Little more than personality: Dispositional determinants of test anxiety (the Big Five, core self-evaluations, and self-assessed intelligence)

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Abstract

This study attempted a hierarchical integration of several dispositional determinants of test anxiety (TA) [Sarason, I.G. (1984). Stress, anxiety and cognitive interference: Reactions to tests. Journal of Personality and Social Psychology, 46, 929–938.], namely the Big Five personality traits [Costa, P.T. Jr., & McCrae, R.R. (1992). Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI): Professional manual. Odessa: Psychological Assessment Resources.], core self-evaluations (CSE) [Judge, T.A., Erez, A., Bono, J.E., & Thoreson, C.J. (2003). The Core Self-Evaluation Scale: Development of a measure. Personnel psychology, 56, 303–331.], and self-assessed intelligence (SAI) [Furnham, A. (2001). Self-estimates of intelligence: Culture and gender difference in self and other estimates of both general (g) and multiple intelligences. Personality and Individual Differences, 31, 1381–1405.] in a sample of 388 US and UK university students. Structural equation models showed that TA was largely a function of Neuroticism, and that CSE and SAI do not contribute to the prediction of TA over established personality traits. Furthermore, the relationship between CSE and TA was fully accounted for by personality traits, whereas SAI was not a significant predictor of TA. The results undermine the notion that self-beliefs affect TA and suggest that wider dispositions play a salient role determining individual differences in TA. Theoretical and applied implications are discussed, particularly in regards to educational settings.
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1. Introduction

Every year, millions of students under-perform in school and university because of heightened test anxiety (TA) (Hill & Wigfield, 1984; Hopko, Ashcraft, Gute, Ruggiero, & Lewis, 1998; Zohar, 1998), which is defined as the "set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative situation" (Zeidner, 1998, p.17). Although TA is known to depend on situational variables, such as levels of motivation, task complexity, and the practical consequences of high or low performance (Humphreys & Revelle, 1984), it varies markedly from one individual to

another. Thus, some individuals will be relatively calm when it comes to completing a test, whilst others will generally "perceive examinations as more dangerous or threatening (...) and experience more intense levels of state anxiety when taking tests" (Spielberger & Vagg, 1995, p.6).

Studies on the self-defeating consequences of subjective cognitions (Ellsworth & Smith, 1988; Lazarus, 1991) suggest that poorer self-beliefs are a major cause of TA. However, psychologists use different labels to refer to what are arguably overlapping constructs, for instance: Self-regulation (Carver & Scheier, 1984), self-efficacy (Bandura, 1986, Smith, Arnkoff, & Wright, 1990; Zohar, 1998), locus of control (Braden, 1995; Feather & Volkmer, 1988), attribution for failure and success (Bandalos, Yates, & Thorndike-Christ, 1995), self-worth (Covington, 1992), emotional self-efficacy (Petrides & Furnham, 2000), self-concept (Bandalos et al., 1995), self-awareness (Fletcher & Baldry, 2000), meta-cognition (Stankov, 1999), self-handicap (Rhodewalt, 1990), self-evaluation (Morris &

Liebert, 1969), self-motivation (Zeidner, 1995), self-concept (Rindermann & Neubauer, 2001), and self-confidence (Koivula, Hassmen & Fallby, 2002).

To overcome this problem, and account for the overlap between different measures of self-belief, Judge, Erez, and Bono (1998) proposed the concept of core self-evaluations (CSE) and also developed a measure of this construct. The concept of CSE was defined as a broad personality trait reflecting the most general and fundamental beliefs individuals hold about themselves (Judge et al., 1998). Accordingly, individuals' CSE comprise four components referring to individual differences in a) self-esteem or perception of one's worth, value, and importance, b) generalized self-efficacy or one's typical level of confidence about the likelihood of performing well, c) locus of control or one's perceived degree of control over life events and situations, and d) neuroticism/emotional stability or one's tendency to experience negative affect, increased levels of worry, and pessimistic beliefs. A large meta-analytic study (Judge, Erez, Thoreson, & Bono, 2002) confirmed that most variance among these components can be explained by a general factor, which was more accurate than the four components in predicting external criteria (Best, Downey, & Stapleton, 2005; Judge & Bono, 2001; Judge, Kluger, Locke & Durham, 1998), though research is yet to examine its relation to TA.

Given the dispositional nature of CSE, it is particularly important to determine whether any links between CSE and TA could be explained by established personality traits, notably the Big Five factors of Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A), and Conscientiousness (C) (Costa & McCrae, 1992). Indeed, Judge et al.(2003) suggested that CSE may be partly dependent on N, E, and C, such that emotionally stable, extraverted, and conscientious individuals are generally more likely to hold positive self-beliefs. In one of the few attempts to provide a hierarchical model for integrating dispositional (both personality and self-evaluative) determinants of AP, Chamorro-Premuzic and Furnham (2006a) proposed that self-expectancy constructs may largely be influenced by personality traits, not only N (negatively) but also E (positively) and O (positively). Accordingly, self-expectancy constructs may mediate (account for) the link between established personality factors and TA. However, the authors looked at AP measures (i.e., exams, continuous assessment, and supervised dissertations) rather than TA, and conceptualized self-evaluations merely in terms of self-assessed intelligence (SAI), that is, people's estimates of their cognitive abilities in relation to the overall population (see also Marsh, Trautwein, Lüdtke, Köller & Baumert, 2006 for similar hierarchical models of core versus surface characteristics in the prediction of AP). Whilst SAI has shown incremental validity predicting AP over and above personality and intelligence (Chamorro-Premuzic & Furnham, 2006b), its relationship to TA remains to be tested.

Thus the present study set out to explore whether individual differences in self-beliefs, as operationalized through CSE and SAI, account for variance in TA independently of established traits, and whether CSE and SAI may explain the effects of personality traits on TA.

1.1. The hypothesized models

The first model tested whether the relationship between the Big Five personality traits and TA was mediated by SAI and CSE. In line with previous research, paths from N, E, O, and A, were loaded on to SAI (see Chamorro-Premuzic, Moutafi & Furnham, 2005; Furnham & Buchanan, 2005), and paths from N, E, and C were loaded onto CSE (see Judge et al., 2003). Direct paths between the Big Five and TA were also allowed according to past findings (see Fitch, 2005; McIlroy & Bunting, 2002). SAI and CSE were both allowed to influence TA. This model was compared to a competing model. The main interest was directed at two variables, namely N and CSE. Because Judge et al. (1998) argued that CSE is a broad latent personality construct, a model, in which CSE and the Big Five were simply correlated, with no causal paths, was tested. The idea was to include both N and CSE in the same structure, where neither one factor is broader than the other (Judge et al., 2002).

The directionality of the model is conceptual rather than causal and can be justified on the basis that the Big Five are less affected by situational variables than is TA. Furthermore, as poorer self-beliefs are assumed to be a major cause of TA, CSE are treated as both exogenous and endogenous, though whether CSE are as broad as the Big Five or merely a self-conception/surface characteristic, akin to SAI, is a matter of theoretical speculation (see Asendorpf & van Aken, 2003).

2. Method

2.1. Participants

Participants were 388 undergraduate students from British (250) and American (138) universities. There were 287 females and 101 males. Age ranged from 17 to 29 ($M = 19.7$, $SD = 2.8$) years. Most students were psychology undergraduates who volunteered to take part in this study in exchange of course credit units.

2.2. Measures

2.2.1. Reaction to Tests (RTT, Sarason, 1984)

This is a 40-item measure of TA composed of four anxiety components, namely "worry" (e.g. "I wonder how other people are doing";), "irrelevant thinking" (e.g. ";My mind wanders during tests";), "tension" (e.g. ";I feel distressed and uneasy before tests";), and "bodily reactions" (e.g. ";I get a headache before a test";). These components form two cognitive (worry—irrelevant thinking) and two emotional (tension—bodily reactions) dimensions of TA. Initially, four components were extracted as specified by Sarason (1984). However, these were highly inter-correlated and following a confirmatory factor analysis, it was decided to compute one higher order TA factor, which was retained for further analysis and treated as criterion. Studies have provided strong support for the psychometric adequacy of the RTT scale (Zimmer et al., 1992; Sarason, 1984).