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## Anger as a predictor of psychological distress and self-harm ideation in inmates: A structured self-assessment diary study



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#### ABSTRACT

Suicidal ideation and behaviour are common among inmates. Anger is found at exaggerated levels and has been associated with suicidal ideation and behaviour in inmate samples suggesting its possible salience in the prediction of suicide. The study investigated relationships between anger, psychological distress, and self-harm/suicidal ideation among inmates. The principles of Ecological Momentary Assessment were considered and a structured self-assessment diary was utilised to examine relationships between the variables of interest. Participants completed a structured self-assessment diary for six consecutive days which included momentary ratings of items describing psychological states of concurrent affects, thoughts, and appraisals related to anger, psychological distress, and self-harm/suicidal ideation. Psychometric assessment measures were also conducted. Temporal associations between predictors and outcomes were investigated. Multilevel modelling analyses were performed. Increased anger was significantly associated with concurrent high levels of self-harm ideation in inmates, when controlling for depression and hopelessness. Temporal analyses also revealed that anger at one time point did not predict suicidal ideation at the next time point. Elucidating the temporal nature of the relationship between anger, psychological distress, and self-harm/suicidal ideation has advanced understanding of the mechanisms of suicidal behaviour, by demonstrating an increased risk of suicide when a male inmate is angry. © 2013 Elsevier Ireland Ltd. All rights reserved.

#### 1. Introduction

Compared to the general population, suicidal ideation and behaviour is significantly more prevalent amongst inmates (Jenkins et al., 2005; Sarchiapone et al., 2009). A high association exists between recent suicidal ideation and suicide risk in inmates, and suicidal thoughts are likely to precede acts in this population (Fazel et al., 2008). Being suicidal in prison is considered to be a dynamic process with the interplay of various social, biological, and psychological factors (Bonner, 1992; Borrill et al., 2005; Rivlin et al., 2011). Psychological distress is thought to be on the pathway towards suicidal ideation and behaviour including factors such as depression, hopelessness, and loss of relational or social support, which can lead to perceptions of loneliness or isolation (Móscicki, 1997; Hawton and van Heeringen, 2009). Such concepts reportedly involved in this overarching experience of psychological distress have previously been described by inmates who have experienced suicidal

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ideation or have engaged in suicidal behaviour (Biggam and Power, 1997; Chapman et al., 2005; Ivanoff and Jang, 1991; Jenkins et al., 2005; Palmer and Connelly, 2005; Larney et al., 2012; Liebling, 1992; Marzano et al., 2011a, 2011b; Rivlin et al., 2011; Suto and Arnaut, 2010) and as such they may be related to such outcomes.

The Cry of Pain theoretical model of suicide suggests psychosocial factors thought to be involved in such adverse outcomes (Williams, 1997; Williams and Pollock, 2001; Williams et al. 2005) by proposing the psychological conditions under which suicide is likely to occur. These conditions include feelings of depression and hopelessness, negative appraisals, appraisals of defeat and entrapment, and the perception of a lack of rescue such as social support. Previous literature lends support to this model both in general community (Gilbert and Allan, 1998; O'Connor, 2003; Rasmussen et al., 2010; Taylor et al., 2010; Taylor et al., 2011) and inmate samples (Marzano et al., 2011a, 2011b; Rivlin et al., 2011; Suto and Arnaut, 2010). Alongside self-harm/suicidal ideation, psychological distress warranted further investigation as an outcome for male inmates at risk of self-harm/suicide.

For male inmates, being angry and the expression of this anger may be a particularly important factor in those who are suicidal as studies of the characteristics of those who die by suicide in

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correctional settings have found that over-representation of histories of violence and violent offences suggesting anger may be a prominent feature of such individuals (Blaauw et al., 2005; Fazel et al., 2008; Fruehwald et al., 2004; Humber et al., 2011; Sarchiapone et al., 2009).

Anger has been suggested to be associated with suicidal ideation and behaviour in inmate samples (Carli et al., 2011; Chapman and Dixon-Gordon, 2007; Lekka et al., 2006; Liebling, 1992; Marzano et al., 2011; Medlicott, 2000; Penn et al., 2003; Rivlin et al., 2011: Sarchiapone et al., 2009: Snow, 2002: Suto and Arnaut. 2010). However, although previous research has suggested an association, the delineation between anger experience, its expression, and the type of expression has not been specified. Is it the increasing experience of being in an angry 'state' that is associated with psychological distress and self-harm/suicidal ideation or is the relationship more readily explained by how the individual expresses such anger, i.e. by suppressing or internalising it ('anger-in'), or externalising it ('anger-out') (Spielberger, 1999). In addition, the temporal nature of the relationship between anger experience and expression in relation to psychological distress and self-harm/suicidal ideation in inmates has not been elucidated. Are inmates simultaneously angry and suicidal or do those who experience anger become suicidal in a delayed response (Carli et al., 2009; Chapman and Dixon-Gordon, 2007; Lekka et al., 2006; Marzano et al., 2011; Rivlin et al., 2011; Suto and Arnaut, 2010)? This warranted further investigation.

Previous research has often relied on retrospective methods using casenotes and clinical records (Fazel et al., 2008) which suffer from well-known limitations (Liebling, 1999; Marzano et al., 2011). The use of psychometric assessment tools and semi-structured interviews post-suicidal event have also previously been employed (Liebling, 1992; Magaletta et al., 2008; Marzano et al., 2011; Medlicott, 2000), and although useful, these methods are hindered by recall and memory biases that do not allow for the assessment of fluctuation in mood states and their relation to thought content and appraisals during the actual episode. The accurate assessment of psychological factors and their interaction with the environment in terms of suicidal ideation and behaviour in inmates has presented great challenges to scientific research (Liebling, 1999). Some have therefore advocated the need for empirical and methodological advancement to enable a theoretical understanding of the mechanisms of this behaviour to be elucidated (Chapman and Dixon-Gordon, 2007; Felthous, 2011; Marzano et al., 2009; Snow, 2002).

Over the last few decades, Ecological Momentary Assessment (EMA) methods have developed (Bolger et al., 2003; Csikszentmihalyi and Larson, 1987; Shiffman et al., 2008) to capture psychopathological processes such as affects, thoughts, and appraisals as they happen in real-time (Conner Christensen et al., 2003; Myin-Germeys et al., 2009; Palmier-Claus et al., 2011). The value of EMA methods is that they are conducted as part of the individual's daily routine to ensure it is ecologically valid, giving reliable insight into their real-time psychological processes (Reis and Gable, 2000). Compared to an individual's retrospective recall of experiences, which is often accompanied with memory and recall biases, the real-time ESM method provides a more accurate measure of affective and cognitive states (Bolger et al., 2003; Palmier-Claus et al., 2011; Stone et al., 1998).

The EMA technique has been successfully utilised with different clinical populations (Anestis et al., 2012; Ben-Zeev et al., 2012; Nock et al., 2009) including secure forensic settings (Hillbrand and Waite, 1992; Hillbrand and Waite, 1994; Hillbrand et al., 2000; Phelps et al., 1998; Waite, 1994) but to the authors' knowledge has not been conducted in a penitentiary. The principles of this innovative methodology were therefore deemed viable to adopt. The EMA approach was significantly modified and adapted using a structured self-assessment diary to base a novel investigation into

and understanding of the associations between anger, psychological distress, and self-harm/suicidal ideation within an inmate sample.

#### 1.1. Aims and hypotheses

The general aim was to examine the relationships between anger, psychological distress, and self-harm/suicidal ideation in a sample of male inmates at risk of self-harm or suicide using adapted EMA methodology in the form of a structured self-assessment diary. Specifically the aims were to investigate whether anger experience and expression was associated with concurrent or delayed psychological distress and self-harm/suicidal ideation. The experience of anger and anger expression [internalised 'anger-in'/externalised 'anger-out'] were predictor variables and factors [affects and appraisals] considered indicative of psychological distress as well as self-harm/suicidal ideation were outcome variables.

As this was a novel method within the research field and the temporal association between anger, psychological distress, and self-harm/suicidal ideation had not been elucidated or tested previously, and given previous research which suggested that anger (experience/expression) may be predictive of psychological distress and suicidal ideation within either a concurrent or short lagged time period, the authors chose to predict both concurrent and a short lagged association. Specifically it was hypothesised that:

- 1. Increased levels of anger experience or anger expression [internalised 'anger-in'/externalised 'anger-out'] will predict concurrent increased levels of psychological distress [affects and appraisals] and self-harm/suicidal ideation.
- 2. There will be a significant temporal delayed association between anger, psychological distress, and self-harm/suicidal ideation, with increased anger experience or anger expression [internalised 'anger-in'/externalised 'anger-out'] at 1 time point predictive of increased levels of psychological distress [affects and appraisals] and self-harm/suicidal ideation at the next time point.

#### 2. Method

The research formed part of a mixed method study which used a diary to measure quantitative and qualitative aspects of inmates' experiences (the results of the qualitative data will be published elsewhere). The quantitative aspect of the study reported in this article was based on the principles of EMA methodology in terms of the study idea, conception, and design (Bolger et al., 2003; Csikszentmihalyi and Larson, 1987; Myin-Germeys et al., 2009; Palmier-Claus et al., 2011; Shiffman et al., 2008). However, this methodology required considerable adaptation and modification for use in a penitentiary setting.

#### 2.1. Adapting EMA methodology

Traditional EMA methods used a paper diary and watch that 'beeped' at random or fixed times to prompt participants to complete the measures at time points to obtain momentary assessment ratings of affect, thought and experiences (Conner Christensen et al., 2003; Myin-Germeys et al., 2009; Palmier-Claus et al., 2011). Electronic hand held signalling devices were then developed and prompted participants to complete the diary with entries made onto the actual computerised device. As an electronic signalling device was not permissible in the penitentiary, but the use of a paper diary was, the essence of the EMA method was adapted and utilised to capture momentary ratings of thoughts, appraisals, and affective states. However, using this method required an adapted technique to signal time points and prompt participants to complete their diary as they were not able to be automatically notified of time-points via an electronic device. Not all participants would be guaranteed to have access to a clock to indicate the time, which meant that adaptations also were required for automatic prompts to time points. These time points were linked or tied to regular and universal 'events' during the penitentiary day acting as automatic cues for participants to complete their diary. The events were considered to be more likely to automatically or intuitively remembered each day as a result of their routine universality. Participants were extensively briefed about the procedure and specifically told that they should complete the diary entry 'in the moment', complete as much as they wanted to

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