigma towards the act in several cultural settings. The African ethical system (including Ghana) vigorously moralizes suicide. This intense moralization, it is argued, in this essay manufactures a robust social stigma towards the act. This essay examined the moral particularities of the African moral system and utilizes such review to shed light on the moral content of suicidal behaviour as gleaned from the burgeoning literature on suicide research in Ghana, and other areas in Africa. A central moral content of suicidal behaviour that emerges from such review is social stigma. The essay shows how suicide stigma as a social reality, becomes instituted at three levels: Family/community, religious, and legal. The essay asserts that there cannot be any meaningful suicide prevention programs that sideline these institutions. In conclusion, efforts to increase suicide literacy in families/communities, churches and in the judiciary are urgently needed. These institutions can also be targeted for training in gatekeeping.

Keywords: stigma, suicide, Ghana, suicide-morality.

Background

Death is inevitable in life and most societies have organized beliefs about life and death. In the Ghanaian (Akan) cosmology, death is associated with birth and is viewed as a transition from this world into that of the ancestors. In most African societies, death is classified as good or bad.

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A long life before death is associated with wisdom, honour and authority. Additionally, there is a general belief that when one lives longer and dies naturally, his next life will be successful (van der Geest, 2006). In fact one criterion of acceptance into the world of the ancestors is the way a person dies (De Witte, 2001). Consequently, the way a person dies in an Akan (Africa) society is very important. Deaths in Akan society has therefore been classified into good and bad death. Good death as viewed by the Akans are described as peaceful death which includes, not dying

through violence, contributed to family welfare, dying naturally at home among others (van der Geest, 2004). A bad death includes accidental, motor-traffic, still born, suicide among others (De Witte, 2001). The moral view of suicide as a bad death is further explained by the social consequences of shame that is transferred unto the surviving family. In a recent article by Adinkrah (2015), the negative attitudes toward suicide in Akan culture is also expressed by specific mortuary rites and practices performed during suicidal death. This includes a generalized lack of mourning, brief period for grieving, denial of proper burial and funeral rites for suicide deaths (Adinkrah, 2015). Suicide is thus described among the Akans as an extraordinarily moral evil that brings catastrophe and shame to both the family and the community at large for which reason it is strongly disavowed (Adinkrah, 2015; Gyekye, 1995).The meaning/s of suicidal behaviour in Ghana therefore appears to be socioculturally constructed. Attitude studies towards suicide in Ghana aimed at exploring the meanings of suicide for the past 7 years have identified several meanings of the act which are heavily laden with moral properties. Some of these meanings are: suicide is a waste of potential, suicide is a murderous act, suicide is a religious transgression, suicide is a faith-failure, and suicide is a social injury (Osafo, Knizek, Akotia & Hjelmeland, 2011c; Osafo et al, 2011b). All these meanings appear to be slanted towards a moral conception of suicide in Ghana.

As a cultural artefact, the meaning of suicidal behaviour is socioculturally constructed (Boldt, 1988). Several authors have thus examined various cultural dimensions and how they impact on suicide in various cultural milieu. For example research into culture and suicide has revealed that a great deal of suicide in rural China are laced with cultural meanings- where women used the act as a protestation against patriarchal oppression (Meng, 2002). In Uganda, the act is viewed among the Banganda as a terrible act that requires social distancing as means of addressing it (Mugisha,, Hjelmeland, Kinyanda & Knizek, 2011). In Ghana, the act is viewed as socially injurious to the entire family set up and the offender is found culpable (Osafo, Hjelmeland, Akotia & Knizek, 2011c). In Africa, the moral elements in suicide point to a certain dominant moral system. Such moral conceptions of suicide must be unpacked to explore how stigma towards the act is processed and institutionalized within certain social contexts and the implication this has on stigma reduction programs in Ghana. This is the thrust of the essay.

The first part of the essay reviews the features of the African moral landscape, situating it within the Akan moral scheme. In the second part the historical currents influencing suicide stigma from religion to criminal codes are examined. This culminates in a discussion of how suicide stigma has become institutionalized by three social systems in Ghana- family/community, religion and the law code, and the potential impact of such stigma on persons in suicidal crisis. The final part of the essay identifies three major stigma towards suicidal persons and addresses specific attempts in reducing suicide stigma in Ghana.

Discussion

The African moral system

Ethics and morality have often been used interchangeably in the literature. Morality is used in a broader sense than ethics although the margins are diffused (Nel, 2008). Nwosu (2004) offered a descriptive view of morality as "a public system of rules that all rational persons advocate and adopt. It is concerned with the behavior of people in so far as that behavior affects others and institutions… In effect, morality aims at a good—a just and peaceful social order, conducive for humanity…" (p. 208-209). Nel (2008) defines morality as "the sense and view of what is right and wrong and that which constitutes an absolute reference for character and behaviour. It is an authoritative code of conduct in matters of right and wrong" (p. 35).

Ethics as Gyekye explains is the formal study of moral issues whilst morality refers to the lay reflections on virtues (Gyekye, 2010). Nel (2008) adds that ethics is any action a person engages in which is informed by moral principles of good and bad. To avoid conceptual confusion in this paper, I shall use the term morality since, it is out of my scope in this paper to attempt a thorough formal treatise on African ethics. What I shall do is rather to provide an extensive review of the prominent features of African morality.

Various philosophers writing on the African moral system identify certain specific moral particularities unique to Africans. Although African culture cannot be viewed as monolithic, there are general patterns observed in the way African tribal groups engage or view moral issues. I do subscribe to a universal ethical system which are common to the human experience and wherever there are human interactions. As observed by Mertz (2007), there are moral issues in the African setting which are similar to those in the western context. For example, Mertz indicates that the following actions are incontrovertibly immoral in both western and African contexts: to kill innocent

people for money, to have sex with someone without her consent, to discriminate on racial basis when allocating opportunities, to steal goods from their rightful owners. However there are moral tendencies and particularities within the African setting that are unique; Africans find the following more immoral: to make policy decisions in the face of dissent, as opposed to seeking consensus, to create competition as means to wealth as opposed to a cooperative one, to distribute wealth largely on the basis of individual rights, as opposed to need and to ignore others and violate communal norm (Mertz, 2007). The African moral system thus lends itself towards specific moral standpoints that might be different from western perspectives.

Examining African philosophers' description of the moral landscape, one can find certain descriptive elements of African morality that must be unpacked as one examines the suicide-morality connection. Most articles that have examined this connection are western papers and they have examined the moral issue in suicide along the lines of Judeo-Christian ethics and the law. African (e.g., Ghanaian) perspective on the morality of suicide are not only Judeo-Christian. They are also intermingled with the broader cultural beliefs and practices of the people. Accordingly, certain features of African morality are discussed. These features are not exhaustive but essential and relevant to the subject of suicide. There will not be any authoritative claim that Akan morality (ethics) is a microcosm of African ethics in this essay. However, as Gyekye (2013) indicated there are empirical and conceptual evidence that Akan morality resonates on the moral landscapes of other African societies. Against this backdrop, the essay will cite examples from Akan morality, a Ghanaian ethnic group the author is familiar with.

One feature of African morality is its centrality on humanism and community. In other words, it is inclined towards the interest of human beings and the smooth functioning of community in pursuit of such interests (Gyekye, 2013). The centrality of community in the discourse of morality is best expressed by Nel (2008) who argued that "Community in the African context is the basis for morality in that it guarantees the well-being of both the individual and the community" (p.42). Gyekye (2013) has observed that the foundation of African morality is humanism, the view that considers the essentiality of human interests and welfare to the thought and action of the people. This view is corroborated by Ikuenobe (2006) and Nel (2008) who both highlight the centrality of community, personhood and wellbeing as major tenets of African morality. The epicenter of African morality is its tendency

towards the welfare of a group of humans (the community) . African societies have the tendency to organize their social life on the basis of communality, solidarity and fellow feeling. The degree to which the sense of communalism is experienced has however been contentious among scholars of African ethics. For instance Menkiti (1984) and Mbiti (1989) have been challenged by Gyekye (1995; 1996) as proposing extreme form of communalism which completely submerges the individual. Gyekye posits, rather that, the African social arrangement is *moderate communitarianism* which allows space for the individual to pursue his or her personal aspirations. However such pursuit should not run counter to the groups' interest. The individual within such ethical framework is expected to conduct himself/herself in a way that facilitate communal welfare. Any other actions that detract from securing the social order and the interest of its members cannot be acceptable. Behaviors are examined in terms of consequences for others. Actions that might threaten such welfare system is an eventual threat to social survival and might be adjudged immoral. This is explained clearly by Gyekye (2013) thus: "In Akan moral system (or African moral system generally), good or moral value is determined in terms of its consequences for humankind and human society" (Gyekye, p. 221). This orientation towards community, human welfare and wellbeing often makes African morality a social ethic (Gyekye, 1996).

Another feature of the African ethical system is the notion of character. The presence of virtue in a person or the lack of it is considered a measure of character- good character or bad character. The celebrated African theologian and Philosopher, Mbiti (1989) asserted that**,** " the African moral system is " a morality of conduct rather than a morality of being…man is not by nature either good or bad (evil) except in terms of what he does or does not do. This, it seems to me, is a necessary distinction to draw in discussing African concepts of morality and ethics" (p. 209). This view is concurred by Gyekye (2013) when he argued that "Good character is the essence of the African moral systems, the linchpin of the moral wheel" (p.211). The implication is that social welfare is a product of individual collective good conduct. The social good destroys if the members who are the fulcrum of it abandon the moral good for the bad. Good conduct such as hospitality, friendship, and caring, giving, support are all conducts that are building blocks for social survival. African morality therefore determines a good or bad conduct by how much the moral conduct contributes towards the social good or

otherwise. Maxims such as ˮ*A person is a person through other persons*ˮ and *"I am because we are" although*   are sometimes used to express a metaphysical claim, to the effect that one could not have become who one is without living in a society, they are also usually meant to express an evaluative claim. In particular, they are implicit prescriptions to become a *real* person, to bring out one's true self, or to live a genuinely human way of life that supports the survival of the community. Herein, ones character becomes paramount.

Closely related to the notion of character is personhood. In African moral system, personhood is earned and not innate. A person is considered a moral person not because he has the metaphysical qualities of reason, feelings, and language. Rather, he/she has the capacity to acquire moral education and contribute to the social good and survival agenda (Ikuenobe, 2006). As Nel (2008) argues, one's humanity is validated on grounds of sharing fellowship with others in the African cultural context. Children in this regard will not be viewed as full human beings (though they have the potential) (Gyekye, 2010). Human beings and a full person is someone who has received moral education that facilitates social welfare and communal living. In this regard the views of three African philosophers are presented below:

Gyekye (2013) opines that*:*
> *"it is the individual's moral achievement that earns him the status of a person. Every individual is capable of becoming a person inasmuch as he has capacity for virtue-for performing morally right actions- and should be treated (at least potentially) as a morally responsibility agent" (p. 216).*

Mbiti (1989) echoes thus *"…a person is what he is because of what he does, rather than that he does what he does because of what he is" (p. 209).*

Ikuenobe (2006) also adds:
> *"what defines a person as having moral personhood is the ability to consider the needs of others and one's own needs in the context of the community, and to feel a sense of shame , guilt, remorse, and show moral sensitivity" (p. 112)*

Although a person may not lose his or her humanness on the basis of a misconduct, he or she risks social censure and loss of respect if his personhood and actions are inimical to the social good and contravenes solidarity (Gyekye, 2010). Every effort thus is made to socialize children to be responsible moral adults within the normative social setting in African societies. Moral education has thus been extensively studied by Ikuenobe (2006) as the basis for acquiring responsible personhood in African setting.

The African moral system also places emphasis on the value and reverence of human life. This aspect of African morality has been described as anthropocentric because of its preoccupation for well-being (Van der Walt, 2003). Gyekye (1996, 2013) has extensively analyzed certain ethno-philosophical themes from Akan proverbs to elucidate the underlying meaning of the perceived goodness of human life. This belief in the value, Gyekye, argues, manifests in the expression of virtues towards visitors. On a broader level, it is a manifestation of the belief in a common brotherhood that is believed to be shared across all cultures. The ethic of generosity and hospitality are some of such indices of the value Akan morality places on human life (Gyekye, 2013). These values for human welfare are protective and facilitative of nurturing human life within African traditional societies (Gyekye, 1996).

The strong orientation to duty and responsibilities more than rights is also characteristic of African morality. Duty is expected obligations that are exacted upon the individual as a contribution toward social welfare. Rights are demands that the individual expects from the community for his/her welfare and comfort. Gyekye (2013) indicates that *"…a robust feature of the African communitarian society, mandates a morality that clearly is weighted on duty to others and to the community; it constitutes the foundation for moral responsibilities and obligations"* (p. 234). What an individual is <u>entitled to</u> is not the focus, rather, what he is <u>expected to</u> is the thrust. By implication rights are bracketed off or suspended in circumstances that require the prosecution of full responsibility. People going through crisis might therefore be expected to hold fast to their obligations and duties more than the rights they have as individuals. A blame might be exacted on the person who fails to be dutiful even in crisis. For example a man who is in suicidal crisis and attempts or dies might be condemned for not thinking about his duty as a husband to his wife, father to his kids and a member of a family with responsibility of protecting the family's honour. He might be viewed as abdicating all three responsibilities in the midst of the suicidal crisis and might be heavily condemned.

A holistic conception of life is another feature of the African moral space. Everything is interdependent and interlaced with other. Verhoef and Michel (1997) asserted that the African ethos

is such that "…the relationship between philosophy, religion and morality as lived by the people is one of unity" (p. 395). A plausible extension is that an act considered personal may have group and social dimensions and implications. Nel (2008) corroborated this when he indicated that in this holistic and interlaced universe, one cannot separate an act from the impact it makes on its contexts such as environment, societal or spiritual.

Sanctions are also key in the African morality space and are means of ensuring compliance (Aja, 1997). A deviation from the moral standards are punishable whilst conformity with it is commendable. Sanctions are viewed as restoring the disequilibrium that is perceived to have occurred when people engage in perceived criminal acts.

The suicide-morality connection

Religion took a center stage in moralizing suicide. There are indications that early Christians used martyrdom as instances for suicide (Kaplan & Schwartz, 2010), but formal formulations by the Church on suicide came later. Such formal formulations also facilitated further legal criminalization of the act (Barton, 1976). In Christianity, Augustine first formulated the Christian view of suicide condemning it on three grounds: 1) that suicide violated the commandment "thou shalt not kill", 2) that suicide disallowed any opportunity for repentance and 3) that suicide was a cowardly act. This view was later expanded by Thomas Aquinas who also added that suicide was immoral because 1) It is unnatural and uncharitable to oneself, 2) suicide is antisocial because a person is member of a social unit and thus detrimental to the community, 3) life is a gift of God and represents God's property; suicide thus represented a usurpation of God's prerogative to determine man's fate (Kaplan & Schwartz, 2010). Excessive martyrdom and the tendency towards suicide abounded among early Christians who viewed suicide as redemption. In an attempt by Church Fathers to stop this, they began to associate sin to suicide (Leenaars, 2004). The second Council of Orleans (AD 533) produced the Church's first official position of disapproval of suicide by denying funeral rites for suicides because they were accused as criminals. (Kaplan & Schwartz, 2010).

During the Renaissance in the 15 century scholars challenged the Christian "transgression view" of suicide. For example in 1516 intellectuals such as Thomas More and John Donnes began defending that suicide did not contravene the laws of reason and God (Barton, 1976). Further,

between the 18th and 19th centuries, several writers also began changing the moral view of suicide in western cultures. Such persons included David Hume, Voltaire, Montesquieu, Schopenhauer. Certain cultures however, historically had not kept a moral view of suicide. Typical of such cultures included the Samurai in Japan that viewed suicide as an image redemption act from social stigma. Suicide was thus viewed as an act of honor within the Japanese culture.

However, continental Europe and the United States regarded suicide as a crime, deepening the suicide-morality connection. For example English Common Law declared suicide as a felony. If suicides occurred, all the estate of the deceased was confiscated, a stake was driven through the body, the person was denied church burial and rituals were performed to debar the ghost from returning to the earth and all forms of abetments were also criminalized (Barton, 1976). This legal code was however changed from felony to misdemeanor and the confiscation of the suicides possession also expunged. The English Common Law against suicide received various rulings which eventually accepted attempted suicide as a misdemeanor punishable by imprisonment and hard labour (Neeleman, 19996). By the 19th century, the sanction against the suicides bodies and mutilation as well as the confiscation of their possessions had ceased. Attempted suicide thus remained a criminal act but considerations of intentionality and the protection of the suicidal person's health were important elements in establishing intentionality until the law was repealed in 1961 (Neeleman, 1996). Compared to Germany, France and the Scandinavia which outlawed the crime against suicide since the 1700's and the 1800's respectively, the decriminalization of suicide in Britain was delayed due to court judgements delaying legal reforms (Neeleman, 1996). Although the act was decriminalized, Neeleman reported that there were indications from coronal reports that strong stigma towards suicide continued to persist. One major source of such stigma is from the Anglican Church. The Church of England since 1959 distinguishes between honorable and non-honorable deaths with Coroners providing the church with further information to help the church decipher the two (Neeleman, 1996). In the Catechism of the Catholic Church (1992), expatiation on the respect for human life has included statements delegitimizing intentional homicide, abortion, euthanasia and suicide. Suicide is explained as a contradiction to the love of self and to God in the Catechism of the Catholic Church. Thus in general religious formulations and

legal codes set the grounds for tabooing suicide on moral grounds.

Institutionalizing Negative attitudes towards suicide in Ghana

Research consistently has reported a generalized negative attitudes towards suicide in Ghana (Hjelmeland, Knizek, Akotia, et al., 2008; Osafo, et al 2011b). These negative attitudes are often expressed towards the suicidal person (Osafo et al, 2015). It is argued in this section that these negative attitudes appear symbolic and institutionalized. When members live in a community, as Nwosu (2004) explained, they become culture-bound enough to accept certain rules by which they relate to one another and interpret certain actions as an attribute of morality and adopt rules which guide their conduct as people; and once these rules become guide to their conduct they will acquire a moral value within that context. Consequently, certain behaviours might be normalized and practiced over time as part of the moral fabric of the people. The harsh negative attitudes toward suicide in the Ghanaian society therefore might achieve a symbolic nature as a social reality in the way the act is construed and the shared meanings established among a group of people. As Ibáñez (1997) argues, "Nothing is social if it is not instituted within the sphere of shared meanings which belongs to a collective of human beings."(p. 30). The negative attitudes towards suicide might be established within the sociocultural moral fabric of people to the extent that they receive unscripted social backing. For example viewing suicide as social evil might have received a strong societal backing through the convergence of the ethics of social welfare and respect for human life. Plausibly, over the long haul, such condemnable view of suicide are functionally thought to be preventive as we have begun to observe from some of our studies (Hjelmeland, Osafo, Akotia & Knizek, 2014).

Instinctually, humans are wired towards self-preservation and so suicide does not resonate with our innate make up (Tang et al. 2011). A negative attitude expressed towards a suicidal person to suppress self-destructive desires might consequently be thought of as suicide preventive. But such view is simplistic as in most cases people tend to expressed negative attitudes towards the person going through the suicidal crisis and not the behaviour. In our 8 years studies of suicide in Ghana, a consistent observation is that people have found it difficult to decouple the suicidal person from the act. They hate the act, condemn

the act, but are unable to express empathy towards the victim. The social reactions towards suicide attempters therefore become traumatic for them in Ghana (Osafo**,** Akotia, Andoh-Arthur & Quarshie, 2015). These negative attitudes toward suicide, it is argued, are products of the Ghanaian sociocultural set up which has created a value system of what constitutes good death and bad death. It is argued that such moral view of death is facilitated by three influential institutions. The first institution is the family/community, the second is religious organizations and the third is the law that criminalizes suicide. Each of these are discussed further.

The family and community. The social arrangement of Ghana is patterned along interdependence. Sociological analysis have revealed that the family is a social insurance in Ghana and therefore socialization of members are patterned along moral lessons that are geared toward reducing loses and maximizing success (Assimeng, 1999; Nukunya, 2003). Children are socialized to avoid any behavior considered image damaging since the damage inflicted by acts of misconduct is shared by all members. A personal act therefore has serious social consequences for the rest of the family and by extension the community. Suicide in Ghana is, thus viewed by most communities as an anathema, with molestations of the body of the suicide, the destruction of anything or method used in the process and the memory of the suicides destroyed (Adinkrah, 2012, Osafo et al. 2011c). Thus socio-culturally, beliefs and practices in Ghana are all proscriptive of suicide. (Osafo et al. 2011c)

Research on the meaning/s of suicide in Ghana has discovered that suicide as a phenomenon has been conceptualized as an act with serious consequences for the family. For example, suicide is conceived by lay persons in both rural and urban Ghana as a waste of potential, an act of cowardice, a threat to conjugal opportunities and a social injury for the family (Osafo et al., 2012, 2011c). African families (much as Ghana) value honour. It is an attribute that gives families a stake to participate within the social space of human interaction. A loss of this honour as a result of suicide is considered a threat to social survival. In certain tribal groupings it is even considered a curse, with serious future consequences for the family. The suicidal attempter then has an uphill task of survival because his or her first tormentors might be from the immediate family and the community at large. In one of our studies, a suicide survivor indicated that the inhumane treatment meted out to him by

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the community was severer than the pressures which pushed him to consider suicide (Osafo, Akotia, Ando-Arthur & Quarshie, 2015). Such harsh attitudes reflect a view of the suicidal person as an outcast and *antisocial person* to the collective survival of the family and community. In the African moral space any conduct that is non-aligned to the collective good is an "*anti*" entity and might have to be re-aligned through social sanctions and punishment. There are complexities of stigma that exude from suicidal behaviour in interdependent societies. Mbiti (1989) asserts that in such societies personalities are intensely naked as life is shared with each other. From that basis, the act of suicide might represent a pain of betrayal and abandonment for the family and at the same time a threat to their social image (Osafo et al, 2011c, 2011a). The suicidal person consequently, might be a target of anger and strong antagonism.

Religious groups: Ghana is rated as a very religious nation (Gilani, Shahid, & Zuettel, 2012). In recent times Pentecostal, charismatic and neo-prophetic ministries have turned the religious landscape into a vibrant one. Religion thus has been deeply infused into Ghana's cosmology and sociocultural practices. Descriptions of Ghanaians as incurably and notoriously religious lends support to this assertion (Gyekye, 2010; Pobee, 1992). It is important however to draw a distinction between religion as a basis for morality and religion as exerting impact on moral behaviours. Gyekye (2013) and other philosophers subscribe to the naturalistic basis of African morality but does admit the influence of religion in the moral beliefs and practices of the African. Others subscribe to a supernatural basis of African morality (Mbiti,1989; Menkiti, 1984). What appears to be common in these perspectives is that religion influences African moral discourses (Ikuenobe, 2006; Gyekye, 1995;1996), and this conclusion resonates within the morality-religion discourses in Ghana. For instance, studies have confirmed that religion facilitated negative attitudes towards suicide in Ghana through strongly held religious views such as the sanctity of life, "thou shalt not kill" , and the equation of suicide with murder (Osafo et al., 2012). As the moral community theory stipulates, individuals are nested into a community of like-minded persons and this can reinforce religious ideals and behaviors (Stack and Kposowa, 2011a). Most people in Ghanaian communities might be living in religious moral space which enforces certain moral behaviours and sanctions immorality. It is an everyday experience to see various church groups in almost every community

in Ghana openly expressing religious lifestyle through prayer and other rituals. Within such intensely charged religious environment, suicide was viewed by our informants as faith-failure, an idea that expressed incapacitation on the part of a religious person to deploy intrinsic religious resources in coping with life's challenges (Osafo, Knizek, Akotia & Hjelmeland, 2011b). To deploy religious resources during distressing circumstances also appears to be a measure of one's successful religious lifestyle. Suicide persons are viewed as having failed in their religious lifestyle. Such commitment to core religious beliefs and the pervasiveness of the experience of living in highly religiously moral communities normalizes the negativity toward suicide. Accordingly, it may be normal to perceive the suicidal person as a *sinner and transgressor* before the religious community.

Legal code: Although efforts are intensifying to decriminalize suicide and improve mental health services around the world, attempted suicide continues to be criminalized in some countries. In an extensive review on the legal status of suicide from 192 countries by Mishara and Weisstub (2015), 25 countries still do have penal codes against attempted suicide with additional 20 countries proscribing attempted suicide under Islamic law where the victim could suffer jail sentences. In some African countries such as Kenya, Malawi, Nigeria, Rwanda, Tanzania, Uganda, including Ghana attempted suicide is penalized (Adinkrah, 2013; Kahn & Lester, 2013).The 1960 Criminal Code of Ghana indicates that "whoever attempts to commit suicide shall be guilty of a misdemeanor." (Act 29, section 57). Widespread stigma towards suicide in Ghana appears to lend some credence for criminalizing it and thus difficult to change this law (Kahn & Lester, 2013). In the meantime, the code is not dormant but active. There are reports indicating that suicide attempters in Ghana are being aggressively prosecuted and fined with majority pleading guilty and receiving sentences ranging from incarceration to fines (Adinkrah, 2013). However other reports show that some professionals such as Police, Nurses, Psychologists and Medics are calling for the repeal of this law though others support it (Osafo et al., 2015; Hjelmeland et al., 2014). Those in favour of the repeal of the law viewed the suicidal person as sick and unwell, whilst those who support the law viewed the suicidal person as a criminal and a potential murderer. They thus validated the need to use the law as means of deterring people and preventing suicide in the long run (Hjelmeland et al

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2014). The institutionalization of criminal code against suicide might prime the value of life and living and accentuates the criminal view of suicidal behavior and persons. This can contribute towards deepening social stigma towards persons as *criminals* who deserve punishment.

The impact of stigma of suicide

As analyzed above, the ultimate result of negative attitudes towards suicide from the family/community, religious groups, and the law code is the intensification of stigma towards suicidal persons. Stigma is a mark that denotes a shameful quality in the person who has been so marked (Pompili, Mancinelli & Tatarelli, 2003). The sources of the stigma are varied and may include beliefs and prejudices (Pompili et al, 2003; Sartorius, 2003), ignorance (Joiner, 2010) and careless use of diagnostic labels (Sartorius, 2003). Stigma till date, continues to be a major obstacle to quality of life of several persons suffering from one form of mental distress or another. Although mental illness is stigmatized, the stigma of suicide continues to be unique one and as a special domain of mental distress (Sudak, Maxim, & Carpenter, 2008; Rudd, Goulding, & Carlisle, 2013).

Suicide stigma has serious consequences which must be tackled. In a recent editorial, Rusch, Zlati, Black and Thornicroft, (2014) have showed three ways in which stigma can be related to suicidality. First, suicide stigma can lead to social isolation and impaired social network. Secondly, suicide stigma can create structural discrimination. This implies that there will be poorer funding of mental health care and this will eventually reduce access to quality mental health care services. Thirdly, stigma can lead to self-stigma which may lead to a sense of worthlessness, hopelessness and a threat to coping resources.

Stigma is one likely obstacle when planning effective intervention for warning signs of any type including suicide (Sudak, Maxim, & Carpenter, 2008). Warning signs are useful indicators for public health education and awareness which eventually may lead to early detection and effective intervention of suicidal persons. (Rudd , Goulding & Carlisle, 2013). The stigma attached to suicide may become hurdles in lowering enthusiasm to provide help to person who are experiencing suicidal crisis (Sudak, Maxim, & Carpenter, 2008). For example in one study that examined the impact of stigma on participants' readiness to provide urgent help and their degree of comfort and trust in their helping efforts, participants showed readiness to respond urgently towards heart attack patient than someone in suicidal crisis. (Sudak, Maxim, & Carpenter, 2008).

Suicide stigma can also lead to people distancing themselves from the suicidal individual and potentially compounding the sense of isolation, loneliness, and burdensomeness (Van Orden, Joiner, Hollar et al., 2006). In one study in Uganda, the stigma attached to suicide is so deep that at the instance of a suicide, the family, lineage, and the entire clan detach themselves from the suicidal person as a way of ritually managing the fear of collective social stigma (Mugisha, Hjelmeland, Kinyanda & Knizek, 2011). The labels of suicidal ideations and persons as weak, shameful, sinful and selfish may prevent them from seeking early help in the suicidal process and those within their social network may also pull way for fear of shared stigma (Pompili, Mancinelli, Tatarelli , 2003; Rusch, Zlati, Black & Thornicroft, 2014).

The emerging literature (although inconclusive) is beginning to show some support for the hypothesis that stigma variables contribute to suicidality (Rusch, Zlati, Black & Thornicroft, 2014). For example in one study, that examined patients views about suicide prevention efforts, 83% of patients were conscious of the stigma associated with mental illness when feeling at their worst, with 59% indicating that this stigma had contributed to their feeling at their worst. (Eagles, Carson, Begg, A., et al, 2003). A recent study in one rural community in Ghana reported that attempters indicated that the stigma following suicide was traumatic for them with one ending up killing himself from social taunting a few weeks after the interviews. (Osafo et al, 2015). Stigma reduction has thus been considered as a one of the suicide prevention efforts (Pompili, Mancinelli, Tatarelli , 2003; Rusch, Zlati, Black & Thornicroft, 2014). In fact stigma reduction is a recommended national prevention method by the WHO as means of globally combating the suicide menace (WHO, 2014);

Summary

I opine in this paper that stigma towards suicide in Ghana is institutionalized. The institutionalization of stigma appears to build a certain sense of normalization of negative attitudes towards, not just suicide, but suicidal persons. This may reduce the interest to empathize, help as well as the willingness to seek early help during suicidal crisis (Osafo et al., 2015). There are three forms of stigma towards suicide and suicidal persons as identified in this essay. The first is viewing the act of suicide as *anti-community act* and thus the *suicidal person as antisocial.* Generally in psychology, an antisocial person is characterized by a long standing pattern of

irresponsible behavior including a lack of conscience and diminished sense of responsibility to others (Colman, 2015). The view that the suicidal person's acts represent a social injury (Osafo et al., 2011b) is consistent with both the aggression and rule violating criteria of the antisocial criteria as indicated by Sperry, (2003) in the DSM-IV-TR. The person's act is perceived as constituting irresponsibility towards the group and a confrontation to the social order. The African ethos is oriented towards social equilibrium and the punishing of non-conformists (Verhoeff & Michel, 1997; Gyekye, 1996). Suicidal persons in Ghana are verbally abused as "stupid" and "foolish" (Osafo et al, 2012). Such labels may reflect acts of social sanction. Efforts that target the reduction of stigma should focus on such labels and replace them with more humane and empathic alternatives such as "unwell", "sick", "needy" and "distressed" as expressed by psychologists and medics in the country (Osafo et al., 2013, 2015). Such words can provoke prosocial tendencies towards the suicidal person.

The second major stigma towards suicide and the suicidal person from the fore discussion is that the act is a transgression. Following from that view, the suicidal person is *a sinner or transgressor*. As a transgressor, he or she is viewed by the religious community as desecrator; or an evil person. Such view may lead to social isolation and lack of enthusiasm to provide help for suicidal persons and their families within faith communities or religious groups in the country. Perhaps this attitude might be changing because of the recent reports of clergy suicide with fatal outcomes in Ghana. Such acts might awaken the Christian community to reconsider concrete efforts in addressing the issue of suicide than the traditional avoidance and condemnatory posture that has often characterized reactions towards suicidality. Stigma as has been argued may serve a deterrent purpose, but empirical evidence has indicated that stigma discourages report and timely intervention (WHO, 2014). Churches should therefore begin to reduce judgmental attitudes, embrace and provide support for persons who might be experiencing some psychological distress leading to suicide.

The third form of stigma toward suicide and suicidal persons is perceiving the suicidal act as a crime and the *person as a criminal*. This is perhaps, the strongest form of stigma as it presupposes that the person has attributes that may be physically dangerous to the rest of the community. In earlier studies conducted in Ghana suicidal persons have been described as murderers (Osafo et al, 2012). It is my view that the highest

intensity of suicide stigma is expressed at this level of perceived criminality. Such label may lead to severe isolation and discrimination towards the person. This might provide a robust justification for the law courts in Ghana to prosecute the suicidal person as a "law breaker" who deserves incarceration as presently observed in Ghana (Adinkrah, 2013).

Implications for suicide prevention

Stigma is considered one of the most problematic attitudes attached to mental health and suicidal behaviour and thus programs targeting its reduction, is central to suicide prevention efforts (Mann & Currier, 2011). I firmly assert in this essay that suicide prevention efforts will not be effective unless these institutions that are virtually manufacturers and repositories of suicide stigma become part of the efforts in addressing it. Such efforts will require specific steps towards formulating a national policy on suicide and suicide prevention in the country. The nature of stigma and the levels at which they are expressed as indicated in this essay show that public awareness and education targeting the reduction of stigma can occur at two major levels: 1) the general population level where families are primary focus for suicide education and 2) institutional and professional levels where religious leaders and legal practitioners are targets for suicide literacy.

Families and the communities within which suicides occur are often a risky one in Ghana and the attempter may suffer afterwards (Osafo, et al. 2015). Suicide education for community can take both universal (i.e., targeting the whole community and education people on warning signs and how to refer persons to appropriate quarters for help) or indicated (where families with suicide episodes are identified and educated, including support programs for those who might be bereaving).

Further, gatekeeper clubs can be formed in communities to provide initial help to suicidal crisis. These gatekeepers may be the only identifiable and available support group for persons with mental and suicidal crisis. Lack of knowledge about suicidal warning signs and the presence of negative attitudes still pervade in Ghanaian communities. Public education at the family and community level should become a major preventive program in Ghana. Evidence of this exist in Australia where Australian Aborigines received suicide education to reduce stigma through community gatekeeper training workshops (Capp, Deane & Lambert, 2001). Such can be piloted in certain communities in Ghana

and evaluated for effectiveness and generalized application. Some evidence-based researches have also indicated that large scale public education and awareness campaigns have beneficial effects (Hegerl, Althaus,& Stefanek, 2003)

Public education at the institutional and professional levels is also very key. Suicide is a state of emergency issue that requires specific actions and steps that should be followed to prevent it (Fountoulakis & Rihmer, 2011), especially when there are potential helpers who see the suicidal person prior to the act. Religious leaders are among such potential frontliners. Yet religion's role in mental health issues is often is doubled-edged (Koenig, King, & Carson, 2012). Its role in the fight against reducing stigma cannot be ignored, however, it must be tactfully guided. In this regard the role of religious groups (and their leaders) become critical. Religious leaders in Ghana are also frontlines in mental health crisis in Ghana (Osafo, Agyapong, & Asamoah, 2015). They may often be present at a critical time when someone is in the middle of some mental crisis including suicide and either provide help or put up an attitude that discourages the person from seeking early help. The need to provide them with education for purposes of modelling prosocial acts and referral system is very important. Evidence of engaging religious groups and their leaders is already available in Ghana. For instance during the fight against HIV'AIDS stigma, religious leaders in Ghana were actively engaged to send messages of compassion and support to the general public and this has been evaluated as effective (Boulay, Tweedie, Fiagbey, 2008; USAID 2003). The potential for religious meetings as sites for public education on mental health in Africa is already demonstrated (Hale & Bennett 2000, Koenig, 2008) and this can be harnessed to improve suicide prevention in Ghana.

There is the need to target the legal institution as a professional group and provide them with education about the evidence-based reasons to decriminalize suicide. We already have some evidence on the grounds that law enforcers such as the police generally support the repeal of the law that criminalizes suicide (Hjelmeland, Osafo, Akotia & Knizek, 2013). In this regard, research and advocacy are needed. Research is needed to back advocacy programs. We have begun this in earnest. Our recent studies have focused on understanding the attitudes of lawyers and judges. Preliminary results are indicating that they are in support of decriminalizing attempted suicide. Earlier advocacy work on decriminalization that targeted parliament was petitionary and based on evidence built elsewhere around the world. To make sustained impact, knowledge generation that should drive advocacy towards decriminalizing attempted suicide in Ghana should go beyond simple petitions to evidence based advocacy. Such evidenced-based advocacy must also have a strong educative slant. Thus the lawmaker (parliamentarian), the law interpreter (lawyers) and the law enforcer (police and judges) all need to improve their suicide literacy to facilitate the advocacy efforts. In one of our dissemination programs, we observed a sharp drop in negative attitudes toward suicide when we gathered the views of participants before and after a suicide prevention educative seminar and training program (Hjelmeland, Osafo, Akotia, Kinyanda, Knizek 2011).

To sum up, the major negative attitudes towards suicide in Ghana is stigma which appears to have some normative support at three major social levels- family/community, religious and legal. Suicide risk is not static and stigma can vary, heighten or even change the initial risk completely resulting in elevated perturbation and high lethality. The firm assertion in this essay is that stigma toward suicide in Ghana is institutionalized and that efforts to reduce stigma and ultimately prevent suicide should target these institutions and incorporate them into prevention programs based on sound and evidenced-based research.

Competing interests
The author declares that there are no competing interests

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Review

Suicide prevention and the Internet, risks and opportunities: a narrative review.

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Abstract: In the past century the development of technology, most notably the Internet, has broadened the horizons for the prevention of suicidal behaviors. At the same time, the Internet has become a double-edged sword especially for vulnerable people, given the difficulty of inspecting the real contents of each site, along with the growing number of pro-suicide websites. The aim of this work is therefore to narratively review the literature regarding the role of the Internet in suicide prevention, as well as possible strategies to counteract the expansion of suicide-promoting websites. Specific attention has been paid to especially vulnerable populations, such as adolescents and young adults.

Keywords: Internet, chat, forum, suicide, suicide attempt, prevention

During the past century the rapid development of technologies, particularly the Internet, has deeply changed the way people, especially the younger generations, seek and exchange information. The use of the Internet as a communication tool is a broad cultural phenomenon, representative of the current evolutionary process. The Internet not only has become a new family member, or a friend without

whom we cannot get along (Tam, Tang & Fernando, 2007), but it has also significantly impacted on everyday life and changed the way people communicate and interact (Mora-Merchán & Jäger, 2010). As an example, if the first social networks, such as MySpace and YouTube, have considerably facilitated communication in general, with the advent of the most recent social networks, such as Facebook and Twitter (Patchin & Hinduja, 2010) the creation of non-spaces (virtual spaces) where users can search for and build their own identities (Chiv, 2010) has become simpler. According to a report on the Internet use in the US in 2009-2010, 93% of young Americans aged 12 to 17 years, and 95% of those aged 18 to 33 years

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have gone online during the study period (Zickuhr, 2010), and more than 60% of the teens reported a daily Internet use in 2007 (Lenhart, Madden, Macgill & Smith, 2007). These percentages are in line with those presented in a more recent consensus data report on the computer use in the US in 2013 (File & Ryan, 2013). Similar figures have emerged in Europe (Livingstone & Bober, 2005), where 90% of young people aged 16–24 years reported a regular Internet use in 2010 (Eurostat statistics, 2010). In this context, Italy ranks as the 11th country in the world and the 6th in Europe in numbers (about 23 million) of Facebook users (www.socialbakers.com;www.internetworldstats.com).

In spite of its broad expansion, a number of downsides of the Internet use must be acknowledged (Durkee, Hadlaczky, Westerlund & Carli, 2011). In fact, the excessive use of Internet seems to be directly correlated with a number of social and psychological problems (Engelberg & Sjöberg, 2004), including depressive symptoms (Morrison & Gore, 2010; Van den Eijnden, Meerkerk, Vermulst, Spijkerman & Engels, 2008; Ybarra, Alexander & Mitchell, 2005) loneliness (Moody, 2001), anxiety (Lee & Stapinski, 2012), attention deficit hyperactivity disorder (Gundogar, Bakim, Ozer & Karamustafalioglu, 2012), obsessive–compulsive disorder (Cecilia, Mazza, Cenciarelli, Grassi & Cofini, 2013) and hostility/aggression (Adalier & Balkan, 2012). Additionally, according to a recent research (Morrison et al., 2010) the online communication, including through the social networks, is at times associated with the so-called "compulsive Internet use" (Caplan, 2003; Chou & Hsiao, 2000; Ward, 2001), in turn correlated with comorbid psychopathology and suicidality (Kaess, Durkee, Brunner et al., 2014). It is of note that the unique context of disinhibition and anonymity offered by the Internet is particularly attractive especially for the more vulnerable users (Van den Eijnden et al., 2008). In fact, the Internet goes beyond any physical and geographical barriers and allows, through the possibility of an anonymous and 24/7 access, a potentially immediate feedback at any time (Burns, Morey, Lagelée, Mackenzie & Nicholas, 2007). For this reason, the Internet is frequently used to find and share information in a context of privacy and anonymity (Borzekowski & Rickert, 2001). However, this bears the risk of running into inaccurate information or even deliberate abuse, especially with regard to medical issues. According to Rideout (2002), about 70% of young Americans aged 15 to 24 years retrieve medical information, and 25% of them seek information on mental health via the Internet

(Gould, Munfakh, Lubell, Kleinman & Parker, 2002; Nicholas, Oliver, Lee & O'Brien, 2004). Importantly, a great proportion of those who retrieve medical information via the Internet, trust it to be valid and reliable (Morahan-Martin, 2004), and therefore do not seek any further professional consultations. This phenomenon has to be taken into serious consideration, because adolescents and young adults who experience mental distress are known to be especially reluctant to seek professional help (Rickwood, Deane & Wilson, 2007). The most commonly reported reasons for not seeking professional help include problems deemed too personal, lack of confidentiality, (perceived) inability of other people or services to provide appropriate help, and the feeling of being able to handle the problems by themselves (Dubow, Lovko & Kausch, 1990). In this context, using the Internet to seek medical information is perceived as a way to preserve own confidentiality and independence. This is especially important for young people, for whom stigma and embarrassment, poor mental health literacy and preference for self-reliance are the most important barriers to help-seeking (Gulliver, Griffiths & Christensen, 2010).

Altogether, these data highlight the importance of considering the current state of knowledge about the Internet use and its role in the promotion of health behavior. Even though to date a number of reviews has been published on this topic, the continuous broadband development and spread of the Internet requires a constant update of the state of the art. In fact, in the Internet context in particular, new phenomena are quickly replaced by newer ones, riding the wave of media that contribute to their spread/born, e.g. the phenomenon of cyberbullicide. This is especially important for the more vulnerable populations, i.e. for those individuals who, because of their state of mood or age-related vulnerability, make the most use of the Internet, and are more likely to be attracted and influenced by risky websites or other Internet-related phenomena (e.g. a suicidal person that would search for information regarding suicide on the Internet is more likely to give importance and/or to be attracted from pro-suicide website).

The aim of this work is therefore to review the literature regarding the potential advantages and possible risks, particularly for vulnerable subjects such as adolescents and young adults, associated with the Internet use. Specifically, we focused on the role of the Internet in suicide prevention (van Spijker, van Straten & Kerkhof, 2014), as well as possible strategies to counteract the expansion of suicide-promoting websites.

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Method

We performed a literature search on Internet use in relation to suicide and suicide prevention, using MEDLINE via PubMed, PsycINFO and Google Scholar database. The search via PubMed and PsycINFO was limited by using specific keywords with boolean operators ("Internet use AND psychopathology"; "Internet AND suicide", "suicide prevention AND Internet"); the search via Google Scholar was used in order to refine the results and to find articles not included in MEDLINE. Only articles published before 31 December 2014 were included in the review.

The modified PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Moher, Liberati, Tetzlaff & Altman, 2009) was used as the methodological approach for this review, as reported in figure 1.

The authors examined all the selected abstracts and went through each specific article in detail. Because our aim was to narratively review the state of the art on the Internet use in relation to suicide risk, and to propose possible Internet-related preventive strategies, only articles addressing the role of either pro-suicide websites or Internet-based suicide prevention were included. Studies on the effectiveness of e-learning modules were excluded.
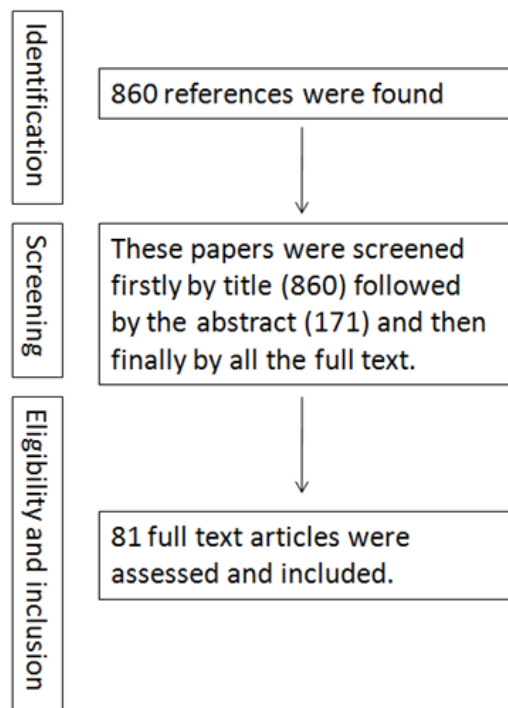
Figure 1. Identification, screening, eligibility and inclusion assessment of the reviewed articles.

Results

The Internet and the risk of suicide

a.   Pro-suicide websites

As mentioned above, the use of Internet is especially common among adolescents, who are per se a vulnerable and easily influenceable population (Alao, Soderberg, Pohl & Alao, 2006; Dobson, 1999; Thompson, 1999). The prevalence rates of depressive symptoms and risky behaviors, including substance abuse and suicidal behavior are also particularly high among adolescents. Suicide is a complex phenomenon thought to arise from a combination of biological, psychological, intrapsychic, interpersonal, sociological, cultural and philosophical factors (Leenaars, 1996). Mutual interaction of triggering factors (e.g. unemployment, economic troubles, stress) and circumstances (e.g. availability of suicidal means, isolation) may lead vulnerable people to commit suicide (Shaffer, Garland, Gould, Fisher & Trautman, 1988). In this context, pro-suicide websites may influence vulnerable individuals to consider suicide as a heroic or desirable rather than a dreadful act (Becker & Smith, 2004). Pro-suicide websites commonly exhibit death certificates and photographs of suicides, and in some cases may even include a box for posting pro-suicide messages (Alao et al., 2006). As such, they are particularly appealing especially for vulnerable people who are seeking relief to an intense state of emotional turmoil.

According to a recent review on the possible influence of Internet sites on suicidal behavior, by entering keywords related to suicide and death in the four most popular search engines (Google, Yahoo!, MSN and Ask) it is possible to retrieve numerous suicide-promoting sites (Biddle, Donovan, Hawton, Kapur & Gunnell, 2008). Specifically, the authors analyzed the first ten sites listed after entering 12 suicide- and death-related keywords: 20% of the 240 retrieved sites specifically focused on suicide and suicide methods. About half of them encouraged or promoted suicide, while the remaining ones described suicide and suicide methods using neither an encouraging nor a preventive attitude. Only 13% of these 240 sites focused on suicide prevention and support, and 12% specifically discouraged suicide. Lastly, 15% were academic or policy sites. Similar figures were found in a recent Turkish study, where about half of the results retrieved after searching for suicide and suicide-related phrases were pro-suicide websites, while only 13% were anti-suicide websites (Sakarya, Güneş & Sakarya, 2013). Similarly, Recupero, Harms & Noble (2008) found an elevated risk of running into pro-suicide sites when using the Internet. Even though most of the web-pages reviewed by the authors were suicide-neutral (or

included both pro- and anti-suicide information) or anti-suicide, 16% were clearly pro-suicide or provided information on how to kill oneself, and 14% included detailed descriptions of suicides or instructions on how to suicide. Similar or even more alarming results emerged in an Italian study (De Rosa et al., 2011), where 25% (n = 124) of the examined websites were pro-suicide (7.4% encouraging, promoting or facilitating suicide; 12.6% describing suicidal methods without directly encouraging suicide; 4.8% describing suicidal methods in fashionable terms), 11% (n = 55) provided information on suicide without clearly discouraging it (2% included practical information on how to suicide; 9% presented the issue in a joking fashion, with factual and non-factual descriptions), and 12.2% (n = 61) reported individual cases of suicide. Only 98 sites (19%) expressly focused on suicide prevention and support, and 8.2% (n = 41) were scientific, academic or policy sites. A newer exploratory study (Westerlund, Hadlaczky & Wasserman, 2012) showed how the Internet risk in relation to suicide content has changed at three different time points (2005, 2009 and 2012 years). From 2005 to 2012 the search of the word suicide on Google search engine grew from 25 million to 270 million hits, and the search results were not always encouraging: despite most of the results retrieved suicide prevention sites, pro-suicide websites were high up on search engine result lists.

The broad picture provided above highlights the need for specific strategies and interventions aimed at limiting the possible negative influence of certain websites. However, the extreme variability of the Internet and its content has to be considered. Indeed, while new sites are continuously created, others are obscured, leading to continuous change in the order of site appearance in the search engines. It is therefore plausible that many other pro-suicide websites may be found with a more accurate search.

b.   *Forums, chat- rooms and suicidal pacts*
In addition to pro-suicide websites, chat-rooms may also influence vulnerable individuals. Indeed, forums and chat groups have been reported to host conversations that may encourage people who are contemplating suicide, and eventually lead them to commit suicide (Becker & Schmidt, 2004). A chat-room allows confidential communication, and no control is exerted on its content. Several cases of suicides and attempted suicides were reported following online suicidal pacts between complete strangers, contracted during chat-room sessions (Alao et al., 2006). In

the past, only two or more persons who personally knew each other could engage in a suicidal pact, i.e. an agreement to commit suicide together in a certain place at a certain time (Rajagopal, 2004). The first case of a suicidal pact on the Internet was reported in Japan in 2000 (Lester, 2008). Afterwards, a total of 34 suicidal pacts via the Internet were reported in 2003, and the number has grown to 91 Internet suicidal pacts in 2005 (Hitosugi, Nagai & Tokudome, 2007). It therefore seems that the development and accessibility of technology has contributed to the development of a modern "folie à deux" (Salih, 1985). Loneliness was found to be a common correlate of Internet suicidal pacts (Ozawa-De Silva, 2008). An online agreement creates a special sense of cohesion and a new type of relationship: when meeting online and planning their suicide, people can live the sense of community and relationship missing in their real lives, and in this context, "dying together is better than dying alone" (Ozawa-De Silva, 2008).

c.   *Cyberbullicide*
A further novel example of the possible negative influence of the Internet is the "cyberbullicide", i.e. cases of direct or indirect suicide in relation to online aggression/bullying (Hinduja & Patchin, 2010). Bullying and cyberbullying are often associated with depression, low self-esteem, hopelessness and loneliness (Hawker & Boulton, 2000; Langhinrichsen-Rohling & Lamis, 2008), which in turn are all well-known suicidal risk factors (Bauman, Toomey & Walker, 2013; Brunstein Kolmek et al., 2007). Even though bullying and cyberbullying share similar causes and effects, the victims of cyberbullying can be extremely easily reached at any place and at any time via messengers, social networks, mobile phones and e-mail, this significantly increasing the frequency of the abuse (Palmeri, 2012).

In summary, a complex relationship exists between the Internet and suicidal behavior. However, even though the use of the Internet may on the one hand encourage vulnerable individuals to attempt or commit suicide, it must be acknowledged that the implementation of innovative Internet-based strategies (such as online projects, support groups via chat rooms, e-mails, asynchronous groups moderated by mental health professionals) represents a powerful preventive strategy, able to reach an extremely large number of people beyond all barriers of space and time (Gilat & Shahar, 2007; Scocco et al., 2006). Although limited, there is evidence to suggest that online platforms, especially social media ones, can be used to identify individuals or geographical areas

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at risk of suicide (Christensen, Batterham & O'Dea, 2014).

Advantages and disadvantages of Internet use in suicide prevention

Before the development of the computer and the Internet, various instruments were used to more easily reach people in need of help, in crisis or experiencing severe emotional distress. The first help-lines (e.g. Samaritans, Befrienders) started to operate as far back as the '50s. There are several reasons behind their success: they operate on a 24/7 basis, are not limited by distance, guarantee anonymity, allow high confidentiality, and can reach people in crisis and provide them with information and support in a relatively short time. However, the Internet has become a first choice instrument for several reasons: it allows both synchronous (chat rooms) and asynchronous (forums and e-mail) support services, as well as group interventions, where the data and content of communications can be saved. Additionally, the Internet contributes to minimizing and bypassing stigma. In this regard, Feigelman et al. (2008) found higher levels of perceived stigmatization from friends and relatives among subjects who decided to participate in an on-line group compared to a traditional group. The high levels of suicide-related stigmatization and the associated belief that no support can be found in real life, do probably induce people to prefer online as opposed to face-to-face interventions. In contemporary society, any discussion about suicide is highly stigmatized as taboo; on the contrary, Internet websites and forums are among the main sources of information on this issue. Whether this is an opportunity rather than a problem remains to be clarified (Alao et al., 2006; D'Hulster & Van Heeringen, 2006).

As mentioned above, the Internet is not free of downsides, even in relation to suicidal risk. For instance, while anonymity is considered one of the main strengths of the Internet, it can become a major flaw when users post untruthful or fictitious messages with the sole intent of drawing attention, but potentially causing distress to vulnerable participants (the so-called "Munchausen by Internet") (Feldman, 2000). As indicated by Barak (2007), this inappropriate use of the service, though relatively uncommon, may also cause severe distress and burnout in helpers. Additionally, it is worth noting that the target population of the Internet is mostly young individuals, while the elderly and those who cannot use a computer are in general difficult to reach (Suler, 2001). In addition, it has been widely shown that the majority of telephone or online service users are women (Lester, 2008). Although suicide rates are notoriously higher in men than in women, men rarely seek help. The reasons for this gender difference in help seeking are not clear (Smith, Braunack-Mayer & Wittert, 2006); however, it has been suggested that higher levels of stigma towards mental illness in men may prevent them from constructive help-seeking (Ellis et al., 2012). Moreover, the traditional masculine role, where men cannot express their emotions and are expected to self-manage their own problems (Möller-Leimkühler, 2002), may contribute to the lower proportion of male clients in online prevention and support services.

Other limitations of the Internet include technical issues, such as the possible, mostly unexpected, breakdown of the Internet, which can occur at any time, including during a highly emotional conversation. The lack of any visual, verbal and physical contact may sometimes lead to potential misunderstandings during a conversation.

Who is working with online suicide prevention?

Several online intervention and support strategies do currently exist, including e-mail, chat rooms and forums. Asynchronous help groups (forums) seem to be preferred to chat rooms for several reasons. A message posted in a forum can receive an answer at any time of the day, and this probably partly relieves the feelings of loneliness. Asynchronous communication also allows messages to be pondered before being posted, and users can feel completely safe. Additionally, people generally prefer to share emotions related to critical mental pain in an asynchronous group rather than in a synchronous chat session, where immediate answers are given (Barak, 2007; Finn, 1999; Miller & Gergen, 1998). Participants in a group can experiment a considerable sense of cohesion and receive emotional support from other members. Hence, asynchronous groups seem to be a more appropriate opportunity for suicidal individuals experiencing acute loneliness and unbearable mental pain/psychache (Shneidman, 1996).

Thus, the active participation of suicide survivors, mental health professionals and others who are suffering from severe distress to online interventions seems to be an important strategy to limit the risk of Internet-induced suicidal behavior, as well as to better operate in the field of suicide prevention and postvention.

Suicide survivors. The term "suicide survivor" indicates those people who had a close relationship with the suicide victim (Shneidman,

1996). Family members and others, particularly adolescents (Bridge et al., 2003), who have lost a significant other by suicide have a high risk of impaired mental health, in the form of specific depressive symptoms or disorders (Andriessen, 2009). Moreover, it is well known that being a suicide survivor, alongside previous attempted suicides, suicide threats and substance abuse, is one of the main predictors of suicidal risk (Diekstra, 1974). Being a vulnerable group, suicide survivors also need specific support, as "postvention is prevention for future generations" (Shneidman, 1969). The role of peer support for suicide survivors, i.e. support groups or help-lines moderated by survivors, has been emphasized by Feigelman (Feigelman et al., 2008): "only those who have experienced it, can fully understand it". Peer support groups bear a double advantage: on the one hand, survivors may again feel helpful, and provide help and support to those going through the same experience, but at the same time they have the opportunity to move ahead with their own grief process. On the other hand, "new" members feel fully understood and helped by those who can actually understand their pain (Feigelman et al., 2008). Many sites and online projects are currently available for suicide survivors (e.g., "Survivors of bereavement by suicide", www.uk-sobs.org.uk/; and "Soproxi Project", www.soproxi.it).

Health professionals. In addition to recognizing and treating illnesses, one of the main intents of any health professional is to detect, whenever possible, any warning signs of and actively prevent the illness itself. Unfortunately, it is relatively common for health professionals not to recognize the severity of an emotional crisis in their suicidal patients. An accurate assessment of suicidal risk, including a careful understanding of the suicidal communication, is a preliminary step in suicide prevention. The recognition of any possible suicidal content in communications with others may in fact drive the development of effective preventive communication strategies, which in turn are of help to clinicians, relatives and friends (Shemanski Aldrich & Cerel, 2009). A number of websites provide information and education for mental health and suicide prevention professionals, such as physicians, nurses and social workers. Moreover, specific websites and online projects have been created to overcome the obstacle of long distances, particularly for those who live and work in rural or otherwise isolated communities (e.g., the Australian projects ACROSSnet - Australian Creating Rural Online Support Systems-, active during the period 2002 - 2005; and: e-SPST - electronic Suicide Prevention Skills Training-,

operating between 2004 and 2009) (Krysinska & De Leo, 2007).

In addition to sites and projects designed to provide adequate online education for health professionals, several websites have been specifically created for people who live with internal distress, most notably those at risk of suicide, with the aim of providing information, support and a variety of interventions via telephone help-lines, e-mails, chat rooms, forums or social networks (e.g.: TAI, Telefono Amico Italia; Reach-out, Australia; Sahar, Israel; 113online, The Netherlands; BeFriender; Samaritans; Soproxi Project). Some of these platforms are described below:

• Reach-out (http://au.reachout.com): an Australian project started in 1998 with the specific aim of reducing stigmatization and encouraging young adults (aged 16 to 25 years) to seek help. The website includes sections with scientific articles on the incidence of mental health problems in the young population; an online community with forums moderated by trained volunteers; links to social networks such as Facebook, Twitter and MySpace. The project has significantly contributed to reducing the stigma related to mental illness and to increasing the level of help-seeking among young adults (Burns et al., 2007).

• Soproxi: a project started in 2006 in a north-eastern region of Italy (Scocco et al., 2006) to provide specialized support to relatives, friends and anyone else who has lost a significant other by suicide. Given the rapidly growing number of contacts from all over Italy, a website (www.soproxi.it) was created in 2011 to provide professional updated education for health professionals, and help and support for survivors via phone calls, skype contacts, e-mails, forums and online chat groups.

• 113online (www.113online.nl): a Dutch platform which offers crisis management interventions via the website and telephone services at primary and tertiary suicide prevention levels (Mokkenstorm, Huisman & Kerkhof, 2012).

• Sahar (Support and Listening on the Net) (www.sahar.org.il): a platform in Hebrew, which provides emotional support to the Israeli population on a national level, including links to scientific articles, chat rooms and help-lines. In addition, Sahar has four separate forums for different target populations: youngsters, adults, enlisted soldiers and those preferring to express their emotions through art (poems, stories, paintings that can be uploaded and shared). Trained volunteers operate the platform (Barak, 2007).

The main limitation of all these programs is that they only offer services in one language, and therefore can operate on a national basis only.

In addition to these multifaceted, multimedia programs, more traditional projects offer telephone hotlines and email support, as in the case of TAI (Telefono Amico Italia), Samaritans and Befrienders.

What remains to be done?

As regards the current policy in Italy, additional strategies are needed to partially control inappropriate and potentially dangerous content on the Internet. At the moment, parents have the possibility to partially control and limit the information retrieved by their children via the Internet using specific filter software programs; however, these filters can be easily bypassed. In general, Internet Service Providers (ISP) play an important role in this respect, and some countries have already adopted specific regulations. In Australia, legislation is rather strict, and since 2006 it is illegal to provide practical information or encourage suicide on the Internet (Biddle et al., 2008). Japanese ISPs have to inform the police of any suicidal content in their platforms (Hitosugi et al., 2007). Similarly, German forum and website owners are held responsible for their content (Becker et al., 2004), and in China, ISPs have since 2010 been judged responsible for failing to inform the authorities of any suicidal posts or pro-suicide information on their sites (Cheng, 2011). Some Korean and Japanese ISPs have also blocked a number of pro-suicide websites (Hitosugi et al., 2007).

However, many other countries still lack specific regulations. For example, the websites controlled by the Internet Watch Foundation, the main Internet monitoring agency in Great Britain, do not include any suicide-related websites, unless they are illegal. USA legislation does not hold website owners responsible for the content of their sites, unless it violates copyright law (Coble, 1998). Italian regulations on this issue are even vaguer, with no specific monitoring policy for pro-suicide websites. Websites can only be blocked by the postal police, where the court so orders, in the case of an alleged crime (De Rosa et al., 2011).

Since it is not possible to block pro-suicide websites, it would be helpful if suicide prevention and support websites were more visible in the search engines and freely provided, especially by institutional rather than private agencies. Accordingly, the Internet could be used as an additional tool for acute, 24/7 support, rather than as an alternative to traditional, face-to-face professional interventions.

Discussion and conclusion

The aim of this review was to describe the possible risks resulting from uncritical use of the Internet, and to provide constructive suggestions. Our intent was not to promote total restriction of suicide-related websites, as "*general prohibition of suicide sites is neither practicable nor reasonable*" (Becker et al., 2004); rather, to foster a responsible policy of responsibility. General rules and guidelines should be followed for Internet use, as in the case of other media (e.g. guidelines for journalists).

Some countries have already taken steps in the direction of Internet-related suicide prevention; however not enough has been done, particularly where the more vulnerable groups are concerned. We would like to emphasize the role of specific online preventive and support projects (e.g. Reach-out, Sahar, 113online, Soproxi Project), which are easily accessible and have proven effectiveness in reducing stigma and reaching a wide target population, including adolescents and young adults, partly through the collaboration with social networks. The main objectives of these online services are to reduce stigma, provide easy access to as wide a population as possible, encourage people to make first contact with (psychiatric) services and even alleviate the acute emotional or suicidal crisis. However, these services do not aim to substitute professional treatment, rather to encourage further contact with health professionals in a face-to-face setting. A close network between helpers operating in online suicide prevention services and professionals operating in local services is therefore needed, in order to avoid the risk of Internet-associated social isolation (Kraut et al., 1998). Since subjects at risk of suicide often have low social support, online-only intervention would contribute to increasing their social isolation.

It is of note here that technology does not itself mean risky behavior, as "*technology is neither content nor behavior*" (Collings & Niederkrotenthaler, 2012). In other words, it is important to notice that it is not the Internet itself that causes harm, but those who create harmful websites. Condemning the technology per se is of no use, rather those who use the technology with harmful intent should be controlled by the authorities and institutions.

We would encourage mental health professionals to be aware of the risks connected with the use of the Internet, and investigate the Internet use habits of their clients, particularly those suffering from depression or having suicidal ideation. Using the Internet could be of help when users, especially the most vulnerable ones, are able to

recognize potential risks and to retrieve and use potential support resources. Accordingly, the primary aim of any campaign should be to reduce pro-suicide sites, and promote and build a "young", easily accessible, readily available network of services that can overcome shame and stigma, partly with the help of more traditional media, as national and local newspapers. Specific training is also needed for (mental) health professionals, social workers, teachers, priests and others involved in the field of online suicide prevention.

Based on the above-described results, it can be claimed that anonymity is one of the main reasons why the Internet is widely used nowadays, this indirectly suggesting that much work is still needed in order to reduce stigma, shame and prejudice especially around mental illness. This would be the first step to promote appropriate help-seeking behaviors in all risk groups, in particular in the younger and more vulnerable individuals.

To conclude, given the broad use of the Internet worldwide, research concerning the implications of the Internet use on mental health and suicidal behaviors needs to be constantly updated. Further research is needed to implement the numerous preventive opportunities offered by the Internet, especially but not only to the younger populations, such as the recently developed "serious games" (Luxton, June & Kinn, 2011) or self-help apps specifically connected to support lines (Shand et al., 2013).

The Internet is an unquestionable key resource and a powerful communication tool which, if correctly used, could potentially contribute to the mitigation of several psychological conditions, including to the prevention of suicidal behavior. The Internet is likely to become one of the most important preventive strategies in the immediate future. Only if the web is mindfully used.

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EPA Section of Suicidology and Suicide Prevention

There is but one truly serious philosophical problem, and that is suicide. A. Camus

The EPA Section of Suicidology and Suicide Prevention is one of the sections of the European Psychiatric Association.

The Section aims at improving research in this field and translating research findings into clinical practice. In this sense it adheres to a bio-psycho-social perspective and involves an international and multidisciplinary network of researchers and clinicians.

The objectives of the EPA Section of Suicidology and Suicide Prevention are:

- Raising awareness about suicide as important public health issue and fighting the stigma surrounding it;
- Improving understanding of risk and protective factors;
- Sharing experience and knowledge on suicide prevention;
- Disseminating best practices on management and treatment of the suicidal patients.

ACTIVITIES

The EPA Section of Suicidology and Suicide Prevention organises symposia and workshops during major scientific events, such as the annual congress of the European Psychiatric Association or the European Symposium on Suicide and Suicidal Behaviour.

The Section organizes Itinerant CME courses in collaboration with National Psychiatric Associations and other organizations.

MEMBERSHIP

The EPA Section of Suicidology and Suicide Prevention comprises more than 100 members from more than 20 countries. Besides psychiatrists, the Section includes experts in several scientific areas, such as genetics, psychology, anthropology and public health.

To apply for membership, please send your request to the Section Chair (marco.sarchiapone@gmail.com).

FURTHER INFORMATION

For further information, please visit our website https://suicidologysection.org/