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Psychiatric heterogeneity of recent suicide attempters: A latent class analysis

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ABSTRACT

Presence of, and comorbidity between, psychiatric disorders is a risk factor for suicide attempts. No study to date has used a person-centered approach to determine whether there are subgroups of attempters showing differing patterns of psychiatric disorders. This study aimed to identify psychiatric subgroups amongst recent suicide attempters (i.e., hospitalized within 24 h of their attempt) and to determine whether identified classes could be differentiated in terms of important clinical correlates. Participants included 97 adult patients who were hospitalized due to a recent suicide attempt at a large Trauma 1 hospital. A structured diagnostic interview assessed a range of psychiatric disorders, and a battery of measures assessed acute and distal clinical correlates and characteristics of the current attempt. The person-centered analytic approach of latent class analysis was used to identify psychiatric diagnostic subgroups, or classes, of attempters. Three psychiatric subgroups were identified: Major Depressive Disorder, High Externalizing Disorders, and High Internalizing High Externalizing Disorders. Classes were found to significantly differ on a range of acute and distal clinical correlates, but not by demographics. Identification of psychiatric subgroups of individuals who have recently attempted suicide has important practical implications for increasing subsequent treatment utilization and tailoring treatment interventions for this population.

1. Introduction

Suicide is a leading cause of death in Western countries (World Health Organization [WHO], World Health Organization: World Health Report, 2000), and the second leading cause of death from injury broadly (Haagsma et al., 2016). Within the United States, for each one person who dies by suicide, there will be another 22 individuals who require emergency medical care for suicidal behavior (Vastag, 2001). This translates to a significant public health influence, as approximately 4.6% of the US population will make an attempt within their lifetime (Kessler et al., 1999). Prior suicide attempt has been identified as one of the best predictors of eventual death by suicide (Goldstein et al., 1991), making understanding correlates of suicide attempt a high priority research target. Additionally, the subsequent discharge period following an attempt has been identified as a pivotal time where recent attempters have a heightened risk for subsequent suicide (Goldacre et al., 1993). Understanding individual characteristics of suicide attempters is an important way to inform prevention within psychiatric samples and as well as post-attempt intervention efforts.

A psychiatric disorder diagnosis is widely identified as a risk factor for suicide attempt, and treatment of psychiatric disorders is a common intervention aimed at suicide risk reduction (Mann et al., 2005). The current study aims to advance our understanding of heterogeneity of psychiatric diagnoses within suicide attempter samples by specifically identifying subgroups differentiated by patterns of lifetime psychiatric diagnoses present prior to a suicide attempt. Studies find that a psychiatric disorder diagnosis is reported for nearly 80% of suicide attempters in the United States (Nock et al., 2010), and medically serious suicide attempters (89%) have significantly higher rates of having any psychiatric disorder than randomly selected community controls (31%; Beautrais et al., 1996b). In an extensive review of the literature on suicidal behavior in young people, Beautrais et al. (1996a,b) found that the most commonly identified categories of psychiatric disorders identified within this population were internalizing disorders, specifically mood and anxiety disorders, and externalizing disorders, including substance use disorders and antisocial behaviors.

Individual disorders within the broad internalizing disorder classification have a marked correspondence with suicide attempt. For example, in a nationally representative sample of US adults, over 53% of attempters were identified as meeting diagnostic criteria for a

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major depressive disorder, 15% for generalized anxiety disorder, and nearly 12% for panic disorder (Nock and Kessler, 2006). These individual disorders are also associated with increased odds of having a lifetime suicide attempt (e.g., Kessler et al., 1999). Specific individual disorders within the broad classification of externalizing disorders also correspond with suicide attempts. Data from the National Comorbidity survey (Nock and Kessler, 2006) shows that rates of antisocial personality disorder (21%) and substance use disorders, such as alcohol abuse (43%), alcohol dependence (35%), drug abuse (33%), and drug dependence (23%), were common amongst suicide attempters. All five of these disorders have been found to occur at higher rates for suicide attempters than non-attempters within US nationally representative samples (e.g., Kessler et al., 1999).

Although individual internalizing and externalizing disorders occur at high rates within suicide attempter samples (e.g. Nock and Kessler, 2006), differentiate attempters from community controls (e.g. Beautrais et al., 1996b), and significantly correspond with risk for future attempt (e.g. Nock et al., 2010), it is also important to consider possible implications of diagnostic comorbidity. Suicide attempters are significantly more likely to have more than one psychiatric diagnosis, with 13% of attempters meeting criteria for any one psychiatric disorder, 12% of attempters meeting criteria for any 2 psychiatric disorders, and over 60% of attempters meeting criteria for 3 or more psychiatric disorders (Nock and Kessler, 2006). Further, some research finds that having only two psychiatric disorders increases risk for a suicide attempt (Nock et al., 2010), while other research suggests a dose-response effect between the number of prior psychiatric disorders and increased odds for suicide attempt (Kessler et al., 1999). Specific patterns of comorbidity, including having an internalizing disorder (i.e. depression) plus an externalizing disorder (i.e. substance use disorder) (e.g., Dhossche et al., 2000), having multiple internalizing disorders (i.e., anxiety and depression) (e.g., Pawlak et al., 1999), and having multiple comorbid externalizing disorders (i.e., alcohol use disorder, substance use disorder, and antisocial behavior) (e.g. Verona et al., 2004) also are found at high rates within suicide attempter samples and/or to significantly increase risk for suicide attempt.

Overall, this body of research shows a high prevalence of psychiatric disorders and psychiatric disorder comorbidity within suicide attempter samples compared to controls. However, these are overall estimates, using traditional variable-centered approaches. Notably, there may be psychiatric heterogeneity within suicide attempter samples, such that the rate of an individual psychiatric disorder and its comorbidity with other disorders may *vary* across different subgroups of attempters. While patterns of comorbidity of suicide attempters has been examined using both psychiatric and general population samples (e.g., Blasco-Fontecilla et al., 2016 for a review; Kessler et al., 1999) to our knowledge, no study to date presents a person-centered examination to determine whether there are distinct subgroups of recent attempters showing differing patterns of prevalence of individual disorders and their comorbidities. For instance, it is possible that there is one subgroup of individuals who have a high prevalence across all psychiatric disorders, suggesting strong psychopathology and comorbidities, and/or a subgroup of suicide attempters who have high rates of certain disorders and not others.

In the current study, we use the person-centered approach of latent class analysis (LCA; Muthén and Muthén, 1998; Muthén and Muthén, 1998–, 2012), to characterize patterns of multiple psychiatric comorbidities, representing both internalizing disorders (including major depressive disorder, generalized anxiety disorder, and panic disorder) and externalizing disorders (including alcohol use disorder, non-alcohol substance use disorder, and antisocial personality disorder), among a sample of recently hospitalized suicide attempters. Further, we determine whether identified psychiatric classes could be differentiated in terms of important clinical correlates. Suicide attempt characteristics (e.g., violence of method), and acute (e.g., use of substances prior to the attempt) and distal (e.g., trait disinhibition) clinical correlates were selected based on their relations to aspects of published suicide risk assessments, acute warning signs for suicidal behavior, and important characteristics of suicidal acts (e.g. Bagge et al., 2013c; Brown et al., 2000; Cochrane-Brink et al., 2000; Conner et al., 2014; Joiner, 2005; Joiner et al., 2005; Malone et al., 2000; Nock et al., 2010; Rosellini and Bagge, 2014; Runeson et al., 2010; Sargalska et al., 2011; Suominen et al., 2004; Yen et al., 2009).

2. Method

2.1. Participants and procedures

The current study is part of a larger ongoing study designed to examine relations between impulsivity and suicide attempts. The current sample included 97 adults who were hospitalized due to a recent suicide attempt (i.e., within 24 h of their attempt) with at least some intent to die (Silverman et al., 2007). The average age of participants was 32.71 (*SD*=11.82; range=18 to 57) and 60% were female (*n*=58). Participants identified as the following races: 63% (*n*=61) Caucasian, 32% (*n*=31) African American, 2% (*n*=2) Native American, Alaskan Native, and 3% (*n*=3) multiracial. Overall, 7% of the sample (*n*=7) used a violent suicide attempt method (e.g., index attempt by either gun, hanging, drowning, jumping from heights and/or immolation; Bagge et al., in press) and 66% of the sample (*n*=64) reported at least one prior attempt (i.e., prior to the index attempt that led to their hospitalization).

The Institutional Review Board of the participating university hospital reviewed and approved the protocol. Participants were recruited from an inpatient psychiatric unit at a Level 1 trauma hospital. All participants were provided written informed consent and informed they were free to discontinue participation at any time. Each participant completed the 5-h study session in a private room during their hospital stay and was paid $70 for completing the assessment session.

2.2. Measures

2.2.1. Measurement of lifetime psychiatric diagnoses

The Computerized Diagnostic Interview Schedule (C-DIS), a valid and reliable computerized version (e.g., Blouin et al., 1988; Vandiver and Sher, 1991) of the Diagnostic Interview Schedule (Blouin, 1991; Robins et al., 2000), was used to determine the presence (1=present; 0=absent) of lifetime DSM-IV (American Psychiatric Association, 1994) diagnoses which included the following: alcohol use disorder (AUD; any alcohol abuse or dependence), substance use disorder (SUD; any non-alcohol substance abuse or dependence, with the exclusion of tobacco use), major depressive disorder (MDD), panic disorder (PD), and generalized anxiety disorder (GAD). The Antisocial Personality Disorder Module of the Structured Interview for DSM–IV Personality (SIDP-IV; Pfohl et al., 1997), a valid and reliable interview (e.g., Zimmerman, 1994), was used to determine whether participants met criteria for antisocial personality disorder (1=present; 0=absent) within the last 2 years.

2.2.2. Measurement of suicide characteristics

The severity of an individual's wish to die by a suicide attempt was measured with the Scale of Suicidal Intent Scale (SIS; Beck et al., 1974), a reliable and valid interview schedule (Beck et al., 1974; Brown, 2001; Mieczkowski et al., 1993; Kaslow et al., 2006). The total score was used to assess overall *suicide intent*. Item 15 (suicide premeditation) was used to assess proximal suicide contemplation. Consistent with previous studies (e.g., Bagge et al., 2013c) this item was dichotomized to indicate *short proximal contemplation* (contemplation for less than 3 h=1 and contemplation for 3 h or more=0).

To assess any history of attempts prior to the current hospitalization a single question from the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007), "how many suicide attempts have