

Trait anxiety, disgust sensitivity, and the hierarchic structure of fears

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Received 20 April 2007; received in revised form 8 November 2007; accepted 15 November 2007

Abstract

This paper describes an evaluation of Taylor's (1998) hierarchic model of fears and its relationship to trait anxiety and disgust sensitivity (DS). In Study 1 ($N = 420$), a confirmatory factor analysis supported a hierarchic structure of fears. Next, an analysis using structural equation modeling indicated that trait anxiety is associated with claustrophobic and social fears, whereas DS is associated with all four fear subtypes examined (claustrophobic, social, blood–injection–injury and animal). However, trait anxiety and DS did not account for all variance shared by fear subtypes. The addition of a generalized “fear factor” accounted for significant residual shared variance between the four fear subtypes, beyond that accounted for by trait anxiety and DS. Study 2 ($N = 213$) generally replicated these results. Findings suggest that the hierarchic structural model of fears would benefit from inclusion of trait anxiety and DS as higher-order contributors to fearfulness.

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Keywords: Fear; Disgust; State-Trait Anxiety Inventory; Factor structure; Phobias; Psychopathology

1. Introduction

There has been a growing interest in empirically derived taxonomic models of mental disorders in recent years (Brown, Chorpita, & Barlow, 1998; Hettema, Prescott, Myers, Neale, & Kendler, 2005; Kendler, Myers, Prescott, Neale, & Eaves, 2001; Kendler, Prescott, Myers, & Neale, 2003; Zinbarg & Barlow, 1996). In such models, symptoms or disorders that covary are thought to possess a common vulnerability and

are placed within the same diagnostic class. Conversely, symptoms or disorders that are quantitatively unrelated are not placed within the same diagnostic class, and provide a demonstration of the heterogeneity of psychopathology. Furthermore, shared variance between diagnostic classes suggests higher-order classes, indicating a hierarchic structure of mental disorders. For example, major depressive disorder, dysthymic disorder, and generalized anxiety disorder have been repeatedly empirically linked, intimating a diagnostic class labeled variably as “Anxious-Misery” (Kendler et al., 2003; Krueger, 1999; Vollebergh et al., 2001) and “Distress Disorders” (Watson, 2005). Such empirically derived taxonomic models can be contrasted to the classification system in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR; American Psychiatric Association, 2000)*,

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which has been criticized by several researchers for its basis in phenomenological similarity rather than empirical evidence (e.g., Brown & Chorpita, 1996; Watson, 2005).

Taylor (1998) proposed a hierarchic structural model of fears based on a review of factor analyses of fear surveys and behavioral-genetic studies in the fear and anxiety literature (e.g., Kendler, Neale, Kessler, & Heath, 1992; Staley & O'Donnell, 1984). According to this model, there is a "hierarchy of causal factors" consisting of general and specific mechanisms that influence one's proneness to developing fears. At the lowest level of the hierarchy are factors that are uniquely associated with specific fears (e.g., blood, snakes, and elevators). Intermediate factors are vulnerabilities associated with a set of specific fears. For example, fears of insects, snakes, and bats are thought to co-vary due to a common vulnerability to developing animal fears. Taylor identified four intermediate-level fear subtypes in his model, based on the findings of factor analytic studies of fear questionnaires: social, animal, blood-injury-illness (BII) and situational (or agoraphobic) fears (Arrindell, Pickersgill, Merckelbach, & Ardon, 1991).

In addition to the four lower-order fear subtypes, Taylor's (1998) hierarchic model of fears suggests that higher-order factors (e.g., neuroticism) represent a general proneness to developing fears. Taylor noted that several behavior genetic studies have demonstrated a two-tier hierarchy of genetic factors: specific genetic contributions to each fear or phobia type and a general genetic factor associated with all fears or phobias (e.g., Kendler et al., 1992). In addition, Taylor reviewed two factor analytic studies that supported a hierarchical structure of fears using fear surveys (Staley & O'Donnell, 1984; Zinbarg & Barlow, 1996). Subsequent evidence for a hierarchical model of fears was provided by a recent study (Cox, McWilliams, Clara, & Stein, 2003) that used exploratory and confirmatory factor analyses of 19 common fears using data from the National Comorbidity Survey (Kessler et al., 1994).

Although the hierarchic model of fears is helpful in providing a descriptive framework for classification, a significant drawback is the ambiguity surrounding the meaning and identification of higher-order factors that are likely to have a bearing on fear proneness. Results of behavioral genetic studies and factor analytic studies such as Cox et al. (2003) infer that a unitary, higher-order mechanism is responsible for the shared variance between fear subtypes. However, there are indications that fear proneness is affected by an amalgamation of

several additive factors. For example, a recent factor analytic study of a fear questionnaire (Cutshall & Watson, 2004), significant and positive partial correlations were found between fear subtypes, even after controlling for neuroticism. To explain this observation, the authors contended that unmeasured factors might account for the common variance between fears that are unrelated to neuroticism. The implication of this finding is that the "general fear factor" identified by Cox et al. may in fact represent multiple, differentiable vulnerabilities to the development of fear. Certainly, clarifying such sources of covariance between fears would go far in developing our understanding of the structure of fears.

The purpose of the current study was to test a hierarchic structural model of fears and its relationship to two likely contributors to fear proneness, trait anxiety and disgust sensitivity. Trait anxiety refers to individual differences in anxiety proneness in response to stressful situations (Spielberger, 1983). Trait anxiety, as well as its more broadly encompassing cousin neuroticism, has an established relationship with a variety of fears. For example, trait anxiety and neuroticism typically exhibit an association with agoraphobic (Kendler, Myers, & Prescott, 2002; Muris, Merckelbach, & Rassin, 2000) and social fears and phobias (Cutshaw & Watson, 2004; Shean & Lease, 1991; Stemberger, Turner, Beidel, & Calhoun, 1995). A similar relationship has been found for BII and animal fears (Olatunji, 2006; Page, 1994), although associations with these fear subtypes have generally been smaller than for social fears (Cutshaw & Watson, 2004; Kendler et al., 2002) and occasionally non-significant (Mulken, de Jong, & Merckelbach, 1996; Thorpe & Salkovskis, 1995).

The observation that disgust sensitivity is associated with fears and phobias is more recent. Disgust sensitivity (DS) is defined simply as individual differences in sensitivity to the emotion of disgust (Haidt, McCauley, & Rozin, 1994; Rozin, Fallon, & Mandell, 1984). Disgust sensitivity is conceptualized as an enduring trait, has temporal stability (Rozin, Haidt, McCauley, Dunlop, & Ashmore, 1999), and is resilient to secondary treatment effects (de Jong, Andrea, & Muris, 1997). There is also some evidence that DS is moderately heritable, in that parent and child reports of DS are moderately and positively correlated (Davey, Forster, & Mayhew, 1993; Rozin et al., 1984; but see de Jong et al., 1997). For example, in one interesting study, Davey et al. found that parental food-related DS, but not parental fear of spiders, predicted the fear of spiders in offspring.

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