



Contents lists available at ScienceDirect

# Personality and Individual Differences

journal homepage: [www.elsevier.com/locate/paid](http://www.elsevier.com/locate/paid)

## How the Five Factor Model and revised Reinforcement Sensitivity Theory predict divergent thinking



Benjamin R. Walker\*, Chris J. Jackson

School of Management, Australian School of Business, University of New South Wales, Sydney, NSW 2052, Australia

### ARTICLE INFO

#### Article history:

Received 16 April 2013

Received in revised form 2 September 2013

Accepted 9 September 2013

Available online 30 September 2013

#### Keywords:

Creativity

Revised Reinforcement Sensitivity Theory

Five Factor Model

Fear

### ABSTRACT

From the Five Factor Model (FFM), we hypothesized openness to experience would positively predict divergent thinking. From revised Reinforcement Sensitivity Theory (r-RST), we hypothesized revised Behavioural Approach System (r-BAS) would positively predict divergent thinking and revised Fight/Flight/Freezing System (r-FFFS) would negatively predict divergent thinking. Moreover, we hypothesized that r-FFFS would incrementally predict divergent thinking after controlling for significant FFM traits. Consistent with Elliot and Thrash (2010), we also hypothesized an indirect effects model with r-BAS predicting divergent thinking through mastery. Using 130 participants, we found support or partial support for all hypotheses. Our results indicate that biological factors of personality associated with r-RST as well as openness to experience predict divergent thinking. The distinction between fear and anxiety in r-RST was also supported with fear and not anxiety negatively predicting divergent thinking.

© 2013 Elsevier Ltd. All rights reserved.

### 1. Introduction

Creative thinking concerns the cognitive processes associated with novel and useful ideas (Amabile, Conti, Coon, Lazenby, & Herron, 1996). It is the basis for generating originality in a range of endeavours including science, art, philosophy, technology and business. In the current volatile economic climate, businesses need creativity to attain competitive advantage and continued viability (Axtell, Holman, Unsworth, Wall, & Waterson, 2000). Creative personality studies associate it with brilliance and adaptive behaviour as well mental and affective disorders (Belli, 2009; Fisher, Heller, & Miller, 2013). Our study on how personality predicts divergent thinking, a key critical feature of creativity, contributes therefore to several applied fields and advances theoretical models of creativity.

Researchers commonly use divergent thinking tasks to measure creativity, as these tasks may best assess the construct (Plucker & Renzulli, 1999; Runco, 2007). In divergent thinking tasks, participants list creative uses for everyday objects. The two most common scoring methods are fluency and originality. Fluency is the raw number of creative items (Torrance, 2008). It assesses ability to spontaneously create a flow of ideas (Rubinstein, 2008). Fluency is consistent with Eysenck's (1996) definition of creativity as the ability to produce inventions, insights and ideas that experts assess as valuable in domains ranging from science, aesthetics, society and technology. Originality is the uniqueness of the item compared

to other items in the dataset (Wallach & Kogan, 1965). The statistical infrequency of an idea is an index of creativity because individuals must temporarily abandon conventional thinking and build new associations between stimuli that no other person has perceived (Rossman & Fink, 2010). Mednick's (1962) theory posits that differences in creativity are variations in cognitive association abilities. Eysenck (1993) suggests that increased originality arises from high levels of dopamine, which reduces latent inhibition. Individuals with fewer constraints and inhibitions in their thinking use a wider array of information with which to make associations (Chermahini & Hommel, 2010).

Divergent thinking tasks using the Five Factor Model (FFM: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) have consistently identified that openness to experience predicted divergent thinking (e.g. Feist, 1998; King, Walker, & Broyles, 1996; McCrae, 1987; Silvia et al., 2008; Wuthrich & Bates, 2001). Openness to experience also predicted other aspects of creativity, such as self-assessed creative ability (Kaufman & Baer, 2004) and creative accomplishments (Feist, 1998, 2006). We predict:

**H1.** Openness to experience will positively predict fluency and originality in divergent thinking.

Researchers devised the FFM with a focus on producing a model with good psychometric design, yet some scholars are sceptical of the FFM because of its poor integration with theory and biology (e.g. Block, 2010). One attempt to develop a biopsychological personality theory is Gray's (1970) Reinforcement Sensitivity Theory (RST). This provides a biological basis for approach and

\* Corresponding author. Tel.: +61 405679100.

E-mail address: [b.walker@unsw.edu.au](mailto:b.walker@unsw.edu.au) (B.R. Walker).

avoidance motivations. Response to reward is mediated by the Behavioural Approach System (BAS), which is associated with extraversion (Gray, 1987; Smillie, Pickering, & Jackson, 2006). Gray (1987) designated avoidance as the Behavioural Inhibition System (BIS). This is associated with punishment sensitivity and the personality trait of anxiety. BIS has some overlap with neuroticism. Research has supported the BAS and BIS biopsychological model of personality (e.g. Boksema, Topsa, Westera, Meijmana, & Lorist, 2006; Clark & Loxton, 2012; Gray, 1987; Lang, 1995).

RST underwent a major revision that separates anxiety and fear into two systems (Gray & McNaughton, 2003). Animal data, psychology and neuroscience support this revision (De Pascalis, Strippoli, Riccardi, & Vergari, 2004; Dissabandara, Loxton, Dias, Daghish, & Stadlin, 2012). The new model is termed revised Reinforcement Sensitivity Theory (r-RST) and comprises three building blocks of personality: r-BAS, r-BIS and r-FFFS (Perkins, Kemp, & Corr, 2007).

Several studies support the distinction between fear and anxiety in r-RST. Perkins and colleagues (2007) found anxiety and fear separately predicted performance in a military training setting. Jackson (2009) found that r-Fight and r-Flight predicted delinquency and everyday psychopathy in students, whereas r-BIS results were non-significant. A study of workers (Clark & Loxton, 2012) found that r-FFFS rather than r-BIS predicted lower psychological acceptance and was correlated with lower work engagement when participants considered the job demanding. Another study found r-BIS predicted depression when r-BAS was low, and r-BAS, low o-BIS and low r-Freeze predicted psychological well-being (Harnett, Loxton, & Jackson, 2013). Jackson, Loxton, Harnett, Ciarrochi, and Gullo (2013) found that r-flight negatively predicted executive functioning. The authors advocated that fear restricts higher order cognitive functioning so cognitive resources can be channelled into a single minded flight response. Similarly, we think fear rather than anxiety will negatively impact divergent thinking, because divergent thinking consumes higher order cognitive resources and generates multiple cognitions which the fear response would usually restrict. This view adds depth to our current understanding that the role of r-BIS is to resolve conflicting demands, whereas the role of FFFS is to quickly respond to aversive stimuli (Morton & White, 2013). While the divergent thinking task includes time pressure, we do not believe this will trigger the approach-avoidance conflict detector role of the r-BIS, because the task does not associate producing ideas with reward or punishment. We predict:

**H2.** r-FFFS will negatively predict fluency and originality in divergent thinking.

This study compares FFM with r-RST in the prediction of divergent thinking. FFM and r-RST differ in many aspects but one principal way is the inclusion of r-FFFS and its separation from anxiety in r-RST, whereas the FFM more broadly measures emotionality in terms of neuroticism. Given our expectation that r-FFFS will predict divergent thinking, we expect r-FFFS to predict divergent thinking incrementally over and above significant predictors from the FFM:

**H3.** r-FFFS will incrementally negatively predict fluency and originality in divergent thinking with openness to experience controlled.

Dual systems theory by Elliot and Thrash (2010) and Jackson (2008) suggests r-BAS indirectly predicts functional outcomes through mastery. Elliot and Thrash (2010) suggest that observable behaviour arises from self-regulation as well as personality. Individuals use self-regulation such as mastery to gain momentum toward positive outcomes (Elliot & Sheldon, 1997). Individuals

high in mastery work hard to achieve goals. They accept mistakes and difficulties as learning experiences (Nicholls, 1992).

Several studies suggest r-BAS and mastery predict functional outcomes. Izadikhah, Jackson, and Loxton (2010) found r-BAS positively impacted supervisor ratings of work performance, mediated by mastery and moderated by psychological climate (Izadikhah et al., 2010). Jackson (2011) found sensation seeking (related to r-BAS) through mastery predicted work performance. Grant and Dweck (2003) found a goal-driven approach orientation to learning predicted educational achievement. We expect a similar impact for r-BAS on divergent thinking given that reward seeking concerns curiosity, exploration and novelty seeking, and r-BAS on divergent thinking through mastery given that mastery hones energizing drives (see Elliot & Thrash, 2010; Jackson, 2011). We predict:

**H4.** r-BAS will positively predict fluency and originality in divergent thinking.

**H5.** r-BAS will positively predict fluency and originality in divergent thinking through mastery, which is an indirect effects model.

## 2. Method

### 2.1. Participants

The sample consisted of 130 management students who participated in return for course credit (mean age = 19.29 years, *SD* age = 1.98 years, age range 17–30 years; female 60%, male 40%). An a priori power analysis suggested 107 participants would enable 95% power to detect a medium sized effect at the .05 level of significance (Faul, Erdfelder, Lang, & Buchner, 2007).

### 2.2. Measures

#### 2.2.1. Five Factor Model (FFM; Costa & McCrae, 1992)

FFM is the primary personality assessment tool. We used the International Personality Item Pool (Goldberg et al., 2006). Openness to experience is associated with appreciation for art, curiosity and variety of experience. Conscientiousness is associated with self-discipline, duty and need for achievement. Extraversion is associated with positive emotions, energy and sociability. Agreeableness is associated with compassion and cooperativeness. Each measure included 10-items rated on a five-point scale.

The neuroticism scale from FFM has some association with the r-BIS and r-FFFS. It appears to be a conflation of depression, anxiety and fear items. The scale includes five depression items, four anxiety items and one fear item. Because neuroticism includes four anxiety items, we expect neuroticism to associate with r-BIS more than r-FFFS.

#### 2.2.2. Revised Reinforcement Sensitivity Theory (r-RST; Jackson, 2009)

The Jackson Five is the only published measure of r-RST. It is rated on a five-point scale and has three biological 'building blocks' of personality with r-BAS, r-BIS (anxiety) and r-FFFS (fear). Revised FFFS is an 18-item measure of fear spanning r-fight, r-flight and r-freeze. Because we theorise fear will predict creativity, we analyse our data at the r-FFFS level of analysis as opposed to the underlying sub-scales of r-FFFS.

#### 2.2.3. Mastery (Jackson, 2008)

Mastery is a competence and learning subcategory of goal orientation associated with exerting effort into tasks. Participants rate the 15 items on a three-point scale. Several studies have validated this scale (Jackson, 2011; Jackson, Baguma, & Furnham, 2009; Jack-

Download English Version:

<https://daneshyari.com/en/article/890899>

Download Persian Version:

<https://daneshyari.com/article/890899>

[Daneshyari.com](https://daneshyari.com)