

Anxiety Sensitivity as a Mechanism in the Treatment of Panic

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Abstract. Panic disorder is a common anxiety disorder characterized by recurrent panic attacks and significant functional impairment. Anxiety sensitivity, defined as the fear of anxiety-related sensations and their perceived harmful consequences, has been proposed as a central cognitive vulnerability in panic pathology. This review integrates evidence from longitudinal and treatment studies to examine the role of anxiety sensitivity in the development and treatment of panic disorder. Using a narrative review approach, findings from student, military, and clinical samples are summarized. Across studies, higher baseline anxiety sensitivity reliably predicts greater risk of panic attacks, increased symptom severity, and a more persistent course of panic disorder, even when general negative affect or trait anxiety is controlled. In addition, treatment studies indicate that reductions in anxiety sensitivity tend to occur early in cognitive-behavioral therapy and prospectively predict subsequent improvements in panic symptoms. Together, the evidence supports anxiety sensitivity as both a vulnerability factor for panic disorder and a key mechanism of therapeutic change.

Keywords: Panic Disorder, Anxiety Sensitivity, CBT

1. Introduction

Panic attacks are short periods when a person suddenly feels very strong fear. During a panic attack, the body also reacts: the heart can beat fast, breathing can feel difficult, and people may feel dizzy, shaky, or unreal. When these attacks happen again and again, and the person worries a lot about having more attacks or changes their behavior to avoid them, this can become panic disorder (PD) [1]. Panic disorder can make it hard to work, study, or keep relationships, so it is important to understand why it starts and how it can be treated [2].

One idea that many researchers study is anxiety sensitivity (AS). Anxiety sensitivity means being afraid of the feelings of anxiety themselves. People high in anxiety sensitivity believe that body sensations of anxiety are dangerous. For example, they may think: “If my heart beats fast, I will have a heart attack,” or “If I feel strange or unreal, I am going crazy.” This concept was originally described by Reiss and colleagues [3].

Anxiety sensitivity is different from trait anxiety or negative affect. Trait anxiety means a person often feels anxious in general. Negative affect means a person often feels many negative emotions, such as sadness, anger, and fear [3]. Anxiety sensitivity is more specific: it is about how dangerous a person thinks anxiety is, not how often they feel anxious. Several studies show that anxiety

sensitivity predicts panic even when trait anxiety or negative affect are statistically controlled [2,4-6].

Researchers also found that anxiety sensitivity has different parts, often called subscales. Many papers describe three main parts [3,6]:

- Physical concerns: fear of physical sensations (e.g., “If my heart races, I will die”).
- Mental incapacitation concerns: fear of losing control or going crazy (e.g., “If I feel confused, I will lose my mind”).
- Social concerns: fear that others will see anxiety and judge the person.

Different subscales may be more important in different studies. For example, some studies suggest that physical concerns are most strongly related to panic disorder, while others indicate that mental incapacitation concerns are the strongest predictors [5,6].

Cognitive theories of panic argue that panic attacks often occur when normal body sensations are misinterpreted in a very negative way. For example, normal shortness of breath after walking fast may be interpreted as “I will suffocate and die.” This kind of thinking makes fear stronger, the body becomes even more activated, and this can create a panic attack [3]. Other authors discuss the idea of “fear of fear,” meaning that people have fear reactions to their own physical symptoms [7]. Anxiety sensitivity fits these ideas very well. It is a way to measure how strongly people expect that anxiety sensations will bring bad outcomes [3].

Over the past years, two important lines of research have appeared. First, longitudinal (follow-up) studies show that people with higher anxiety sensitivity at the start are more likely to develop panic attacks or panic disorder later [8,9]. Second, treatment studies show that when people receive cognitive-behavioral therapy (CBT) for panic disorder, their anxiety sensitivity goes down, and this decrease is related to symptom improvement [7,10]. CBT is a kind of talk therapy that helps people change their thoughts and behaviors.

The goal of this paper is to bring these findings together and answer two research questions:

- RQ1: Does baseline anxiety sensitivity predict later panic-related symptoms and the course of panic disorder?
- RQ2: During treatment for panic disorder, do reductions in anxiety sensitivity come before and relate to improvements in panic symptoms?

Based on earlier studies, it is expected that:

A. People with higher anxiety sensitivity at baseline will have a higher chance of later panic attacks and a more chronic course of panic disorder, even when trait anxiety or negative affect are controlled [2,4-6].

B. During CBT, decreases in anxiety sensitivity will be followed by decreases in panic symptoms, which would support anxiety sensitivity as a mechanism of change [7,10].

2. Method

The present paper is not a new experiment. Instead, it is a review of important studies that have already been conducted. The focus is on studies that:

A. Use adults as research participants (for example, college students, military cadets, or adults with panic disorder).

B. Measure anxiety sensitivity with a standard questionnaire, usually the Anxiety Sensitivity Index (ASI), originally developed by Reiss and colleagues (as cited in [9]) and widely used in later work [8,9].

C. Examine panic-related outcomes:

- For follow-up studies: panic attacks, panic symptoms, or panic disorder diagnosis or course measured at a later time.
- For treatment studies: repeated measures of both anxiety sensitivity and panic symptoms during therapy.

For RQ1 (prediction over time), key studies include two military basic training studies by Schmidt and colleagues [4,5], one-year and three-year student follow-ups [6,8], a study by Plehn and Peterson [9], and a clinical follow-up of panic disorder patients by Pérez Benítez and colleagues [2].

For RQ2 (change during treatment), important work comes from Smits et al. [7], who studied fear-of-fear during CBT, and Gallagher et al. [10], who examined both anxiety sensitivity and self-efficacy during CBT for panic disorder.

Because the studies differ in many ways (samples, designs, and measures), their numerical results are not combined into a single summary statistic. Instead, the main patterns of findings are described in words, and attention is given to whether the results are consistent across studies.

3. Results

3.1. Overview of the studies

The follow-up studies together include several thousand people. For example, Schmidt et al. [4,5] studied more than 1,000 military cadets during a five-week basic training period. Li and Zinbarg [8], Plehn and Peterson [9], and Jurin and Biglbauer [6] studied college students over one to three years. Pérez Benítez et al. [2] followed 136 adults with panic disorder for one year and measured their course of illness.

All these studies used the ASI or related scales to measure anxiety sensitivity. Some reported only a total score; others also examined subscales such as physical concerns or mental incapacitation concerns. Panic outcomes included:

- Whether people had a spontaneous panic attack during follow-up [4,5].
- Whether they met self-reported DSM criteria for panic disorder symptoms [6].
- How much time they spent in a panic episode during a year [2].

In the treatment studies, Smits et al [7]. studied 90 people receiving CBT for panic disorder and 40 people on a waiting list. They measured fear-of-fear (a concept very close to anxiety sensitivity) and different panic-related outcomes. Gallagher et al. [10] examined 361 panic disorder patients receiving an 11-session CBT program and measured anxiety sensitivity, self-efficacy, and panic symptoms at every session.

3.2. RQ1: does baseline anxiety sensitivity predict later panic

3.2.1. Military basic training studies

Schmidt et al. [4] measured ASI scores in military cadets before they started basic training and then observed who had spontaneous panic attacks over the five weeks. Cadets with higher anxiety sensitivity at the beginning were more likely to have panic attacks later, even when past panic attacks and trait anxiety were controlled. In another group of cadets, Schmidt et al. [5] again found that anxiety sensitivity predicted spontaneous panic attacks. In this second study, ASI subscales were also examined, and mental incapacitation concerns emerged as the strongest predictor of later panic.

3.2.2. Student follow-up studies

Li and Zinbarg [8] followed college students for one year. At baseline, they measured anxiety sensitivity and other traits. One year later, they assessed panic attacks. Students who had higher AS at baseline, especially higher mental incapacitation concerns, were more likely to have panic attacks at follow-up, even when negative affect and previous panic history were taken into account. They also examined whether having panic attacks would later increase anxiety sensitivity (“scar effect”) and found some, but less consistent, support for this idea.

Jurin and Biglbauer [6] followed students for three years and used DSM-5 criteria in a self-report form to measure panic disorder symptoms. Baseline AS predicted later panic disorder symptoms even when trait anxiety was controlled, and the physical concerns subscale was the only significant predictor. An ASI score of about 25 was suggested as a possible cut-off to identify people at higher risk, although the accuracy was only moderate.

Plehn and Peterson [9] found that anxiety sensitivity predicted later panic symptoms and panic attacks, but its ability to predict full panic disorder diagnosis was weaker. This pattern suggests that AS may be better at predicting symptom levels than strict diagnostic status in some cases.

3.2.3. Clinical course of panic disorder

Pérez Benítez et al. [2] studied adults who already had panic disorder and followed them for one year. Their aim was to determine whether anxiety sensitivity and negative affect could predict how much time patients would spend in a panic episode during that year. When baseline panic severity, depression, other anxiety disorders, and treatment were controlled, only anxiety sensitivity (not negative affect) significantly predicted the amount of time spent in panic. Again, the physical concerns subscale was especially important.

3.2.4. Summary of RQ1

Overall, the evidence for RQ1 is strong. Across military, student, and clinical samples, higher anxiety sensitivity at baseline predicts worse panic-related outcomes later. This includes a higher risk of having panic attacks, higher levels of panic disorder symptoms, and more time spent in panic episodes. These effects often remain even when trait anxiety or negative affect are included in the analyses [2,4-6,8,9]. There is some variation in which AS subscale is strongest (mental vs. physical concerns), and at least one study found weaker prediction for full diagnosis, but the main pattern supports anxiety sensitivity as a risk factor.

3.3. RQ2: do reductions in anxiety sensitivity predict treatment improvement

3.3.1. Fear-of-fear as a mediator in CBT

Smits et al. [7] focused on fear-of-fear, which is very similar to anxiety sensitivity. CBT was provided to patients with panic disorder and compared with a waiting-list condition. CBT reduced fear-of-fear and also improved panic-related outcomes such as panic frequency, agoraphobia, anxiety, and global disability. Mediation tests showed that changes in fear-of-fear explained a large part of the treatment effect. For global disability, fear-of-fear fully mediated the effect of CBT; for other outcomes, it partially mediated the effect. These findings suggest that helping patients become less afraid of their own symptoms is one way in which CBT works.

3.3.2. Anxiety sensitivity and self-efficacy in CBT

Gallagher et al. [10] examined in more detail how CBT changes people over time. Anxiety sensitivity, panic-related self-efficacy (the belief “I can handle my panic symptoms”), and panic symptoms were measured at each of 11 CBT sessions. Anxiety sensitivity usually went down early in treatment, whereas self-efficacy increased more slowly and later in the course of therapy. Using advanced statistical models, the authors tested which changes came first. Session-to-session decreases in anxiety sensitivity and increases in self-efficacy both predicted later decreases in panic symptoms, even when both variables were included in the same model. Importantly, changes in anxiety sensitivity tended to precede changes in symptoms, which supports the idea that anxiety sensitivity is a mechanism of change rather than simply a result of feeling better.

3.3.3. Summary of RQ2

The treatment studies support RQ2. When anxiety sensitivity or fear-of-fear decreases during CBT, panic symptoms later decrease as well [7,10]. In at least one study, the timing of these changes indicates that reductions in anxiety sensitivity occur before reductions in symptoms [10]. This pattern is consistent with the view that CBT works partly by teaching patients that their body sensations are not as dangerous as they think, and by helping them experience these sensations in a safe way.

4. Discussion

The present review aimed to answer two questions about anxiety sensitivity and panic. For RQ1, the follow-up studies show that people with higher anxiety sensitivity at the beginning are more likely to develop panic attacks, have more panic disorder symptoms, or spend more time in panic episodes later on [2,4-6,8,9]. For RQ2, the treatment studies show that when CBT reduces anxiety sensitivity or fear-of-fear, panic symptoms also improve, and in some analyses, the change in anxiety sensitivity appears to occur first [7,10].

Together, these findings suggest that anxiety sensitivity is both a vulnerability factor for panic and a mechanism of change in therapy. In other words, anxiety sensitivity seems to play a role in both the onset and the improvement of panic problems.

These results support cognitive models of panic [3]. If people believe that normal body sensations are very dangerous, they are more likely to react with strong fear, which can develop into a panic attack [3]. Anxiety sensitivity is a clear way to measure this belief. The findings also show that anxiety sensitivity is not simply the same as being a “nervous person” in general. Even after trait anxiety or negative affect are taken into account, anxiety sensitivity still predicts panic outcomes [2,4,5]. This means that anxiety sensitivity provides additional, useful information.

From a clinical point of view, these findings have several implications. First, screening for anxiety sensitivity in schools, clinics, or other settings might help identify people who are at higher risk of panic problems. For example, a high ASI score may suggest that a person could benefit from early education or preventive interventions [6]. Second, in treatment, therapists may wish to focus directly on anxiety sensitivity. CBT for panic already includes many helpful components, such as psychoeducation about anxiety, breathing exercises, cognitive restructuring, and interoceptive exposure. These components help patients learn that body sensations are uncomfortable but not truly dangerous, which should reduce anxiety sensitivity and fear-of-fear [7,10]. Third, measuring anxiety

sensitivity several times during therapy could provide useful feedback about whether the intervention is effectively targeting this key mechanism.

5. Conclusion

In conclusion, the available evidence suggests that anxiety sensitivity is an important and changeable factor in panic. High anxiety sensitivity makes it more likely that a person will develop panic attacks or panic disorder, and lowering anxiety sensitivity appears to be one pathway through which CBT helps people improve. Understanding, measuring, and targeting anxiety sensitivity may help both to prevent panic problems and to enhance treatment for those who already suffer from them.

The existing studies, however, have several limitations. Most of them use self-report questionnaires for both anxiety sensitivity and panic symptoms. People may not always report their feelings and experiences accurately. In addition, many samples are young adults (students or cadets) from Western countries, so it is not clear whether the findings generalize to other cultures, older adults, or individuals with multiple mental health problems. Different studies also use different definitions and measures of panic, which makes it difficult to compare exact effect sizes. Finally, the present paper used a narrative approach rather than a full statistical meta-analysis, and therefore cannot provide a single precise estimate of how strong the effect of anxiety sensitivity is.

Future research could build on this work in several ways. Long-term studies with more measurement time points could better test how anxiety sensitivity, stress, and panic influence one another over time. It would also be valuable to include behavioral and physiological measures, such as bodily reactions to a CO₂ challenge, to go beyond self-report. More work is needed in diverse cultural groups, because beliefs about body sensations and mental illness can differ across cultures. Finally, future studies should compare anxiety sensitivity with other possible mechanisms, such as safety behaviors, attention to threat, or general self-efficacy, in order to build a more complete model of panic disorder.

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