CHAPTER 11

Generalized Anxiety and Panic Disorder

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INTRODUCTION

Anxiety—formally ''discovered'' in 1844 by Sören Kierkegaard in the book titled *Begrebet angest,* translated into English in 1944 as *The Concept of Dread*—has undergone a series of changes in conceptions (McReynolds, 1985). Anxiety was thought to be a result of having the freedom to choose as well as having an apprehension associated with seeking the unknown (Goodwin, 1986; McReynolds 1985). Since then, the awareness of and knowledge about anxiety, including definition, symptoms, treatments, and etiology, have significantly increased.

Concepts such as anxiety, apprehension, worry, nervousness, panic, fright, and fear have caused confusion and misunderstandings, and although some believe that these constructs interact with each other (Grey, 1991), others believe that these constructs are certainly separable (Craske, 1999; Perkins, Kemp, & Corr, 2007). Research has shown that there are basic emotions, those that are hardwired or innate, and emotions that are a product of cognitions and associations of the basic emotions (Craske, 1999). In a study conducted by Power and Tarsia (2007), results showed that five independent basic emotions that include sadness, anger, disgust, and happiness lead to more complex emotions such as irritation, annoyance, nostalgia, love, and anxiety. Precisely, fear was found to be the basic emotion of anxiety, nervousness, tension, and worry. Perkins and colleagues (2007) found that fear was not only distinguishable from anxiety, but also accounted for a significant amount of unique discrepancies in applied performance. Miceli and Castelfranchi (2005) stated that fear and anxiety are similar in that they both share concern for threat; however, anxiety involves an indefinite threat because there is no specific threat or cue producing the anxiety, whereas fear indicates a specific threat or injury. Craske (1999) classified fear as one of the basic emotions, a hardwired biological event, whereas anxiety characterizes those cognitive emotions that represent cognitive processes that are less imbedded biologically and vary depending on life experiences. Craske et al. (2009) defined anxiety as a future-oriented mood state that prepares the individual for an impending adverse event, whereas fear is an alarm response to a present or an apparent event.

Considered a universal feeling, anxiety commonly suggests an experience of varying blends of uncertainties, agitation, and dread with the individual experiencing cardiovascular, gastrointestinal, muscular, and respiratory symptoms (Zal, 1990). Anxiety is a nervous and

reactions of patients with GAD and healthy controls to photographs of threatening, neutral, and happy faces. Attentional bias was assessed using a dot probe task. Compared to controls, anxious participants showed greater vigilance for threatening faces, providing evidence for an attentional bias in GAD. Studies using the emotional Stroop task have shown that generally anxious participants are considerably slower at naming threat-related words, providing more evidence for an attentional bias (Mathews & MacLeod, 1985; Mogg, Mathews, & Weinman, 1989). More evidence was provided in another study with patients with GAD in which the dot probe task was used. The authors concluded that anxious participants shifted their attention toward threatening stimuli in the environment, whereas normal participants did not (McLeod et al., 1986). Mogg and Bradley (2005) reviewed the literature on attentional bias and GAD and they concluded that there is evidence to suggest that there is an automatic attentional bias in GAD for a wide range of negative external stimuli and that this bias can sometimes operate subconsciously.

Neuropsychological deficits produced by GAD have also been seen in children. Micco and colleagues (2009) investigated executive functioning in children with anxiety disorders (GAD, SOOC, SEP) and depression. Participants were 6–17 years old and were assessed using structured interviews and neuropsychological tests. Results indicated participants with GAD showed impairment in verbal working memory as measured by the California Verbal Learning Test Child Edition (CVLT-C), whereas participants with social phobia displayed deficits in sustained attention as measured by Seidman Continuous Performance Test (CPT-omissions). Children with anxiety disorders showed no impairment in set shifting (Micco et al., 2009). Waters and Valvoi (2008) used an emotional go/no go task to assess attentional bias in children from 8–12 years with GAD, social phobia, specific anxiety disorder , and separation anxiety disorder. Participants were presented with happy, angry, or neutral faces. Anxious girls and boys were slower at responding to angry faces on no go trials. In a similar study with children (7–12 years), GAD attention bias was assessed using an emotional dot probe task. The task consisted of pairs of visual face stimuli (happy, angry). Results showed that children with severe GAD displayed an attentional bias for angry and happy faces. Children with milder GAD and controls did not show attentional bias (Waters, Mogg, Bradley, & Pine, 2008). In another study which investigated differences in cognitive bias across emotional disorders, children and adolescents (ages 7–18 years) with GAD, PTSD, and clinical depression were tested using measures of attention, memory, and prospective cognition that had threat- and depression-related stimuli. Some of the specific measures included were the British Picture Vocabulary Scale, Wechsler Objective Reading Dimensions, the Attentional Dot Probe Task, the Modified Stroop Task, and a memory task. Significant results were found for the dot probe task, with GAD patients showing a selective attention bias for threat-related stimuli, relative to depression-related material, compared to the depressed group. No differences were found between groups in vocabulary and reading (Dalgleish et al., 2003). Vasa et al. (2007) found no deficits in memory in children with and without GAD.

There is some evidence for GAD producing neuropsychological problems in older adults. For instance, Mantella and colleagues (2007) examined cognitive functioning in elderly patients with GAD. Participants with GAD, major depression, and normal controls were compared using the Mattis Dementia Rating Scale. Naming, executive ability, and memory were also assessed. When compared to controls, GAD patients showed impairment in short-term and delayed memory and difficulties in set shifting (attention) as measured by the trail-making test. More research is needed in order to elucidate differences in neuropsychological deficits in adults, children, and older adults. Preliminary findings suggest that similar deficits are present across the age groups.

NEUROPSYCHOLOGICAL DEFICITS IN PANIC DISORDER (PD)

Airaksinen, Larsson, and Forsell (2007) conducted a study to assess the neuropsychological functioning of individuals diagnosed with anxiety disorders compared to healthy controls. The sample consisted of participants diagnosed with PD, social phobia, GAD, OCD, specific phobia, and healthy controls. Episodic memory (remembering neutral words), verbal fluency

in individuals with PD as well as in individuals with MDD. However, it has been suggested that health-related workers (e.g., physicians, psychologists, neuropsychologists) should address other symptoms beyond anxiety, specifically, affective symptoms related to depression and aggression (Overbeek et al., 2005). Furthermore, general anxiety symptoms might also be comorbid with PD, which raises the risk of an erroneous diagnosis. For example, Sheehan (2004) investigated the case of a 37-year-old married Hispanic female who presented with a history of panic attacks, PD, and four attempts of suicide within 2 years. The challenge indicated by Sheenan (2004) is that anxiety symptoms tend to be comorbid with other Axis I disorders in which anxiety symptoms appear in a very prominent manner, including PD. Thus, distinguishing between PD and anxiety characteristics as either anxiety symptoms or anxiety disorders is a difficult task when making a diagnosis.

Anxiety symptoms have been reported as a result of brain surgery, although it has been challenging to determine whether the anxiety symptoms are a result of the surgery or whether they are comorbid with other disorders. Thus, learning which brain networks contribute to the potential anxiety symptoms can help to prevent and detect risky conditions. For instance, Silton and colleagues (2011) indicated that performance impairments in dACC activity of anxious individuals during conflict resolution suffer attention disruption due to worries or ruminations. Furthermore, it has been found that children and adolescents with repaired arteriovenous malformations displayed adequate emotional functioning, which might be attributed to characteristics of defensiveness and worry (O'Toole, Borden, & Miller, 2006). These findings (O'Toole et al., 2006; Silton et al., 2011) are useful because they allow us to gain a better understanding of how surgical brain procedures can affect a displayed anxiety condition. In addition, anxiety symptoms have been detected after individuals suffered a traumatic brain injury, but anxiety symptoms before brain injury also exist (Meares et al., 2011). These findings can be used to prepare treatment strategies to work with anxiety symptoms with individuals who suffered from brain lesions (Meares et al., O'Toole et al., 2006; Silton et al., 2011).

Testing Anxiety

Performance/evaluation anxiety can influence neuropsychological test scores considerably, resulting in mistaken diagnoses (Straus, Sherman, & Spreen, 2006). There are studies that consistently show highly test-anxious participants perform w than their nontest-anxious counterparts across a variety of outcome measures (Chappell et al., 2005; Everson , Millap, & Rodriguez, 1991). In neuropsychological tests used with both children and adults, highly anxious individuals tend to perform worse. There is evidence for poorer performance in the finger tapping test (Chavez, Trautt, Brandon, & Steyart, 1893), digit span (Firetto, 1971), block design, verbal fluency (Buckelew & Hannay, 1986), the Stroop Test (Batchelor, Harvey, & Bryant, 1995), the Wechsler Memory Scales (Cannon, 1999), and scales of intelligence (Oostdam & Meijer, 2003). Test anxiety did not affect performance on the trail-making test and digit symbol test (Chavez et al., 1893). Because test anxiety has a negative effect on the performance of neuropsychological tests, it can lead to incorrect diagnosis or irrelevant inferences from neuropsychological scores (Tramontana, Hooper, Watts-English, Ellison, & Bethea, 2009).

CONTEMPORARY MODES OF TREATMENT

The ai, of treatments for anxiety disorder are to help an individual with his or her worriedness, anticipatory anxiety, and fear, as well as the physiological, behavioral, and cognitive symptoms that are associated with the anxiety (Craske, 1999). Although anxiety disorders are treatable and several forms of treatment are used to treat anxiety, only one-third of the population receives some sort of treatment (''Treatment,'' 2011). With treatment being more complicated when the person has other conditions such as depression or substance abuse, attainment of treatment success ranges from a few weeks to more than a year (''Treatment,'' 2011). Thus, treatment for individuals with anxiety is often individualized. Current considerations for the treatment for anxiety disorders include but are not limited to behavioral treatments, system-

nia, agitation and irritability, headaches, and difficulty concentrating are often reported (Rygh & Sanderson, 2004; Gosselin et al., 2006). Other side effects of the azapirones and the antidepressants include but are not limited to headaches, nausea, dizziness, tension, somnolence and insomnia, hypertension, decreased libido, dry mouth, constipation, urinary hesitance, and weight gain.

Benzodiazepines work mainly by modulating the effects of GABA. These medications increase GABA's inhibitory effects, resulting in an overall decrease in physiological and psychological arousal (Costa , 1979). Azapirones (buspirone), SSRIs, SSNRIs , tricyclics, and MAOIs increase the levels of serotonin in the brain, regulating and restoring the normal levels of the neurotransmitter and how it acts on different neural structures (Wehrenberg & Prinz, 2007; Van Ameringen, 2010). To decrease the release of norepinephrine, beta blockers and alpha 2 autoreceptor agonists are used (Wehrenberg & Prinz, 2007).

Treatment of PD

To treat PD, the individual has to have an understanding of the fears, the consequences, and the anxiety or impending doom associated with the fears (Rosenbaum & Pollack, 1998). In order for treatment to be effective, it has to target fears of bodily sensations (Craske, 1999; Rosenbaum & Pollack, 1998). Because CBT helps the individual become aware and develop effective problem-solving skills, it has become increasingly effective in treating PD. Rosenbaum and Pollack (1998) stated that to achieve wanted results, CBT needs to include informing the individual about the disorder, interoceptive and in vivo exposure, cognitive restructuring, and anxiety management skills. With the aforesaid method and the use of self-help books and patient manuals, panic-free outcome findings of 74%–85% have been reported in short-term treatment, whereas good maintenance of CBT has produced 1–2 years of panic-free symptoms (Rosenbaum & Pollack, 1998).

CBT activates the PFC executive functions (decision-making, inhibition of behavior, making meaning of experience) in order to control or modulate the limbic system arousal. Using the executive functions, the patient can engage in calming techniques (e.g., relaxation, breathing) to change the meaning of the symptoms eradicating irrational beliefs and superstitions about them. The result is a desensitizing of the emotional limbic system reducing the frequency of panic attacks (Wehrenberg & Prinz, 2007). For example, a patient can decide to engage in diaphragmatic breathing; this changes the rate or respiration, which turns the parasympathetic nervous system ; this lowers heart rate and blood pressure and raises blood flow, which makes the patient feel calm and relaxed (Wehrenberg & Prinz, 2007). According to Gorman and colleagues (2000), CBT may enhance the ability to handle phobic avoidance and catastrophic thinking (cortical processes), which decreases panic attacks. Psychotherapy can be responsible for improving the ability of the PFC to better regulate the autonomic behavior and response of the amygdala (LeDoux, 1996).

Like GAD, PD is treated with medications. In addition to antidepressants, tricyclic antidepressants, and benzodiazepines, monoamine oxidase inhibitors (MAOIs) are also prescribed to individuals affected by PD (Craske, 1999; Rosenbaum & Pollack, 1998). The antidepressants have proven to be effective for comorbid disorders and, as well, have demonstrated a low potential for abuse and safety in overdose. The benzodiazepines have the highest potential for abuse among abuse-prone individuals, but they also have a rapid onset of action and are the highest efficacious psychoactive drug when treating PD (Rosenbaum & Pollack, 1998). SSRIs, SNRIs, atypical SSRIs, tricyclics, and MAOIs are used in order to raise serotonin levels and create balance with norepinephrine. Beta blockers and alpha 2 autoreceptor agonists decrease the release of norepinephrine (Wehrenberg & Prinz, 2007). Benzodiazepines raise the levels of GABA in the PFC, which reduces panic symptoms. Specifically, the benzodiazepines' improvement of the inhibitory effects of the PFC serves to correct the imbalance between GABA and glutamate (Shrestha, Natarajan, & Coplan, 2010). Additionally, the PFC can have an inhibitory effect on the amygdala and whole fear network (Grace & Rosenkranz, 2002).