A cross-sectional investigation of the suicidal spectrum: typologies of suicidality based on ambivalence about living and dying


Objective: The aim of this study was to determine the validity of assigning suicidal individuals into differing typologies of suicidality based on their reported wish to live and wish to die.

Methods: One hundred five inpatients who reported suicidal ideation in the previous 48 hours completed a battery of assessments during inpatient psychiatric hospitalization. An algorithm was used to assign participants into 1 of 3 typologies of suicide: wish to live, ambivalent, or wish to die. Discriminant function analysis and group classification were used to predict group membership, followed by multiple analysis of variance and follow-up contrasts to measure between-group differences.

Main Results: Group classification resulted in 76% accuracy for predicting typology of suicidality based on scores from suicide-specific measures. Self-perceived risk of suicide and hopelessness were the strongest variables at differentiating between the 3 groups. Patients in the wish to die typology were less likely to report having never made a suicide attempt.

Conclusions: Creating typologies of suicidality may prove useful to clinicians seeking to better differentiate among suicidal patients within a limited period of assessment.

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1. Introduction

Suicide is a major public health problem in the United States. Research suggests that, in 2008, 8.3 million adults seriously contemplated suicide, 1.1 million attempted suicide, and 500,000 people required inpatient hospitalization for injuries related to attempted suicide [1]. Although risk factors such as a psychiatric diagnosis, male sex, and history of suicide attempt are often associated with suicide [2,3], such variables do little in helping clinicians to more deeply understand, assess, and treat suicidal patients in the moment. Research findings have demonstrated significant variability across suicidal individuals in terms of their thoughts [4], motivations [5], and the lethality of their attempt behaviors [6]. Given the heterogeneity of suicidality, mental health practitioners may benefit from effective, efficient tools for discriminating between types of suicidal individuals. In turn, clinical treatment researchers may find that certain typologies of suicidality are better suited to different types of suicidal treatments, for example, dialectical behavioral therapy [7], cognitive therapy [8], and the Collaborative Assessment and Management of Suicidality [9,10].

Both historical [11] and recent research [12] suggests that the notion of ambivalence about the wish to live and to die underlies much of the variability seen among people who contemplate suicide. Shneidman [13] observed that “people who are actually committing suicide are ambivalent about life and death at the moment they are committing it” (p. 76). To this end, Kovacs and Beck [11] developed the “internal struggle hypothesis” (ISH) to describe many suicidal individuals’ simultaneous wish to live and wish to die. Only 2 empirical studies have specifically tested the ISH [11,12]. The original 1977 study confirmed the presence of
an “internal debate” among 50% of the sample population, as determined by the presence of conflicting desires to be dead and alive. In addition, this study revealed that severe suicidal intent correlated strongly with a greater desire for death.

A more recent investigation merged responses on the wish to live and wish to die ratings scales to create a suicidal ambivalence index score. Using suicide deaths as the outcome variable, univariate hazard ratio analyses showed the index score to be a meaningful predictor of eventual suicide completion, above and beyond the effect of the total score for the Scale for Suicide Ideation (SSI) [14]. Furthermore, the study identified 3 distinct tiers of suicidal orientation in terms of predicting suicide completions. Index scores with a greater orientation toward the wish to live held no predictive value for suicidal completion. Yet, the remaining 2 index scores yielded hazard ratios for predicting suicide of 2.68 and 6.58, respectively [12]. One interpretation of these results is that 3 tiers of suicidal orientation may exist: those with a stronger orientation toward life, those with a stronger pull toward death, and those who carry a greater degree of ambivalence over the wish to live and to die.

In the current study, we adapted the methodology used by Brown et al [12] by merging the wish to live and wish to die self-report ratings and trichotomizing suicidal inpatients into 3 distinct groupings: wish to live (WTL), ambivalent about living or dying (AMB), and wish to die (WTD). Our study aimed to answer 2 specific questions: is it possible to reliably classify suicidal individuals into distinct typologies based on the WTL vs AMB vs WTD groupings? In what specific ways do these potential groups of suicidal individuals differ using standardized self-report tools?

2. Method

2.1. Participants and procedure

The current study used a sample of 148 adult psychiatric inpatients between 18 and 65 years of age hospitalized at the Mayo Psychiatry and Psychology Treatment Center. Participants were approached by the Mayo Psychiatry and Psychology Treatment Center staff to obtain informed consent for the study. One hundred five of the consented participants endorsed current suicidal ideation in the previous 48 hours and were included in the final analyses. Psychiatric diagnoses were determined by board-certified psychiatrists working on the psychiatry inpatient unit based on information gathered during clinical interviews with patients, collateral information from family and outpatient providers, and review of existing medical records [15].

Institutional review board approval was obtained by the research team before data collection (Mayo institutional review board no. 2181-04). Clinical staff administered all assessments to and obtained demographic information from consenting patients within 48 hours of admission to the inpatient unit. All measures were deidentified before data entry.

2.2. Instruments

2.2.1. Suicide Status Form

The Suicide Status Form (SSF) [16] is a self-report measure that uses both quantitative and qualitative assessment of suicide risk. Two separate studies have shown the SSF to have strong convergent and criterion validity as well as excellent test-retest reliability [17,18]. Current research also supports the SSF as an instrument that can partially predict and describe moderators of change related to longitudinal care of suicidal risk [19]. The current study used the wish to live and wish to die ratings scales on the SSF, which ask the participant to answer “I wish to live to the following extent” and “I wish to die to the following extent” using a range of scores from 1 to 7 (anchors: 1 = not at all, 7 = very much). In addition, we used a variable from the “Core SSF Assessment” that measures perceptions of overall (behavioral) risk for suicide (ORS) on a 1-to-5 self-report rating scale (anchors: 1 = will not kill self, 5 = will kill self).

2.2.2. Beck Hopelessness Scale

The Beck Hopelessness Scale (BHS) [20] is a 20-item self-report measure that consists of binary scales indicating behaviors and thoughts related to hopelessness. The measure has demonstrated acceptable test-retest reliability ($r = .60$) and good concurrent validity with clinician rating of hopelessness ($r = .74$) [20] as well as high levels of criterion validity in predicting suicidal behavior [21,22].

2.2.3. Reasons for Living Inventory

The Reasons for Living Inventory (RFLI) [23] is a 48-item self-report instrument containing reasons why a person would choose not to commit suicide. Each item requires a response on a 6-point scale of agreement/disagreement (1 = not at all important, 6 = extremely important). Previous research suggests that individuals with lower overall scores on the RFLI are more likely to have past suicide attempts [24]. The RFLI has shown acceptable levels of test-retest reliability ($r = .830$) [25] and internal consistency ($\alpha = .74$ to $\alpha = .94$) [24].

2.2.4. Outcome Questionnaire-45.2

The Outcome Questionnaire-45.2 (OQ-45.2) [26] is a 45-item self-report measure that assessed clinical symptoms of interest over the past week. A 5-point Likert scale was reverse coded for all questions with a positive valence so that higher scores indicate a greater severity of dysfunction. The measure is composed of 3 main categories: mood and anxiety distress, interpersonal satisfaction, and performance in vocational pursuits. The OQ-45.2 has demonstrated good internal consistency ($\alpha = .93$) [26] and test-retest reliability ($r = 0.84$) [27].

2.3. Data analyses

The present study used a series of separate analytical techniques to test our specific research questions regarding the spectrum of suicidal thinking. Following Brown et al
[12], we calculated suicide index scores for each patient by subtracting the WTL ratings from the WTD ratings that created an interval continuum of suicide spectrum scores (ranging from −6 to +6) on the SSF. We next used evenly distributed cutpoints on the resulting continuum that created 3 distinct separate groupings: a WTL group, an AMB group, and a WTD group. The range of scores differs slightly from that in the Brown et al [12] because the WTL and WTD scales on the SSF were measured using 7-point rating scales compared with a 3-point scale used on the SSI [14]. The specific range for each group is as follows: −7 to −3 for WTL, −2 to 2 for AMB, 3 to 7 for WTD. This resulted in a relatively even distribution of our sample into 27 participants in the WTL group, 31 participants in the conflicted group, and 28 participants in the WTD group. Twenty-two cases were ineligible for analysis because of missing data.

Our first research question focused on correct classification of suicidal individuals into distinct typologies of suicidal states based on their WTL vs WTD ratings. To address this question, we initially conducted a discriminant function analysis (DFA), which is an approach that uses continuous data to predict group membership [28]. The DFA determines canonical functions based on the independent predictors, which are then used to determine accuracy in predicting group membership [29]. This method can be thought of as an inverse model of multivariate analysis of variance. Finally, we conducted a series of post hoc pairwise comparisons to investigate which standardized measures revealed significant differences between the 3 groupings. Although logistic regression often involves fewer violations of assumptions, DFA was chosen because of the nature of the data, in that the independent variables were all nondichotomous linear variables, groups comprising the dependent variable were ordinal in nature and mutually exclusive with no overlaps, cases were independent, and overall sample size was adequate with balanced group sizes [30].

### 3. Results

#### 3.1. Patient characteristics

Participants included 76 (78%) females (mean age, 37 years) and 29 males (mean age, 34 years). Most of the participants were white (90%), with Latino (1%), American Indian (1%), African American (1%), and Asian (1%) participants comprising a small percentage of the sample (5 individuals had missing data for race). Forty-one percent of the sample were married; 41%, single; and 16%, divorced or separated. Some individuals had greater than 1 psychiatric diagnosis. Significant differences on several demographic and diagnostic variables were observed between typologies. The WTL group consisted of more men than the AMB and WTD groups ($P = .01$), whereas the WTD group was diagnosed with bipolar disorder more often than the AMB and WTL groups ($P = .01$). Both the AMB and WTD groups had a greater frequency of borderline personality disorder diagnosis than the WTL group ($P = .01$). Significant differences were observed for history of previous suicide attempts ($P = .01$), with WTD patients reporting the most instances of having made a previous suicide attempt (Table 1).

#### 3.2. Discriminant function analysis

A DFA was conducted to determine whether 4 standardized predictor scores—the ORS (from the SSF), BHS, RFLI, and OQ-45.2—could predict a patient’s placement on the spectrum of suicidality (from WTL to WTD). The overall Wilks $\Lambda$, which describes results for function 1 (F1), was significant: $\Lambda = .29, \chi^2_8 = 99.74, n = 86, P < .01$, indicating that overall, the predictors differentiated among the 3 suicidal spectrum groups. In addition, the residual Wilks $\Lambda$, describing function 2 (F2), was also significant: $\Lambda = .87, \chi^2_3 = 11.14, n = 86, P < .05$. This test suggests that the residual variance not accounted for by the first discriminant function differentiated the 3 suicidal ambivalence groups, as well. The initial function accounted for most of the variability in the DFA with an eigenvalue of 1.97 and canonical correlation of .814, compared with an eigenvalue of .146 and canonical correlation of .357 for the second function.

Upon investigation of each predictor’s relative contribution to discriminating groups, standardized canonical dis-

### Table 1

Demographic and diagnostic data

<table>
<thead>
<tr>
<th>Variable</th>
<th>WTL</th>
<th>AMB</th>
<th>WTD</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean ± SD)</td>
<td>36.44 ± 13.42</td>
<td>35.74 ± 11.17</td>
<td>35.85 ± 10.81</td>
<td>.96</td>
</tr>
<tr>
<td>Female (%)</td>
<td>52.8</td>
<td>88.6</td>
<td>76.5</td>
<td>.01</td>
</tr>
<tr>
<td>Single, divorced, separated (%)</td>
<td>66.7</td>
<td>48.6</td>
<td>57.6</td>
<td>.36</td>
</tr>
<tr>
<td>Education (%)</td>
<td>59.3</td>
<td>22.6</td>
<td>35.7</td>
<td>.49</td>
</tr>
<tr>
<td>&lt;High school</td>
<td>3.7</td>
<td>6.5</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>High school graduate or GED</td>
<td>22.2</td>
<td>41.9</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>Some college or technical school</td>
<td>59.3</td>
<td>22.6</td>
<td>35.7</td>
<td></td>
</tr>
<tr>
<td>College graduate</td>
<td>14.8</td>
<td>29.0</td>
<td>21.4</td>
<td></td>
</tr>
<tr>
<td>Current psychiatric diagnosis (%)</td>
<td>55.6</td>
<td>77.1</td>
<td>61.2</td>
<td>.15</td>
</tr>
<tr>
<td>MDD</td>
<td>5.6</td>
<td>0.0</td>
<td>20.1</td>
<td>.01</td>
</tr>
<tr>
<td>Bipolar disorder</td>
<td>2.8</td>
<td>5.7</td>
<td>0.0</td>
<td>.36</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>36.1</td>
<td>17.1</td>
<td>23.5</td>
<td>.18</td>
</tr>
<tr>
<td>Any SUD</td>
<td>2.8</td>
<td>25.7</td>
<td>32.3</td>
<td>.01</td>
</tr>
<tr>
<td>Borderline personality disorder</td>
<td>23.1</td>
<td>29.0</td>
<td>6.5</td>
<td>.01</td>
</tr>
<tr>
<td>History of suicide attempts (%)</td>
<td>46.2</td>
<td>12.9</td>
<td>29.0</td>
<td></td>
</tr>
</tbody>
</table>

GED indicates General Education Diploma; MDD, major depressive disorder; SUD, substance use disorder.
criminant function coefficients for F1 resulted in 2 relatively high correlations, ORS = −.569 and BHS total score = .436. The results of standardized canonical discriminant function coefficients for F2 also included ORS, with a correlation of .784, whereas OQ-45.2 total score had a correlation of .738. These scores function much like Betas in a multivariate generalized linear model, indicating the relative weight each predictor has to maximize differences between groups in the present model. To conceptualize the factor structure and label each function, a structure matrix was examined. Based on the results, we labeled F1 as risk and hopelessness and F2 as overall functioning.

After naming each function, the mean values for F1 and F2 for each of our 3 proposed groups were investigated by comparing group centroids. Group means for F1 were lowest for the WTD group (mean, −1.509) and highest for the WTL group (mean, 1.894), with the AMB group falling approximately halfway in-between (mean, −.286). Group means for F2 differentiated the AMB group (mean, −.495) from the WTD (mean, 204) and WTL (mean, .351) groups but do not suggest differentiation between all 3 groups as seen in F1.

3.3. Group classification

After the DFA, we investigated the ability to correctly classify individual cases into their respective suicidal spectrum groupings. The results suggest that 76.7% of originally grouped cases were correctly classified based on the functions. After controlling for the effect of chance, 82.1% of the WTD group, 74.2% of the AMB group, and 74.1% of the WTL group were correctly classified into our respective groups. Overall classification of groups was in the acceptable range, with a $\kappa$ coefficient of .65.

3.4. Follow-up contrasts

A series of pairwise tests were conducted to determine for which variables all 3 groups showed significant differences of group means. A Tamhane T2 post hoc adjustment was used given that Levene Test of Equality of Error Variances was significant for both ORS ($F = 6.22, P = .003$) and BHS ($F = 4.807, P = .011$) scores. This specific adjustment is noted for being a conservative approach and uses the Sidak procedure ($1 - (1 - \alpha)^{1/C}$) to determine the new $\alpha$ level [31].

The results suggest that all group means on the ORS variable were significantly different from one another ($P < .001$ on all pairwise comparisons; Table 2). In addition, all pairwise comparisons were significant for group mean differences on the BHS ($P \leq .01$ on all comparisons). For both RFL and overall level of functioning, the results suggest that although the WTL group differs significantly from both the conflicted and WTD groups, the conflicted and WTD groups are relatively similar in terms of group means. This was especially true for the OQ-45.2 total score.

### Table 2

Comparison of means for ORS, BHS, RFLI, and OQ-45.2 with Tamhane Adjustment

<table>
<thead>
<tr>
<th>Variable</th>
<th>WTL Mean</th>
<th>AMB Mean</th>
<th>WTD Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORS</td>
<td>1.59$^{b}$</td>
<td>2.73$^{b}$</td>
<td>4.00$^{b}$</td>
</tr>
<tr>
<td>BHS</td>
<td>26.81$^{b}$</td>
<td>34.00$^{b}$</td>
<td>36.79$^{b}$</td>
</tr>
<tr>
<td>OQ-45.2</td>
<td>114.29$^{a}$</td>
<td>116.39$^{a}$</td>
<td>146.70$^{b}$</td>
</tr>
<tr>
<td>RFL</td>
<td>136.43$^{a}$</td>
<td>153.00$^{a}$</td>
<td>159.00$^{a}$</td>
</tr>
</tbody>
</table>

* Significant difference from one other group.

$^{a}$ Significant difference from both groups.

4. Discussion

The current study investigated the extent to which a cross-sectional sample of suicidal individuals can be assigned into different typologies along a suicidal spectrum based on self-reported wish to live and wish to die ratings. Consistent with the ISH, we were able to predict 3 distinct suicidal group classifications with very good accuracy. Furthermore, we found significant group differences between all 3 groups on 2 of 4 dependent variables using conservative statistical methods for controlling for familywise error on follow-up contrasts.

The DFA results suggest 2 functions, the first of which accounted for the greatest amount of variance, where the predictors discriminated among 3 typologies on the suicidal spectrum. Overall risk for suicide and BHS scores had the greatest effect in differentiating the 3 typologies in the initial function, whereas ORS and OQ-45 had the greatest effect in the second function. Thus, the initial, and more meaningful, function appears to reflect risk and poor outlook on the future, whereas the second function reflects risk and overall general level of functioning. These results support prior research demonstrating a significant association between hopelessness about the future and suicidal ideation [20,21,32], with less conclusive evidence regarding differences in overall level of functioning between low-, moderate-, and high-risk suicidal individuals. Of note, the group means for F2 do suggest worse functioning in specific areas for the AMB group in comparison with that between the WTL and WTD groups; however, these results should be interpreted cautiously, given that the initial function of the DFA provides the strongest indication of meaningful group differences on the independent predictors and that F2 represents the greatest part of the variance not accounted for in F1.

Results from the group classification suggest that scores on the 4 variables included in the model were able to correctly classify group membership in 1 of the 3 typologies of suicidality with 76.7% accuracy. Upon review of classification for each specific group, it appears that the WTD group was predicted with the highest degree of accuracy, followed by equal rates of classification for the AMB and WTL group.

The follow-up contrasts conducted after the DFA suggest that ORS and BHS scores discriminated between the 3
typologies. Although neither the RFLI nor the OQ-45.2 displayed significant differences in total scores between the 3 typologies, the results support the notion that the typologies are ordinal in terms of perceived risk of suicide and hopelessness. Findings from the follow-up contrasts are bolstered by the use of a post hoc adjustment to control for inflated familywise error.

In addition to the main study objectives, our findings suggest significant differences between typologies on several demographic and diagnostic variables. Women were over-represented in the AMB and WTD groups but not so in the WTL group. In addition, severity of psychopathology and history of previous suicide attempts were greater in the AMB and WTD groups compared with the WTL group. Perhaps with a larger sample size, these differences would become less pronounced; however, the finding that only 6.5% of the WTD group had no history of a suicide attempt provides additional information regarding differences in suicide risk between the typologies.

One major consideration when interpreting these results is the extent to which a person will remain within a distinct typology over time. There have been no longitudinal studies investigating how a person’s location on the spectrum of suicidal ambivalence changes across time, either naturally or in response to treatment. Methods used by Brown et al [12] used a lifetime SSI, which asks the participant to consider their worst episode of suicidal ideation when reporting wish to live and wish to die, which would theoretically remain the same across separate assessment time points. However, the use of lifetime SSI rating may introduce a degree of response bias that may invalidate interpretation of results, as persons with a history of suicidal ideation may misremember the severity of past suicidal ideation or the episode altogether [33]. Future studies are needed to clarify which approach provides the best determination of typology related to suicidality.

There are several limitations that should be considered when reviewing findings from the current study. First, the study uses a cross-sectional sample of data, which prevents the ability to test the predictive validity of the typologies. Although the results suggest differences between typologies at the time of assessment, the extent to which these findings persist across time is yet to be determined. Second, the current study used a variation on the WTL/WTD scales originally appearing on the SSI. Instead of a 3-point Likert scale, the SSF uses a 7-point Likert scale to assess each question. Therefore, previous psychometric findings of the SSI may not apply to the scales used on the SSF. However, by lengthening each scale, the SSF version of the WTL/WTD scales may result in greater total variance introduced in the model [34]. Future research examining the scores used for specific cutpoints applied to the suicidal ambivalence index is also needed to advance the precision of the current methodology for establishing mutually exclusive groups of suicidal individuals. Third, the sample is derived from an inpatient psychiatry unit, which may not generalize to a broader range of patients treated in outpatient clinics. Fourth, the sample is limited in terms of racial diversity, limiting the generalizability to a mostly white inpatient population in the Midwest. Fourth, the study is limited by a small sample size. A replication using a larger sample would provide additional power for data analysis and reduction in likelihood of type II error occurring.

To the best of our knowledge, this is the first study attempting to predict typologies of suicidality using suicidal ambivalence and measures of self-perceived risk of suicide, hopelessness, reasons for living, and general functioning. As such, this study provides insights into the mental status and level of functioning of suicidal individuals across the spectrum of suicidal ambivalence. Research investigating typologies may have the potential to provide extensive information about the ways in which suicidal people differ, both in terms of suicidal thinking and general level of functioning. The methodology used in the current study has inherent clinical utility because of the ease with which a care provider can determine the typology of a suicidal patient. By simply asking the extent to which a suicidal person wishes to live and wishes to die, a patient is grouped into categories that are ordinal in nature, in terms of self-reported risk for suicide, hopelessness, overall level of functioning, and reasons for living.

It is important to make a distinction between established suicide risk scales and the manner in which suicide ambivalence index scores were used in the current study. Most suicide risk scales aim to determine a patient’s level of intent to suicide, which helps to inform care providers’ understanding of severity of suicidal ideation and likelihood of a suicide attempt. Although Brown et al [12] have established the validity of suicidal ambivalence index scores for predicting death by suicide, much of the intention of the current study was to provide a more detailed description of what patients actually look like along this spectrum through the use of a well-rounded assessment battery. Therefore, significant associations between previous suicide attempts, the SSF, BHS, and typology of suicidal ambivalence are meant to provide a more thorough understanding of the heterogeneity of suicidality rather than an indication of risk for suicide.

Beyond the ability to assign typology, entering into a discussion about personal desires for life and death provides a meaningful entry into the suicidal mind [35]. As shown by previous research [36,37], the investigation into a person’s reasons for living and dying provides important insights into specific factors that are being considered by a suicidal person. Clinicians can then use such information when collaboratively constructing a treatment plan that addresses primary and secondary factors related to a person’s suicidal ideation [38].

Future research on typologies of suicidality may provide information on moderating variables that affect treatment outcome. Although numerous studies have examined ways in which suicidal individuals can be grouped together, no
studies have applied the use of typologies to explain differential treatment trajectories across time. Such research may eventually lead to better use of resources in terms of applying treatment specific to suicidality. In addition, future studies are needed to examine the extent to which these typologies change across time between suicidal episodes.

5. Conclusion

The current study investigated the use of suicidal ambivalence and the ISH to create typologies of suicidality. Suicidal individuals were evenly dispersed into 3 typologies of suicidality along the spectrum of suicidal ambivalence, and all groups differed on self-perceived overall risk of suicide and hopelessness. Overall level of functioning and reasons for living reflected an ordinal nature to the suicidal typologies, as well. The current method for creating typologies of suicidality may prove useful to clinicians seeking to better differentiate among suicidal patients within a limited period of assessment. Additional research is needed to determine the impact that suicidal typologies have on risk assessment and methods of treatment.

References


