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Anxiety between personality and cognition: The gray zone

Ljiljana Mihić *, Petar Čolović, Ivana Ignjatović, Snežana Smederevac, Zdenka Novović

Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia

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ABSTRACT

The aim of the study was to explore relations between Gray's revised Reinforcement Sensitivity Theory (rRST) systems (Behavior Inhibition, Behavior Activation and Fight/Flight/Freeze System – BIS, BAS and FFFS) and two cognitive vulnerabilities to anxiety disorders (Intolerance of Uncertainty – IU and Anxiety Sensitivity – AS). The sample comprised 223 participants. The results suggested that BIS was a significant predictor of all components of the anxiety vulnerability measures. However, Freeze and Flight had also significant contributions, particularly in explaining vulnerabilities to physical and social threats as well as inhibitory behaviours while facing uncertainty. The findings provide insights into the nature of AS and IU which is in accordance with the rRST.

1. Introduction

Current views on etiology of anxiety disorders emphasize different biological, environmental, and psychological risk factors (Antony & Stein, 2009). However, a lack of effort to integrate different schools/approaches into a common frame of reference seems to be a crucial obstacle to broadening our understanding of etiological factors. Examples of such independent approaches are psycho-biological orientation in the field of personality (e.g., Gray, 1982), and the cognitive perspective in psychopathology (e.g., Reiss & McNally, 1985).

On the basis of several lines of evidence, Gray (1982) in the Reinforcement Sensitivity Theory has proposed that anxiety is an innate system that controls behavior in the face of a potential threat. After a major revision of the theory, Gray and McNaughton (2003) have made a clear distinction between behaviors that are associated with anxiety and behaviors associated with the emotion of fear.

According to the rRST, BIS is a reactive system underlying behavior related to potential threat and risk-assessment. BIS is also responsible for detection of conflict between two aversive or two appetitive stimuli (Corr, 2009). There is an abundant literature that relates BIS and anxiety (e.g., Beevers & Meyer, 2002), and BIS and anxiety symptoms and disorders (e.g., Maack, Tull, & Gratz, 2012a, 2012b). BAS is a motivational system which promotes active and explorative behavior. It is activated by signals of reward and all appetitive stimuli, conditioned and unconditioned (Corr, 2009). BAS may have a certain role in shaping both anxiety- and fear-related reactions (Kimbrel, 2008). FFFS is a reactive system that underlies behavior connected to perceived actual threat and is related to the emotion of fear (Eilam, 2005; Perkins, Kemp, & Corr, 2007). Possible reactions to sudden threats, depending on proximity of these threats, may be fighting, fleeing, or freezing. Flight occurs when the threat is far enough that it can be avoided (Corr, 2009). Freeze is activated when a danger is so close that an organism sees no way out of the situation, with the resultant emotion of panic. Fight is triggered in the encounter with the immediate threat that is so close that no other reaction is possible.

Much of the past research regarding Gray's systems was fraught with difficulties in distinguishing their relative contributions given the fact that the available scales were not discriminating between BIS and FFFS (Maack et al., 2012a). However, it is important to note that BIS and FFFS are not entirely independent systems. Recent findings indicate that it is difficult to make a clear distinction between BIS, Flight and Freeze concerning their biological bases, affective, and behavioral manifestations (Smederevac, Mitrović, Čolović, & Nikolašević, 2014). Others also noted that it is possible that a certain level of association between the fear and anxiety systems is unavoidable (Jackson, 2009). For example, both BIS and FFFS were related to test anxiety, with FFFS having a greater contribution in accounting for the test anxiety variance (Nob, 2013). Difficulties in distinguishing these systems are reflected in the current and previous classifications of mental disorders, in which anxiety/fear-related syndromes are classified as anxiety disorders. Also, comorbidity between anxiety, panic disorder and specific

* Corresponding author at: University of Novi Sad, Department of Psychology, Dr Zorana Djindjića 2, 21 000 Novi Sad, Serbia.
E-mail address: lmihic@ff.uns.ac.rs (L. Mihić).

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phobias is common (Alpers, 2009), making it difficult to measure their indicators by questionnaires.

Another line of research regarding fear, anxiety, and their disorders follows the cognitivistic perspective on emotions. Two cognitive constructs that received a lot of attention in examining risk factors for emotional disorders are Anxiety Sensitivity (AS) and Intolerance of Uncertainty (IU). AS is defined as a fear of anxiety symptoms and their consequences, which is based on a set of beliefs about catastrophic ends of various somatic symptoms of anxiety, cognitions accompanying anxiety states, or publicly observed anxiety symptoms (Lewis et al., 2010). Currently, it is accepted that AS has a hierarchical structure with one higher-order factor subsuming three lower-order factors: concerns about physical symptoms, concerns about mental incapacitation, and social concerns (Rodriguez, Bruce, Pagano, Spencer, & Keller, 2004).

Intolerance of Uncertainty (IU) implies cognitive, emotional, and behavioral reactions to negative beliefs about uncertainty and its implications (Dugas & Robichaud, 2007). Prospective Anxiety, anxiety about future uncertain events, and Inhibitory Anxiety, describing inhibitory effects of uncertainty on action and experience, are two facets of IU, reliably replicated across studies (Birrell, Meares, Wilkinson, & Freeston, 2011). Both AS and IU are related to a large number of anxiety disorders and depression (e.g., Buhr & Dugas, 2006; McEvoy & Mahoney, 2012; see also Naragon-Gainey, 2010, for a review).

There is a paucity of research examining the relation between AS and IU. Both constructs seem to share the intolerance of unknown, but in the case of AS this intolerance is related to the uncertain meaning of physiological, social and cognitive features characteristic of anxiety states (Carleton, Sharpe, & Asmundson, 2007). However, there are still some uncertainties regarding their nature and etiology. For example, Reiss and McNally (1985) indicated Anxiety Sensitivity (AS) as one of four fundamental fears because there is an *identifiable threat* or stimulus, such as various manifestations of anxiety, which is followed by the *uncertainty* regarding its consequences (Carleton et al., 2007). Hence, in terms of rRST, cognitions that are seen in individuals high in AS could be a reflection of activation of both BIS (underlying uncertainty) and FFFS (presence of the real threat). An involvement of BIS in cognitive manifestations of AS can also be inferred from the two lines of research examining the links between AS and neuroticisms, on one hand, and neuroticism and BIS, on the other. Correlations between AS and neuroticism range from .30 to .50 (e.g., Lilienfeld, 1999). At the same time, a number of mood induction studies suggest that BIS and neuroticism measures seem to be similar (Gomez & Cooper, 2008). Similarly, the nature of the two subcomponents of IU is still not clearly understood, partly due to the relative recency of this construct. Uncertainty inhibition or paralysis captured by Inhibitory Anxiety might reflect either passive avoidance (BIS) or the Freeze component of FFFS.

The issue of relations between BAS and anxiety is still unresolved. A number of studies report that anxiety disorders are largely unrelated to BAS sensitivity (e.g., Kimbrel, Mitchell, & Nelson-Gray, 2010), but several of them suggest an association between BAS and anxiety (e.g., Pawluk & Koerner, 2013). Therefore, the role of BAS in anxiety vulnerabilities needs further research.

Hence, a greater understanding of the nature of AS and IU can be achieved by relating them to the constructs of rRST. The principal aim of this study is to examine the relations between AS, IU, and the dimensions of rRST. The specific role that AS and IU play in the explanation of anxiety suggests that the contribution of BIS should be the most important for all AS and IU dimensions. Besides BIS, a specific contribution of FFFS dimensions to the explanation of AS and IU can be expected because both constructs seems to be related to different classes of stimuli. Inhibitory Anxiety refers to inhibitory effects of uncertainty on behavior and experience. Therefore, Freeze, and possibly Flight, may be significant predictors of this IU dimension, besides the BIS. On the other hand, AS may be related to FFFS, particularly to Freeze, because the freezing system can contribute to the shaping of inhibitory behavior, which is primarily determined by BIS. BAS and Fight are the least expected to explain IU, because BAS was usually, but not necessarily, unrelated to anxiety disorders (Pawluk & Koerner, 2013).

2. Method

2.1. Participants

Two hundred and twenty-three adults (131 female), participated in the research, after providing informed consent. 24.2% were undergraduates enrolled at the University of Novi Sad, Serbia. The remaining participants, who also volunteered for the study, were adults recruited via the "snowball" strategy whereby the students were asked to recruit further participants. 70% of them had high-school education or higher. The mean sample age was 30.94 years (SD = 10.92).

2.2. Measures

All measures were administered in Serbian.

The Reinforcement Sensitivity Questionnaire (RSQ; Smederevac et al., 2014) was applied as a measure of rRST constructs. The questionnaire contains 29 items, grouped in five subscales: BIS, BAS, Fight, Flight, and Freeze. Discriminating between the rRST systems was one of the primary goals in construction of the RSQ. Recent findings confirm that moderate correlations between these systems are stable across different samples of participants (Mitrović, Nikolašević, Smederevac, & Čolović, 2012; Mitrović, Smederevac, Čolović, Kodžopeljić, & Dinić, 2014). Participants respond to items on a four-point Likert scale, ranging from "completely disagree" to "completely agree". Internal consistency estimates for RSQ subscales in the current study ranged from .73 to .76.

The Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007; Serbian translation: Mihić, Čolović, Jokić-Begić, & Lauri-Korajlija, 2013) is a measure of beliefs regarding catastrophic consequences of symptoms associated with anxious arousal. ASI-3 contains 18 items and comprises three subscales: social evaluate concerns (ASI-Social Concerns), fear of physical symptoms (ASI-Physical Concerns), and fear of cognitive dyscontrol (ASI-Cognitive Concerns). The items are rated on a five-point scale, ranging from "very little" to "very much". Internal consistency estimates for the subscales in the current study ranged from adequate to good (.79, .81, and .88, respectively).

The Intolerance of Uncertainty Scale (IUS; Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994; Serbian translation: Mihić, Sokić, Samac, & Ignjatović, 2014) is a 27-item scale with a five-point scale, ranging from "not at all characteristic of me" to "entirely characteristic of me". Factor analytic studies of the scale found consistently two factors: Prospective Anxiety, reflecting active seeking of certainty, and Inhibitory Anxiety, tapping paralysing, distressing, and endangering aspects of uncertainty (Birrell et al., 2011; Mihić et al., 2014). In the current study, the subscales showed very good internal consistency reliabilities (.81 and .95, respectively).

3. Results

Table 1 provides means (M), standard deviations (SD) and Pearson's product-moment correlations for all study variables. Univariate skewness and kurtosis had acceptable values. Missing values were estimated using the EM algorithm (Tabachnick & Fidell,