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Research report

Out of the blue: Untangling the association between impulsivity and planning in self-harm

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ABSTRACT

Background: Planned and unplanned acts of self-harm may have distinct clinical and psychological correlates. Trait impulsivity is one factor that might be expected to determine whether self-harm is planned. Research so far has focussed on suicide attempts and little is known about how individuals engaging in planned and unplanned acts of self-harm differ. The aim of the current study was to examine how individuals who report planned self-harm, unplanned self-harm, and no self-harm differ in terms of impulsivity and affective symptoms (depression, anxiety, and activated mood).

Method: An online survey of University students ($n=1350$) was undertaken including measures of impulsivity, affective symptoms and self-harm. Analyses made use of a multinomial logistic regression model with affective and cognitive forms of impulsivity estimated as latent variables.

Results: Trait affective impulsivity, but not cognitive, was a general risk factor for whether self-harm occurred. There was no evidence of differences between planned and unplanned self-harm. Affective symptoms of depression and anxiety mediated the relationship between affective impulsivity and self-harm.

Limitations: The study was cross-sectional, relied on a student sample which may not generalise to other populations.

Conclusions: Trait affective impulsivity is associated with self-harm but it appears to be mediated by depression and anxiety symptoms. The exact relationships between trait affective impulsivity, depression, anxiety and self-harm require further longitudinal research in clinical populations but might lead to improved risk assessment and new therapeutic approaches to self-harm.

1. Introduction

Some suicide attempts or acts of self-injury appear to be quite impulsive, lacking a priori planning or premeditation, whereas others seem to follow a process of ideation and planning (Jeon et al., 2010; Spokas et al., 2012) and are thought to be more serious (National Institute for Health and Clinical Excellence 2011). The rates of so called “impulsive” suicide attempts appear to vary depending on how this is defined. Focussing specifically on whether proximal planning was reported prior to the act (the most widely adopted criterion for “impulsive” suicidal acts) between 13% and 78% of suicide attempts appear impulsive across studies (Rimkeviciene et al., 2015). However, it is not clear whether similar findings occur for self-harm in general (though according to Csorba et al. (2009) 27% report extended thinking about the act prior to non-suicidal forms of self-harm). Here we adopt the Royal College of Psychiatrist's definition of self-harm as an act of intentional self-injury irrespective of suicidal intent (which may cover a range of specific behaviours including self-cutting, burning and poisoning; Kapur et al., 2013; Royal College of Psychiatrists, 2010). The presence of two possible forms of self-harm, the planned and the unplanned (Jeon et al., 2010; Nakagawa et al., 2009) raises the possibility that there may be distinct clinical and psychological characteristics linked to these two different types of self-injury. This possibility would have important implications for services and clinicians, who may have to adapt their practise depending on the degree of planning associated with the self-injury an individual presents with.

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A recent review has suggested that unplanned suicide attempts (compared to planned attempts) are associated with less intent to die, lower lethality, interpersonal motives, absence of a mental disorder or co-morbidity (Rimkeviciene et al., 2015). However, similar research in the context of self-harm more generally is rarer (although see Haw and Hawton, 2011). In the current study we aimed to expand upon the research into planning and self-harm by looking at psychological factors that may distinguish planned and unplanned acts of self-harm.

One factor that appears likely to distinguish planned and unplanned suicide attempts is trait impulsivity, the tendency for an individual to engage in behaviours with a lack of planning, premeditation or regard to potential risks (Robbins et al., 2012; Smith et al., 2007). Trait impulsivity here describes a disposition and so is different to the description of a particular act (e.g., a suicide attempt) as "impulsive" because it appeared unexpected or was not planned. A large body of research links both suicide attempts and self-harm to greater levels of trait impulsivity (Anestis et al., 2012a, 2012b; Carli et al., 2010; Dougherty et al., 2009; Herpertz et al., 1997; Turecki, 2005). There is some evidence that urgency (the tendency to act impulsivity in response to affective states) in particular is linked to self-harm (Anestis et al., 2012b; Peterson and Fischer, 2012) although Peterson and Fischer (2012) did not identify a prospective relationship between urgency and self-harm. Most studies have not considered the role of urgency and affective impulsivity in relation to either suicide attempts or self-harm in general. Whilst it might be expected that trait impulsivity would lead to more unplanned self-harm, the alternative hypothesis has also been suggested that greater impulsivity will lead to more planned self-harm (Witte et al., 2008). Specifically, it has been noted that those with high trait impulsivity tend to have a greater likelihood of experiences such as accidental injury, substance use and culturally accepted forms of self-injury (e.g., piercings, scarification) which may ultimately lower an individual's threshold for acting on suicidal thoughts, and possibly engaging in self-harm more generally (Bender et al., 2011; Witte et al., 2008). They may also have more challenging lives as a consequence of their impulsiveness, leading to a greater suicidal and self-injurious thinking (Turecki, 2005). This leads to the possibility that high trait impulsivity may also increase the risk of engaging in planned acts of self-harm (versus no self-harm), and may even lead to planned rather than unplanned acts.

Trait impulsivity does not appear to clearly distinguish between planned and unplanned suicide attempts across a number of studies that have looked at (Rimkeviciene et al., 2015). However, this has not been explored for self-harm more generally whether or not there was any reported intent to die. Whilst intuitively it would be expected that impulsive individuals tend to engage in unplanned rather than planned acts of self-harm, it may be that impulsivity is elevated in both cases, or is even most pronounced in the case of planned self-harm. Self-harm in many cases serves an important function for individuals, for example, managing aversive emotional states (Armey et al., 2011; Chapman et al., 2006; Mikolajczak et al., 2009). Trait impulsivity is liable to increase exposure to aversive emotional states and may therefore result in increased planning of self-harm as a method of coping.

Research into the structure of impulsivity supports a higher-order trait with facets relating to lack of planning and perseveration, which is be distinct to urgency (Smith et al., 2007). Other data suggests that positive and negative urgency load onto a higher-order facet of mood-driven "rash action" (Cyders and Smith, 2008). These results suggest the presence of distinct, though related, cognitive (planning, perseveration) and affective (urgency) forms of impulsivity, which may have distinct pathways into self-harm and planning. As self-harm may often be triggered by aversive affective states, affective impulsivity may be more important as a predictor than cognitive impulsivity. In the current study we therefore distinguish between these two forms of impulsivity.

Many studies exploring impulsivity in the context of self-harm do not control for affective symptoms, such as anxiety and depression. This is problematic, since such symptoms appear to be positively linked to trait impulsivity (Peluso et al., 2007) and may be more common in planned acts of self-injury (Rimkeviciene et al., 2015; although see Jeon et al., 2010; Nakagawa et al., 2009) and thus may suppress any negative relationship between trait impulsivity and planning. Positive affective states or activated mood states may also play a role in some instances of self-harm. For example, suicide attempts have been linked to manic–hypomanic states in some clinical groups, although not others (Balestrieri et al., 2006). Hence we also include positive, activated mood in our analyses.

The aim of the current study was to compare those reporting planned acts of self-harm to those reporting unplanned acts and those reporting no acts of self-harm in terms of their level of trait impulsivity, including affective impulsivity. We also control for affective symptoms (depression, anxiety and activated mood). It was hypothesised that:

1. Greater trait impulsivity (all forms) would be associated with greater odds of reporting self-harm, even whilst controlling for affective symptoms.
2. Trait impulsivity (all forms) would be greater in unplanned self-harm compared to planned self-harm, and this effect would remain whilst controlling for affective symptoms.

2. Methods

2.1. Participants & procedure

The sample consisted of students at a UK University, with invitations to participate in a study of "personality and behaviour" posted on the University student intranet. Information regarding the study was provided online, with contact details of researchers provided in case participants had any questions. Inclusion criteria were that participants were aged $\geq$18 years and were proficient in English (self-declared by the participant). Data was collected using an online survey, run using the SurveyMonkey website (www.surveymonkey.com). Ethical approval was obtained from the University of Nottingham Medical School Ethics Committee. All participants provided informed consent.

2.2. Measures

2.2.1. Self-harm

Participants were divided into three groups based on their responses to two questions about self-harm. The first question asked if in the past four weeks participants had self-harmed, with a brief definition of self-harm also provided ("intentionally hurt yourself in some way"). Participants responding "no" to this question were placed in the *No Self-Harm* group, whilst participants responding "yes" to this question were then asked "Think about the last time you did this. To what extent did you plan doing this?" Those who responded "I planned it to some extent" or "I definitely planned it" were placed in the *Planned Self-Harm*, whilst those responding "I did not plan it at all", were placed in the *Unplanned Self-Harm* group.

2.2.2. Barratt Impulsiveness Scale (BIS; Patton et al., 1995)

The scale measures impulsivity as a trait measure. It comprises 30 items, rated across a four-point scale (rarely/never, occasionally,