



## A preliminary investigation of impulsivity in generalized anxiety disorder

Elizabeth J. Pawluk, Naomi Koerner\*

Department of Psychology, Ryerson University, Canada

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### ABSTRACT

Few studies have examined the association between impulsivity and generalized anxiety disorder (GAD). This study examined whether individuals with probable GAD display impulsivity in a particular way, and the extent to which impulsivity uniquely predicts GAD severity and GAD status, over and above intolerance of uncertainty (IU), a key cognitive factor in GAD. Individuals with ( $n = 63$ ) and without ( $n = 77$ ) probable GAD completed self-report measures of impulsivity and IU. Results revealed that elevations in the severity of GAD symptoms and in IU were associated with impulsive actions in the face of negative affect (i.e., negative urgency), but also greater premeditation and lower “functional” impulsivity (i.e., the ability to take quick action when it is advantageous to do so). Impulsivity led to an increment in the prediction of GAD symptoms and GAD status, over and above IU. Negative urgency and lower functional impulsivity were significant unique predictors of GAD severity or GAD status. The findings highlight a need to consider impulsivity in theories that implicate intolerance of negative affect and uncertainty in excessive and uncontrollable worry.

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### 1. Introduction

Generalized anxiety disorder (GAD) is defined by excessive and uncontrollable worry and anxiety (APA, 2000). Concerted efforts to gain a better understanding of GAD have produced a number of explanatory models (e.g., Dugas, Gagnon, Ladouceur, & Freeston, 1998; Mennin, Heimberg, Turk, & Fresco, 2005; Sibrava & Borkovec, 2006; Wells, 2006); yet, GAD remains difficult to treat (Dugas, Anderson, Deschenes, & Donegan, 2010). As such, there is a continued need to uncover the processes and individual difference characteristics that distinguish individuals with and without GAD.

Although high anxiety has been shown to be associated with stable dispositional characteristics such as neuroticism (Bienvenu et al., 2004; Weinstock & Whisman, 2006) and childhood behavioral inhibition (e.g., Gladstone, Parker, Mitchell, Wilhelm, & Malhi, 2005), emerging literature suggests that some individuals with anxiety disorders may also be elevated on *impulsivity* (e.g., Cougle, Timpano, & Goetz, 2011; Kashdan & Hofmann, 2008). This may appear counterintuitive; however, there is good reason to postulate that impulsive actions may indeed be part of the behavioral repertoire of individuals with clinically-significant anxiety, including those with GAD.

#### 1.1. The relationship between impulsivity and anxiety

Gray's (1982) original Reinforcement Sensitivity Theory (RST) of personality treated impulsivity and anxiety as orthogonal dimensions that corresponded with two distinct motivational systems, the Behavioral Approach System (BAS), which guides behavior in situations where reward is likely, and the Behavioral Inhibition System/Fight-Flight-Freeze System (BIS/FFFS), which becomes activated in response to the possibility of punishment or novelty (Corr, 2008). According to earlier versions of the RST, activation of the BAS is likely to result in impulsive behavior, whereas, activation of the BIS/FFFS is likely to result in behavior that is characteristic of anxiety (e.g., avoidance).

A revised version of the RST (Gray & McNaughton, 2000) proposed a distinction between the BIS and FFFS. It has been posited that the FFS specifically mediates fear reactions (e.g., escape) in response to aversive stimuli. The BIS, on the other hand, is theorized to be a “risk assessment” system (Corr, 2008, p.11) whose role is to resolve competing motivations between the BAS and FFFS. Gray and McNaughton proposed that the motivational conflict that activates the BIS generates anxiety, repetitive negative thinking (e.g., worry), as well as hypervigilance (Corr, 2008).

Although Gray and McNaughton (2000) left the BAS relatively unchanged in their revision (Corr, 2008), research conducted since the publication of the revised theory suggests a more complex role for the BAS. It appears that the BAS is activated not only in situations that are characterized by the potential for a reward, but also by possible evasion of punishment (i.e., relief, escape). Thus, BAS-mediated impulsive behavior may also be motivated by potential

\* Corresponding author. Address: Department of Psychology, JOR, 9th floor, Ryerson University, 350 Victoria Street, Toronto, ON, Canada M5B 2K3. Tel.: +1 416 979 5000x2151.

E-mail address: [naomi.koerner@psych.ryerson.ca](mailto:naomi.koerner@psych.ryerson.ca) (N. Koerner).

threat (Franken & Muris, 2006). In an experiment by Corr (2002), anxious participants who were high in impulsivity displayed an *attenuated* startle reflex in response to aversive images. Corr proposed that impulsive approach behavior may “protect” anxious individuals from negative emotion. In line with this, Slessareva and Muraven (2004) reported a relationship between sensitivity to punishment and impulsivity. Thus, there appears to be some theoretical grounding to support a hypothesized positive relation between clinically-significant anxiety and impulsivity.

### 1.2. Varieties of impulsivity

Notions of impulsivity have changed considerably over time and there are two points that are germane to the current study. First, it is widely acknowledged that “impulsivity” is not a unitary construct that simply reflects a tendency to behave in a disinhibited way or to act without consideration of the consequences; rather, it appears that impulsivity may be multifactorial (Corr, 2008). Whiteside and Lynam (2001) developed a four-factor model of impulsivity consisting of the following dimensions: (1) *negative urgency*, which refers to the tendency to engage in rash behavior when experiencing negative affect; (2) *lack of premeditation*, which refers to the tendency to act without consideration of the consequences; (3) *lack of perseverance* when engaging in difficult tasks; and (4) *sensation-seeking*.

Second, the notion of impulsivity as a dysfunctional trait has been challenged. Dickman (1990) proposed that impulsivity might be functional in situations in which quick decisions are advantageous or warranted. Therefore, it may be maladaptive to be very low in “functional impulsivity”.

Taken together, these theories indicate not only that impulsivity has diverse manifestations, but also that a person can be elevated on one dimension of impulsivity and be low on another. Further, impulsive behavior may vary as a function of the motivation driving it (e.g., to obtain a reward versus to reduce negative affect).

Thus, in the study of the association between impulsivity and anxiety, it is important to consider (1) that only certain types of impulsive behavior may characterize clinically-significant anxiety and (2) that a failure to engage in impulsive behavior when it is advantageous may also distinguish normative anxiety from clinically-significant anxiety.

### 1.3. Evidence for an association between impulsivity and anxiety

A small number of investigations have examined impulsivity in individuals with an anxiety disorder, in particular obsessive-compulsive disorder (OCD). Zermatten and van der Linden (2008) examined the relation between OCD symptoms and the four dimensions of impulsivity per Whiteside and Lynam’s (2001) theory, described earlier. Negative urgency showed significant positive associations with obsessions, hoarding, ordering, checking, and neutralizing. Ordering and checking were also associated with greater premeditation. Lastly, there was a significant positive association between frequency of obsessions and a greater tendency to lack perseverance. Consistent with these findings, Cogle et al. (2011) also found that negative urgency (and distress intolerance) significantly predicted unique variance in OCD symptoms.

Summerfeldt, Hood, Antony, Richter, and Swinson (2004) examined whether elevated impulsivity is unique to OCD by comparing scores on the Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995) in individuals with OCD, social anxiety disorder (SAD), panic disorder, or no psychological disorder. The clinical groups produced significantly higher scores on the BIS-11 relative to the healthy control group; however, they did not differ from one another, suggesting that elevated impulsivity is not a unique characteristic of OCD. Indeed, Kashdan and Hofmann (2008) identified

a subset of highly impulsive (defined in their study as heightened novelty-seeking) individuals with SAD who reported more severe substance use relative to individuals with SAD who were lower on impulsivity.

Few studies have examined the associations of impulsivity to worry and GAD in spite of findings that speak to such associations. For example, Belzer et al., (2002) observed a unique association between catastrophic worrying and an impulsive, hasty approach to solving problems.

Gay et al. (2011) Study 2 examined the association of trait worry to dimensions of impulsivity in an undergraduate sample. Negative urgency and a lack of perseverance uniquely predicted elevated levels of worry; whereas, sensation-seeking and a tendency to neglect the consequences of one’s actions were uniquely associated with lower levels of worry. Similarly, Miller, Flory, Lynam, and Leukefeld (2003) found that DSM-IV-defined GAD symptoms were most strongly associated with higher negative urgency and a lack of perseverance, but neither uniquely predicted GAD symptoms. More recently, Cogle et al. (2011) found that negative urgency was positively associated with the tendency to worry.

Thus, there appears to be some indication of a relationship between worry, GAD, and impulsivity; however, there is a need to reconcile these findings with literature that indicates that people high in worry display delayed, possibly premeditative decision-making (e.g., Tallis, Eysenck, & Mathews, 1991), which seems to be indicative of a more cautious decision-making approach. However, as Tallis et al. noted, this “cautious” decision-making style does not appear to be associated with greater accuracy. Dugas and Robichaud (2007) reported that high worriers often strive to arrive at the “perfect decision;” however, such efforts may be disadvantageous when faced with relatively simple problems (e.g., what to have for dinner) or situations in which delayed action may result in a lost opportunity (Dickman, 1990). Under certain circumstances, taking more time to make a decision may not confer any advantage to high worriers, or could even be problematic, per Dickman’s (1990) conceptualization of functional impulsivity.

Taken together, research has demonstrated that impulsivity and anxiety are linked. However, the way in which impulsivity is expressed may vary as a function of the type of clinically-significant anxiety. Furthermore, as discussed earlier, dimensions of impulsivity appear to be independent of one another such that elevations on one dimension of impulsivity are possible in the absence of elevations on other dimensions of impulsivity. Finally, not all forms of impulsivity are problematic; that is, low levels of “functional impulsivity” may distinguish individuals with and without clinically significant anxiety.

The present study (1) compared individuals with GAD and without GAD on various dimensions of impulsivity and (2) examined whether self-report measures of impulsivity uniquely predict the presence and severity of GAD over and above *intolerance of uncertainty* (IU), a dispositional characteristic that is strongly associated with GAD (Dugas et al., 1998; Dugas & Robichaud, 2007). Individuals who are high in IU find uncertainty stressful, upsetting, and unfair (Buhr & Dugas, 2002; Sexton & Dugas, 2009). As a result, individuals with GAD engage in approach and avoidance behaviors to reduce uncertainty, and presumably the distress that it causes (Dugas & Robichaud, 2007). The associations between IU and dimensions of impulsivity have not, to our knowledge, been explored and impulsivity is not an explicit component of cognitive-behavioral models of pathological worry. In the current study, we sought to assess the relationship between IU and impulsivity and to determine whether impulsivity contributes to variance in GAD status over and above IU, with the aim of generating hypotheses about the possible functional relationship between uncertainty and impulsive behavior in individuals who worry excessively.

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