



# A prospective evaluation of agoraphobia and depression symptoms following panic attacks in a community sample of adolescents

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## Abstract

In a community sample of high schoolers who experienced their first panic attack, we examined the prospective relationships among pre-panic vulnerabilities, panic attack severity, and post-panic agoraphobia and depression symptoms. Students were evaluated yearly over 4 years to test the following four hypotheses: (1) pre-panic anxiety sensitivity, negative affect, and childhood behavioral inhibition will serve as vulnerabilities that predict agoraphobia and depression symptoms following a panic attack; (2) these vulnerabilities will lead to more severe panic attacks; (3) severe and spontaneous panic attacks will predict subsequent agoraphobia and depressive symptoms; and (4) the interaction between panic severity and vulnerabilities will be associated with worse outcomes following a panic attack. Results supported the first three hypotheses, but no evidence emerged for an interactive effect. Findings are discussed in light of recent modernized classical conditioning models that address factors contributing to development of more severe panic related psychopathology after panic attacks.

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Although some studies have examined predictors of panic attacks (e.g., Hayward, Killen, Kraemer, & Taylor, 2000), there are no prospective investigations that explain why panic attacks are followed by psychopathology in some and by a benign course in others. As an important starting point, two longitudinal studies indicate considerable risk for developing an internalizing disorder after experiencing a panic attack. In a sample of 46 participants with infrequent panic attacks, Ehlers (1995) reported that seven (15%) had developed panic disorder by the 1-year follow-up assessment. Although these data are useful, this study is limited by its use of a questionnaire to assess panic. In addition, Pine, Cohen, and Gurly (1998) reported that fearful spells, defined as episodes of brief, spontaneous crescendo anxiety, reported during adolescence were associated with an increased risk for panic disorder (Odds ratio = 18.9), generalized anxiety disorder (Odds ratio = 6.7), social phobia (Odds ratio = 3.4), and major depressive disorder (Odds ratio = 2.7) 7 years later in young adulthood. Neither of these studies addresses the important question as to why some of those with panic or fearful spells develop internalizing disorders and some do not. Only a subset of those who experience a panic attack go on to develop psychopathology (e.g., Reed & Wittchen, 1998; Wittchen, 1986), and more research is needed to identify those at risk.

For some, panic attacks can be followed by any number of psychiatric disorders including, but not limited to, panic disorder and agoraphobia. For example, both the National Comorbidity Survey and the Epidemiologic Catchment Area (ECA) Study have documented an increased chance for developing major depression following panic attacks (Andrade, Eaton, & Chilcoat, 1996; Kessler et al., 1998; Roy-Byrne et al., 2000). According to the ECA data, those with DSM-IV panic attacks experienced a 6.9 times greater relative hazard for developing major depression than those without a history of panic attacks. In the Early Developmental Stages of Psychopathology study, only 8.5% of participants met criteria for no DSM-IV diagnosis after experiencing a spontaneous DSM-IV panic attack (Reed & Wittchen, 1998). Data further indicated that the conditional probability of developing panic disorder was 37% and agoraphobia was 27% for both genders, and the conditional probability of developing any other mental disorder following the attack was 63% in males and 40% in females. Although the potential for psychopathology following panic attack is substantial, who are at greatest risk for developing these problems?

Cross-sectional studies have contributed some useful data for this puzzle, and have suggested that both panic attack characteristics as well as predisposing factors may be important in determining various trajectories to psychopathology. For example, the number of symptoms experienced in a panic attack has been linked to both the severity of panic disorder (Korff, Eaton, & Keyl, 1985) and agoraphobic avoidance (Cox, Endler, & Swinson, 1995), although this finding has not been consistent (Aronson & Logue, 1987; Craske & Barlow, 1988). Cognitions also seem to play an important role as exemplified by experimental

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