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# An empirical investigation of suicide schemas in individuals with Posttraumatic Stress Disorder



Maria Panagiotti<sup>a,\*</sup>, Patricia A. Gooding<sup>b</sup>, Daniel Pratt<sup>b</sup>, Nicholas Tarrier<sup>c</sup>

<sup>a</sup> Institute of Population Health, Centre for Primary Care, University of Manchester, UK

<sup>b</sup> School of Psychological Sciences, University of Manchester, UK

<sup>c</sup> Department of Psychology, Institute of Psychiatry, Kings College London, UK

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## ABSTRACT

Posttraumatic Stress Disorder (PTSD) has been strongly associated with suicidality. Despite the growing evidence suggesting that suicidality is heightened by the presence of an elaborated suicide schema, investigations of suicide schemas are sparse. Using novel methodologies, this study aimed to compare the suicide schema of PTSD individuals with and without suicidal ideation in the past year. Fifty-six participants with a diagnosis of PTSD (confirmed via the Clinician Administered PTSD Scale) completed questionnaires to assess suicidality, depressive severity and hopelessness. A series of direct and indirect cognitive tasks were used to assess suicide schemas. The pathfinder technique was employed to construct graphical representations of the groups' suicide schemas. The suicidal group reported significantly more severe PTSD symptoms, depressive symptoms, hopelessness and suicidality. The suicide schema of the suicidal group was significantly more extensive compared to the non-suicidal group even after taking into account in the analyses group differences in clinical measures. Moreover, the suicide schemas of the two groups were qualitatively distinct from each other. These findings provide support for contemporary theories of suicide which view suicide schemas as an important indicator of suicide risk. The investigation of schema constructs opens a new avenue of research for understanding suicide.

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## 1. Introduction

People diagnosed with Posttraumatic Stress Disorder (PTSD) often report suicidality including suicidal ideation and suicide attempts (Panagiotti et al., 2009, 2012c; Kryszynska and Lester, 2010). Recent research suggests that more than 50% of individuals with PTSD experience suicidal ideation and between 20% and 30% attempt suicide (Tarrier and Gregg, 2004; Bernal et al., 2007; Sareen et al., 2007; Panagiotti et al., 2012a). Although one of the most widely recognized strategies for preventing future suicides is the early identification and treatment of those who are at the highest risk for suicide, this effort is hampered by the lack of theory-derived and empirically testable models of suicidality (Bolton et al., 2007; Panagiotti et al., 2009). In an attempt to overcome this limitation, our research team has proposed the Schematic Appraisal Model of Suicide (SAMS), which is a reconceptualization of Williams' Cry of Pain Model of suicide (CoP) (Williams, 1997; Williams et al., 2005; Johnson et al., 2008). The

SAMS emphasizes the role of two cognitive structures in the development and maintenance of suicidal behaviors, namely, a negatively biased subjective appraisal system and a suicide schema network (Johnson et al., 2008; Pratt et al., 2010). Both, the negative appraisal system and the suicide schema are viewed as dynamic processes which constantly interact and strengthen each other (Johnson et al., 2008; Pratt et al., 2010; Taylor et al., 2011). Suicidal thoughts and acts are thought to emerge as a means of escape from the experience of severe feelings of defeat and entrapment caused by the constant maladaptive interaction of the appraisal system and suicide schema (Taylor et al., 2010a, 2010b; Panagiotti et al., 2013). For example, the appraisal of common stressors, such as, negative social interactions, psychiatric symptoms, and personal characteristics in terms of defeat and entrapment activate and strengthen suicide schema which in turn generates more rigid and difficult to overcome negative appraisals (Johnson et al., 2008). Our empirical work so far has focused on the investigation of different aspects of the function of the appraisal system. Our appraisal-related studies which were conducted in a range of clinical and non-clinical populations (i.e., individuals with psychosis, PTSD, students and para-suicidal individuals) have provided strong support to the SAMS model (Taylor et al., 2010; Johnson et al., 2011; Panagiotti et al., 2012b; Panagiotti et al., 2014).

\* Correspondence to: Centre for Primary Care, Institute of Population Health, Williamson Building, Oxford Road, University of Manchester, M13 9PL, UK. Tel.: +44 161 306 0665.

E-mail address: [maria.panagiotti@manchester.ac.uk](mailto:maria.panagiotti@manchester.ac.uk) (M. Panagiotti).

Despite the progress achieved in the investigation of the appraisal system, the role of suicide schema is under-investigated mainly because the empirical test of “schema” constructs are notoriously difficult (Teasdale and Dent, 1987; Bower and Forgas, 2001; Johnson et al., 2008; Pratt et al., 2010).

Suicide schema is defined as a loose network of interconnecting stimulus, response, and emotional information which when activated, triggers thoughts of suicide as a means of escape from defeating and entrapping states (Bower and Forgas, 2001; Johnson et al., 2008). It is assumed that the suicide schema is strengthened each time it is activated, and such activation increases the potential to incorporate a wide range of elements into the schema network, such as, psychiatric symptoms and related emotional and cognitive states (Johnson et al., 2008; Pratt et al., 2010). Based on the differential activation model and the suggestion that some people are more susceptible to experience networks of self-referent negative thoughts as a consequence of small mood changes, one tentative hypothesis is that the extensiveness and elaboration of the suicide schema will differ from individual to individual (Teasdale and Dent, 1987). Using a novel approach, Pratt and colleagues conducted the first empirical test of the direct and indirect features of the suicide schema in individuals with psychoses. This study showed that individuals with a history of suicide attempts had more extensive suicide schemas compared to individuals without a history of suicide attempts even after adjusting for the effects of comorbid depression, anxiety and hopelessness (Pratt et al., 2010).

The overarching aim of this study was to conduct the first empirical investigation of the suicide schema in individuals with PTSD. On the grounds of theoretical suggestions and empirical evidence from psychoses (Johnson et al., 2008; Pratt et al., 2010), it was hypothesized that individuals with PTSD who experienced suicidal ideation in the past year would generate more extensive and elaborated suicide schema networks compared to those who did not experience suicidal ideation in the past year. Consistent with the Pratt et al.'s (2010) paradigm, we also examined whether the differences in the groups' suicide schemas remained after adjusting for the effects of PTSD symptom severity, depressive symptom severity, hopelessness and lifetime suicidality.

## 2. Methods

### 2.1. Participants

Participants were recruited using adverts (i.e., newspaper advertising, online advertising in the University of Manchester [UK], posters in mental health services based in Manchester, such as, Victim Support and the Rape Crisis Center) asking for people who had experienced a traumatic event (i.e., crime, physical threat, serious accident, military combat, natural disaster, terrorist attack, diagnosed with a life-threatening illness) in the past, and have been affected by it, to volunteer. Potential participants were sent by post or email a self-report measure, the Posttraumatic Stress Diagnostic Scale (PDS) (Foa et al., 1997) to assess whether they met the inclusion criteria for the study. Those participants who returned the PDS scale and met the inclusion criteria of the study proceeded to the full assessment. Potential participants had to fulfill the following inclusion criteria to be included in the study: (1) they had to have experienced a serious traumatic event and meet criterion A<sup>1</sup> of the PDS (Foa et al., 1997); (2) be aged between 18 and 65 years; (3) fulfill the criteria for a lifetime diagnosis of PTSD confirmed by the Clinical Administrated PTSD scale (CAPS) for DSM IV (Blake et al., 1995); (4) have experienced at least one PTSD symptom in past month with  $\geq 1$  frequency and  $\geq 2$  intensity scores determined by the CAPS; and (5) have a thorough grasp of the

English language (this was necessary for participation in the assessment interview and for the understanding of the questionnaire items). In addition, participants had to provide informed consent and be willing to come into the University of Manchester to carry out the study. Participants were excluded if they suffered from dementia, organic brain disorder or an active psychotic disorder. Two individuals were excluded because they reported suffering active psychosis. No participant reported suffering from dementia or organic brain disorder. All the participants were already in contact with mental health services (either they were previously/currently receiving treatment or were placed in the waiting list).

### 2.2. Assessments and measures

#### 2.2.1. Clinician administered PTSD scale

The CAPS (Blake et al., 1995) was used to confirm a PTSD diagnosis or to assess the number and severity of PTSD symptoms. The total CAPS severity score was computed by adding the intensity and frequency scores for each of the PTSD symptoms. A current or lifetime diagnosis of PTSD was assigned according to guidance (i.e., item frequency=1 and intensity=2, for at least one PTSD criterion B, three C, and two D symptoms, and total severity > 65) (Weathers et al., 1999). Previous research has found that the Cronbach's alpha coefficient ranges from 0.85 to 0.87 for the three symptom clusters and 0.94 for the total CAPS score (Blake et al., 1995). The alpha coefficient for the total CAPS severity score was 0.93 in this sample.

#### 2.2.2. Beck depression inventory II

The BDI-II (Beck et al., 1996a) comprises 21 items which measure the severity of depressive symptoms (range 0–63) in the past two weeks. The BDI has high internal consistency (Cronbach's alpha coefficient of 0.86 for psychiatric patients and 0.81 for non-psychiatric individuals) and concurrent validity with respect to clinical ratings and the Hamilton Psychiatric Rating Scale for Depression (HRSD) for psychiatric (0.72 and 0.73, respectively) and non-psychiatric individuals (0.60 and 0.74 respectively) (Beck et al., 1996a, 1996b; Dozois et al., 1998; Richter et al., 1998). In this sample, the alpha coefficient was 0.94.

#### 2.2.3. Beck hopelessness scale

The BHS (Beck et al., 1974) consists of 20 true or false items assessing the prevalence of thoughts and beliefs about feelings of hopelessness in the past week (e.g., “My future seems dark to me”). The scale has been found to have an alpha coefficient of 0.93 (Holden and Fekken, 1988) and in this study it was 0.92.

#### 2.2.4. Suicidal behaviors questionnaire-revised

The SBQ-R (Osman et al., 2001) is a four-item measure which assesses the level of suicidality experienced by the participants. The first item measures levels of lifetime suicidality including thoughts and attempts; the second item assesses the frequency of suicidal thoughts in the past year; the third item measures the communication of the intent to commit suicide; and the fourth item assesses the likelihood of committing suicide in the future. The total score ranges from 3 to 18 with higher scores indicating greater levels of suicidality (Osman et al., 2001). The alpha coefficient was 0.87 in the present sample.

#### 2.2.5. Suicide schema tasks

Based on the structural approach (Goldsmith et al., 1991), two different types of cognitive tasks (fluency tasks and sort task) were used to measure the content and structure of suicide schema. We have used these tasks previously to measure suicide schema among individuals with psychoses (Pratt et al., 2010).

The fluency tasks aimed to assess whether individuals with suicidality differed from those without suicidality in their ability to generate information (MacLeod et al., 1993; MacLeod et al., 1997). Participants were informed that they will be provided with a concept and that they have to orally generate as many distinct words, thoughts, feelings or phrases related to this concept within one minute. To ensure that participants understood the task they were provided with an example. Additionally, the Animal Category Fluency Task (ACF) (Pratt et al., 2010) was administered first as a means of familiarizing the participants with the cognitive tasks and ensuring that the two groups were equally competent in generating information. Subsequently, participants were presented with the Suicide Category Fluency Task (SCF) (Pratt et al., 2010) in which they repeated the fluency task using the concept “Suicide” instead of “Animals”. The participants' responses to the concepts of “animals” and “suicide” were recorded in the order they were produced, and the total number of words generated was calculated.

The Suicide Category Sort Task (SCT) aimed to complement the suicide fluency task because the latter is dependent on the availability of the components of the schema to both introspection and articulation (Olsen and Rueter, 1987). Participants were given 10 concepts and they were instructed to sort them from the most related to suicide to the least related to suicide. The development and selection process of these 10 concepts and also more details about all the cognitive tasks implemented in this study are described elsewhere (Pratt et al., 2010). Briefly, after reviewing the academic and clinical literature, a questionnaire with 100 concepts with varying degree of relevance to suicide was developed and administered to 12 volunteers who rated the relevance of these 100 concepts to suicide in a 0–3 scale.

<sup>1</sup> The criterion A of the PDS scale consists of four questions which assess if the person experienced or witnessed an event that involved actual or threatened death or serious injury or a threat to the physical integrity of self or others and if the person felt intense fear, helplessness, or horror as a consequence of that event. This inclusion criterion was used in order to ensure that all the prospective participants had been exposed to a traumatic experience which was severe enough to meet the criterion A of the PDS scale.

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