



Variance in Comorbidity with Chronic Illnesses Among Different Types of Panic Attacks

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Abstract

Studies suggest that panic disorder is often comorbid with a range of physical ailments. The 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions examined variance in comorbidity of chronic illness amongst different subtypes of panic disorder for a nationally representative sample. Each of the 1,303 participants who met the criteria for panic disorder was assigned a panic type (high-physiological, autonomic-psychosomatic, or cognitive) based on the symptoms they reported during their panic attacks. A comparison of means revealed that diagnosis of different chronic illnesses was statistically more common among the panic disorder population and that within the panic sample, comorbidity differed significantly between panic subgroups. In particular, participants who met the criteria for high-physiological type panic were more likely to have comorbid physical illness than those categorized as the cognitive type. The difference in comorbidity with physical illness amongst different panic subgroups suggests physiological and psychological differences among panic subtypes and reinforces the hypothesis that panic disorder, a psychological illness, is highly correlated with physical illness.

Introduction

In the United States, anxiety disorders generate \$42.3 billion of medical expenses annually and their rate of diagnosis continues to rise (Greenberg et al., 1999). One such anxiety disorder, panic disorder (PD), affects about 4% of the American adult population and can be debilitating if not life threatening; one fifth of those diagnosed with PD will attempt suicide (Hirschfeld, 1996). However, the specifics of different symptom manifestations and how they relate to physical illness has not been explored.

Patients with PD experience acute and recurrent attacks of extreme psychological distress and physiological arousal called panic attacks. A panic attack is considered to be an episode that reaches its peak within ten minutes and includes four of thirteen panic symptoms (American Psychiatric Association, 2000, *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed.). Symptoms of panic attacks differ widely and include elevated heart rate, trouble breathing,

feelings of smothering, chills, sweating, nausea, vomiting, cramps, numbness, derealization, and a sudden fear of being alone, dying, or going mad. Though varied, PD symptomology has been shown to cluster into two or three relatively consistent subgroups.

One subgroup consistently identified in previous studies is the “severe physiological”, or “cardiac” subgroup, which is characterized by the presence of more severe cardiac symptoms including chest tightness, heart palpitations, hot flashes, and difficulty breathing (Meuret et al., 2006; Bovasso & Eaton, 1999.). The second consistently identified PD type is the “cognitive”, or “fearful” variety, identified by an overwhelming fear of “going crazy”, a sense of unreality, and fear of dying (Meuret et al., 2006; Schmid, Forsyth, Santiago, & Trakowski, 2002; Bovasso & Eaton, 1999). An intermediary type of PD, consisting of mixed psychological and physiological symptoms, called “autonomic-psychosomatic” type (AP) was identified by both Schmid et al. (2002) and Meuret et al. (2006). This intermediate cluster has been characterized as respiratory, with dizziness, nausea, shortness of breath and chest tightness, but not with heart palpitations (Bovasso & Eaton, 1999; Schmid et al., 2002; Briggs, Stretch, & Brandon, 1993). An important difference between AP and high-physiological panic types is that AP panic symptoms are acute versions of nonclinical anxiety. In comparison, high physiological symptoms are more severe than the normal psychosomatic symptoms of anxiety in non-PD people.

The distribution of types of panic attacks among the PD population varied widely between studies mentioned above, though most identified the cognitive cluster as the least common (Meuret et al., 2006; Schmid et al., 2002; Bovasso & Eaton 1999). These different categories of panic disorder are thought to reflect the interplay between the known factors that trigger panic. Such as experiential or conditioned fear, biological triggers including dyspnea and false alarm, and psychological triggers like anxiety, social anxiety, and catastrophic misinterpretation of physical symptoms (Brown & Barlow, 2002; Craske, 1991). As of yet, the clustering of symptoms in naturally occurring panic has not been studied for a significant sample size of PD patients.

All forms of anxiety disorders, especially PD, have shown a high comorbidity with depression and other psychiatric disorders (Gadalla, 2008; Brown & Barlow, 2002). A growing body of research also indicates that anxiety disorders have a very high comorbidity with a variety of physical illnesses particularly back pain and irritable bowel syndrome (Gros, Antony, McCabe, & Swinson, 2009). Rates of irritable bowel syndrome were found to be as high as forty-four percent in patients with panic disorders (Lydiard, Laraia, Howell, & Ballenger, 1986). An analysis of the National Comorbidity Survey-Replication found that PTSD patients were more likely than the comparable populations to develop arthritis, chronic pain, heart disease and ulcers (Sledjeski, Speisman, & Dierker, 2008). A ten-year-long study in Canada found that patients with a chronic anxiety disorder had a statistically significant risk of developing cerebrovascular disease, ischemic heart problems, gastrointestinal diseases, hypertension, and respiratory illnesses (Bowen, Senthilselvan, & Barale, 2000). However, as noted, these studies were not conducted using significant sample sizes and used convenient rather than representative samples.

Several studies have indicated that certain comorbid illnesses may be more prevalent among certain types of PD. Specifically, hypertension and heart-related problems are more prevalent in cardiac-type PD patients than in the larger PD sample (Meuret et al., 2006; Bovasso & Eaton, 1999) and that respiratory PD is more likely to be comorbid with asthma (Bovasso & Eaton, 1999). However, a comprehensive analysis of comorbidity between chronic illness and different types of PD has not been done for a nationally representative sample.

For this study, a statistical analysis was conducted using the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) with the following goals: 1) to establish a

relationship between panic disorders and chronic illness for a nationally representative sample 2) to examine how the comorbidity of chronic illness and PD differs for participants who experience different clusters of symptoms during their most severe panic attack.

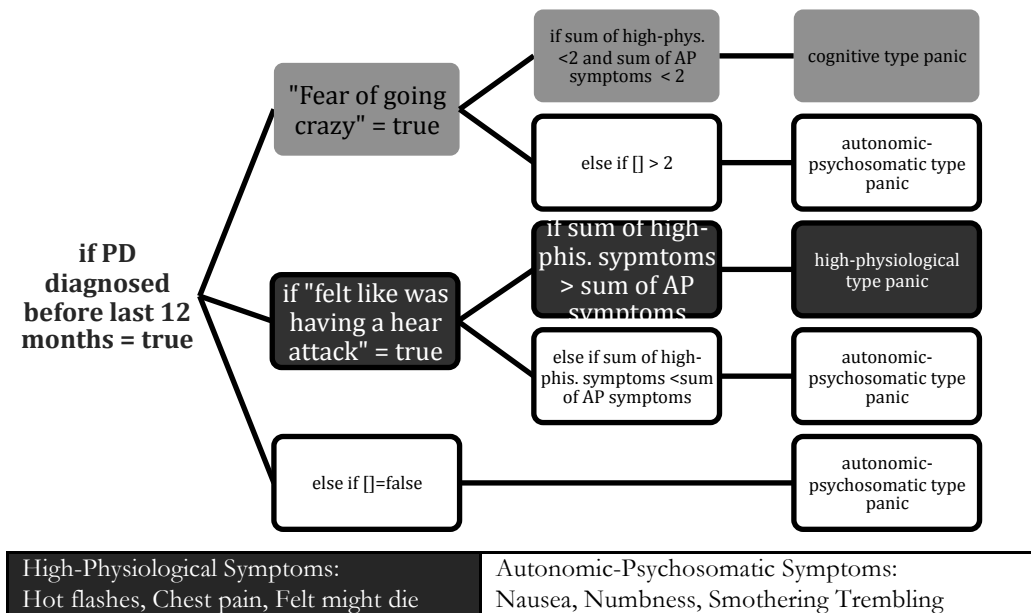
Methods

Sample

The sample came from the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). NESARC was an anonymous survey of 43,092 randomly selected, nationally-representative, American adults conducted by the National Institute of Alcohol Abuse and Alcoholism. The study oversampled young people (ages 18-24) African Americans, and Hispanics. Participants in the study were interviewed face-to-face in their homes (with the assistance of a computer) about their alcohol and drug usage, demographics, behavioral health, and physical health.

Measures

Figure 1: Schematic to classify panic



Categorization of panic. The NESARC interview included dozens of questions about panic attack symptoms, frequency and relation to social phobias, alcohol and drug use, and physical illness. Using these responses, NESARC provided its own diagnosis of Panic Disorder developed independently of substance abuse or illness, which they called “Illness-induced and

substance-abuse ruled out panic disorder prior to last 12 months.”

Within the NESARC-generated PD sample, a schematic based on symptoms of panic disorder was used to analyze panic disorder type. Symptoms were categorized as high physiological (hot flashes, chest pain, felt might die) and or autonomic-psychosomatic symptoms (nauseous, numbness, smothering, trembling). The only cognitive symptom measured in NESARC was the “felt might go crazy” symptom, thus participants were all coded as having cognitive type panic if they responded affirmatively to “felt might go crazy” and had fewer than two each of AP and high-physiological symptoms. Because “felt like was having a heart attack,” is the most characteristic symptom of the high-physiological type, participants were coded as high physiological type panic if they answered yes to this symptom and had more symptoms from the high physiological category than in the autonomic-psychosomatic category. All others were coded as autonomic-somatic type.

Measures of chronic illness. All of the chronic physical illnesses measured in the NESARC survey were analyzed except for liver disease, because there is no evidence for a relationship between liver failure and anxiety in the literature. The following illnesses (diagnosed within the twelve months prior to the study) were measured: hardening of the arteries, high blood pressure/hypertension, angina pectoris (chest pain), tachycardia, myocardial infarction, other heart disease, stomach ulcer, gastritis, and arthritis and a quantitative chronic illness variable representing the number of chronic illnesses per participant.

Results

In the NESARC sample 3.13% - 1,303 participants - of the sample were coded positive for illness and substance-induced ruled out panic disorders diagnosed prior to the last 12 months. The PD individuals were 70% female. The mean age of those with panic disorder was 45.69, ($SD = 18.2$), slightly lower than that of the sample as a whole ($M = 46.58$, $S.D = 14.9$). Of PD participants, 52% were high-physiological type, 26% were autonomic-psychosomatic type and the remaining 22% were cognitive type panic.

ANOVA test for differences among mean number of chronic illness diagnoses was statistically significant between PD patients ($M = 1.37$) and non-PD individuals ($M = 0.807$, $p < .001$). Chi squared tests were used to compare diagnosis of different illnesses among those with different types of panic disorders and between the PD and non PD sample. A chi squared test for PD and non-PD samples was significant for each of the eleven illnesses ($p < .001$). PD patients were nearly three times as likely to develop a heart disease, stomach ulcers, or gastritis and nearly 50% more likely to develop arthritis or high blood pressure than the average population.

Panic Type

Chi-square test revealed that high-physiological panic groups had a significantly higher comorbidity than autonomic-psychosomatic PD patients with arthritis ($X^2 = 6.17$), gastritis ($X^2 = 64.7$), hypertension ($X^2 = 74.05$) and heart disease ($X^2 = 10.52$), all $p < .05$. AP type PD had a significantly higher comorbidity than cognitive type with ulcers ($X^2 = 1.95$), but a significantly lower rate of hypertension ($X^2 = 2.47$). All panic disorders, including cognitive PD, had a significantly higher rate of comorbidity with each of the illnesses measured than the non PD group.

Figure 2: Rates of chronic illness (percent) in total PD population vs. non PD population.

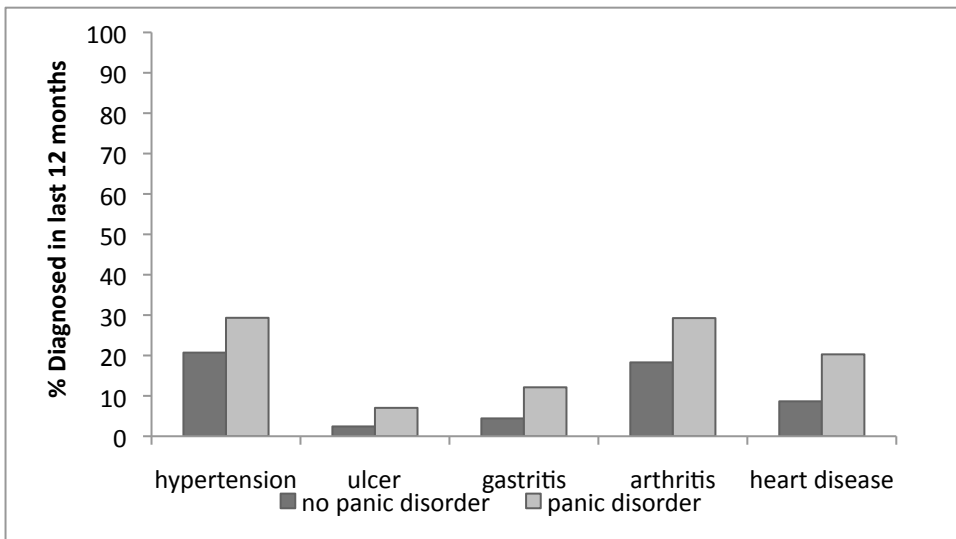
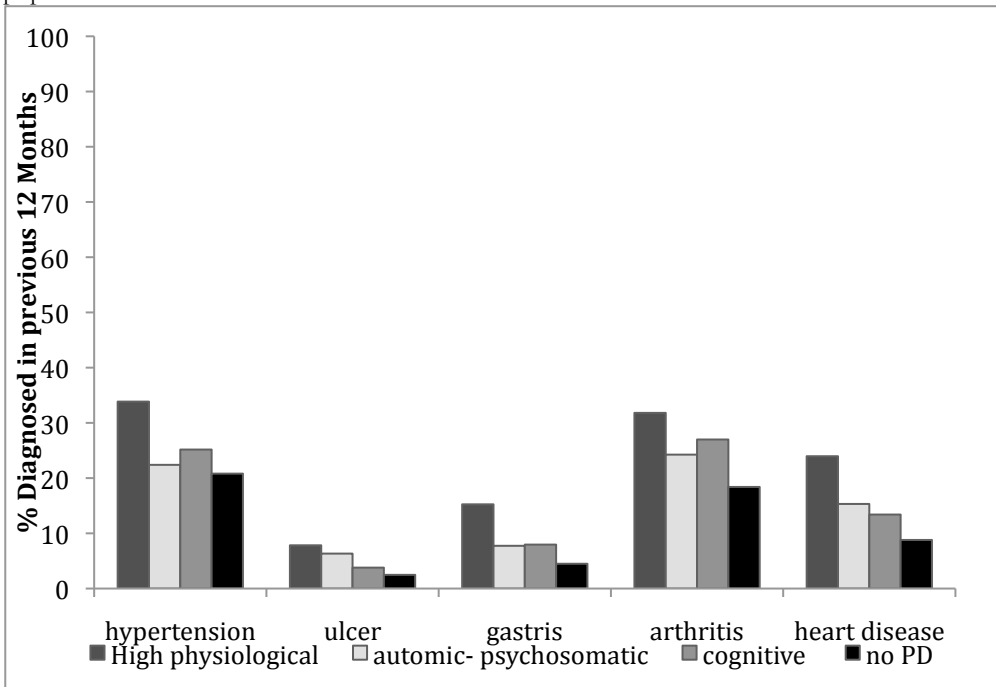
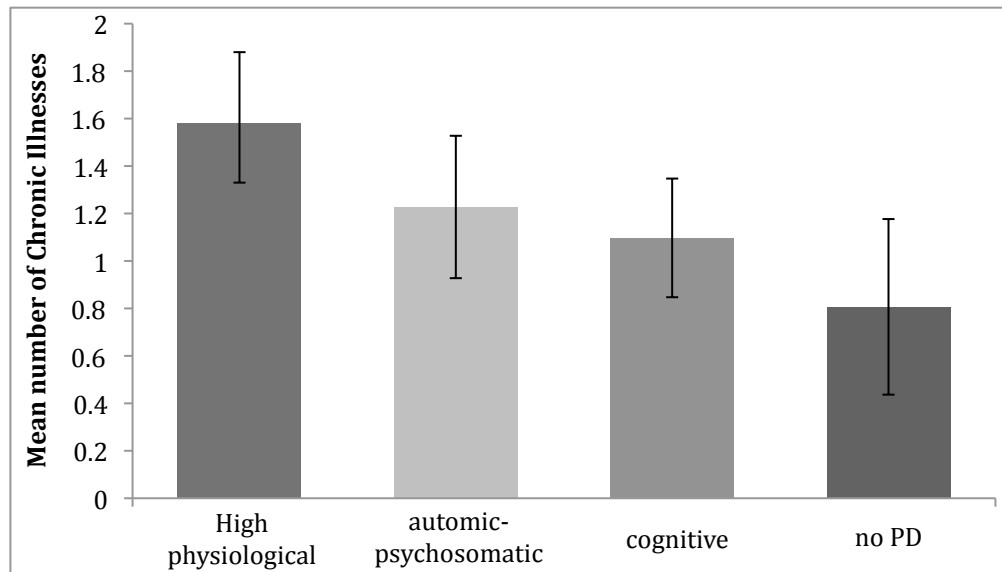


Figure 3: Rates of Chronic Illness (%) by different types of panic disorder and the non-PD population.



When chronic illnesses diagnosed in the last 12 months were summed to create a single variable, the PD group ($M = 1.49$, $SD = 1.74$) had a significantly higher mean number of chronic illnesses than the non-PD sample ($M = 0.79$, $SD = 1.34$). Post-hoc comparisons for mean number of chronic illnesses by panic type showed differences between high-physiological ($M = 1.58$), AP ($M = 1.23$) and cognitive ($M = 1.09$) groups, but were not statistically significant between AP and cognitive PD patients.

Figure 4: Duncan grouping for the sum of chronic illness by different type of PD.

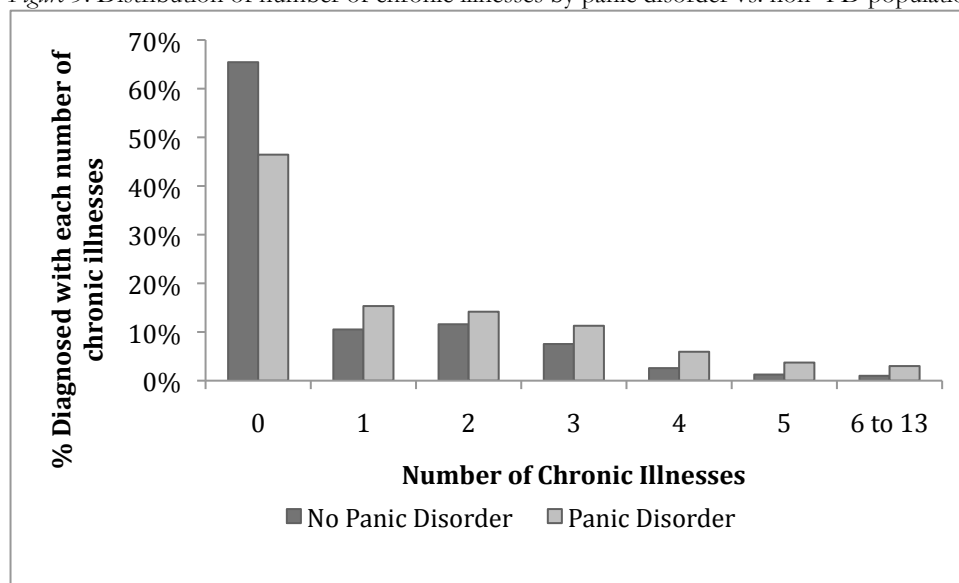


Each letter represents a statistically different mean.

Logistical regression and multiple regression tests were used to examine confounding variables and interactions. Neither depression, social phobia, sex, nicotine dependence, nor drug use (without addictive behavior) confounded any of the relationships between panic type and heart disease, high blood pressure, ulcers, gastritis, or arthritis. A BMI over 30 (considered obese) was significantly associated with all of the illnesses. Obesity, however, did not confound any of the relationships found between panic type and illness except for AP vs. cognitive type panic and stomach ulcers ($p = .59$). Age was independently and significantly associated with the diagnosis of multiple chronic illnesses. A “panic symptom sum” variable was created by summing the number of symptoms participants reported during their most severe panic attack in attempts to quantify the severity of the panic attack. The total sum of panic symptoms was also tested as a confounder through a logistic regression, in order to examine if severity of panic confounded the relationship between panic type and the chronic illnesses listed above. The association between ulcers and high-physiological vs. cognitive type ($O.R. = 1.09$, $p = .84$) and between ulcers and AP vs. cognitive panic ($O.R. = 1.29$, $p = .16$) were confounded by the total number of panic symptoms reported by the observation, but all of the remaining relationships remained the same. The sum of panic symptoms was independently and significantly associated with gastritis but none of the

other illnesses.

Figure 5: Distribution of number of chronic illnesses by panic disorder vs. non- PD population.



Discussion

These findings confirm that for a nationally representative sample, the panic disorder population is diagnosed with nearly twice as many chronic illnesses as their non-PD counterparts. These findings show that comorbidity between panic disorder and five very different chronic illnesses differs widely between the three different types of panic disorder. Though this study has some limitations, it provides a valuable argument for further research in certain areas. The presence of additional confounders, and on the differences between panic types classified through a diagnostic schematic (like used in this analysis) and classified from clustering analysis of naturally occurring or lab-induced self-report symptoms could be studied.

None of the confounding variables examined in this study: age, race, drug use, smoking, drinking, or obesity confounded the association of high-physiological type panic with chronic illness, though obesity did affect the relationship between AP and cognitive types and diagnosis with ulcers. However, additional lifestyle choices and demographics variables such as sleep habits, eating habits, and access to medical care should be considered. Similarly, NESARC did not record frequency or severity of panic attacks, which could confound the associations found in this study.

This analysis was also limited by the dearth of symptoms recorded by NESARC. The NESARC study offered only eight questions about panic symptoms, while PD patients report dozens of different sensations and symptoms during panic attacks, which could be used to further classify type of panic and would provide enough data for a more advanced statistical analysis of system clustering. Though a clustering analysis was not completed, the proportions of cardiac type PD patients and cognitive type PD patients classified in this study based on the schematic are similar to those described by earlier classifications based clustering of naturally occurring panic. In particular, Bovasso & Eaton (1999) reported that about 57% of the PD

sample could be considered to have high-physiological type panic. Most of the previous studies of panic symptom clustering were conducted under laboratory conditions without subsequent analysis of self-report symptoms. The proportion observed in this study of high-physiological participants is slightly higher than that observed in laboratory-induced panic attacks, which was usually between 30% and 50% (Meuret et al., 2006; Schmid et al., 2002). This analysis of naturally occurring symptoms is generally concurrent with analysis of laboratory induced panic symptom clustering indicating that lab-induced panic may be a valid way of categorizing types of panic. Because a schematic of diagnostic criteria would be required to diagnose different types of PD, future studies could compare grouping based on statistical analysis of clustering to that derived from a set of criteria. If laboratory induced panic is to be used to categorize panic, further research should directly compare laboratory induced panic attack symptoms to naturally occurring panic attack symptoms.

The radical difference in comorbidity with a range of physical illness among the different types of panic disorder gives further evidence for the presence of an inherent physiological distinction between types of panic disorder. The higher comorbidity between high-physiological panic type and all types of chronic illness suggests that the type of symptom (i.e. stomach pain) does not necessarily lead to an increase in comorbidity with a similar chronic illness (i.e. stomach ulcers); rather, greater severity of physical panic symptoms is associated with a higher comorbidity of physical illness in general.

More broadly, these findings suggest that PD has an inherent physiological element which may lend insight into the varied causes and treatments of PD. Furthermore, this physiological basis is either different or varies dramatically in severity in those with different types of panic disorder. As this physiological basis of PD probably holds the key to finding better treatment for those with panic disorder, the physiology and neurology of PD patients should be studied using modern advances in fMRI technology, genetics research, and analysis of body chemistry.

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