Is It Asthma or a Panic Attack? A Case Study of Asthma and Anxiety in an Adolescent Male

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Because respiratory complications arising from common anxiety medications may contraindicate pharmacological intervention in patients with asthma, behavioral intervention is a vital component of treating anxiety successfully in these patients. Previous research suggests behavioral treatment may reduce panic symptoms and asthma medication use while subsequently increasing quality of life in patients with asthma and panic disorder; however, research assessing treatment outcomes of this population remains limited. A 16-year-old male, “Mark,” was referred for psychological services regarding concerns about a high frequency of asthma attacks and anxiety surrounding these attacks. Mark met diagnostic criteria for the Diagnostic and Statistical Manual for Mental Disorders-Fourth Edition (DSM-IV) panic disorder without agoraphobia, mental disorder (panic disorder) affecting asthma, and generalized anxiety disorder. Treatment consisted of psychoeducation, progressive muscle relaxation, guided imagery, cognitive restructuring, problem-solving training, interoceptive exposure, and relapse prevention training. At treatment termination and 2-year follow-up, Mark displayed clinically significant reductions in depressive and anxious symptoms, reported no further occurrences of panic attacks, and no longer required routine psychotropic or asthmatic medications. Therefore, Mark’s posttreatment diagnosis was panic disorder without agoraphobia, in full remission; he no longer met criteria for diagnoses of mental disorder (panic disorder) affecting asthma or generalized anxiety disorder. These findings support the claim that behavioral treatment effectively reduces anxiety and asthma symptoms in patients with panic disorder and asthma, and suggests that targeting psychological concerns can significantly impact physical health.

Keywords: asthma, panic disorder, adolescent, behavioral treatments

Asthma is the most frequent pediatric chronic illness in the United States, affecting 9.5% of youth (Centers for Disease Control, 2011). The presence of asthma is particularly predictive of later onset of panic disorder (Carr, 1998; Hasler et al., 2005; Zandbergen et al., 1991), with studies illustrating comorbidities as large as 24% (Feldman, Giardino, & Lehrer, 2000). Such studies often have been limited by varying definitions and diagnoses of asthma, but a large-scale (N = 4181 adults) German community study (Goodwin, Jacobi, & Thefeld, 2003) found that current and lifetime levels of more severe, physician-diagnosed asthma were associated with a significantly increased likelihood of developing panic attacks and panic disorder (4–5% of the sample). Katon and colleagues (2007) demonstrated that adolescents with asthma were nearly twice as likely as a nonasthmatic control group to meet Diagnostic and Statistical Manual for Mental Disorders-Fourth Edition (DSM-IV) criteria for one...
or more anxiety or depressive disorders, but found no differences in the prevalence of anxiety disorders by asthma severity.

Many of the physical (e.g., chest tightness, choking) and psychological (e.g., panic, avoidance of attack-cueing situations) symptoms associated with asthma overlap with symptoms of panic disorder. This comorbidity between asthma and panic disorder may be because of classically conditioned fear acquisition after a severe asthma episode, as well as physiological reactions to asthma medications that trigger the sympathetic nervous system (Carr, 1998). In training patients to differentiate between the onset of a panic attack from that of an asthma attack, previous research has illustrated that the latter is most uniquely identified by symptoms of wheezing, mucous congestion, and coughing (Schmaling & Bell, 1997). Lacking objective physiological measurement of a panic attack, rapid onset and brief duration of symptoms may also help differentiate it from an asthma episode (Feldman et al., 2000).

While cognitive–behavioral theoretical models have been proposed to explain the comorbidity between asthma and panic disorder (e.g., Park, Sawyer, & Glaun, 1996), few studies or articles have emerged examining the processes and outcomes of treating panic disorder and other anxiety disorders within asthmatic populations. One case series of three adults with comorbid asthma and panic disorder demonstrated decreased asthma symptomology and anxiety after psychotherapy, but provided minimal treatment details (i.e., limited to descriptions of medications with little information about co-occurring psychotherapy; Bernstein, Sheridan, & Patterson, 1991). Feldman, Giardino, and Lehrer (2000) further noted this gap in the literature whereas proposing an integrative behavioral treatment consisting of psychoeducation, progressive muscle relaxation (PMR), peak flow monitoring of air expiration, heart rate biofeedback, and cognitive restructuring of physical symptoms indicative of a panic attack. A subsequent, noncontrolled study of two manualized treatment protocols (8 vs. 14 sessions in duration), each consisting of varying degrees of symptom education, PMR, cognitive restructuring, and exposure therapy, proved effective in reducing panic symptoms and albuterol (i.e., a bronchodilator rescue medication for asthma) use as well as increasing asthma-related quality of life in adult asthma patients diagnosed with panic disorder (Lehrer et al., 2008). Moreover, Ross and colleagues (2005) demonstrated reductions in frequency of panic attacks, decreased asthma symptoms, and improved asthma-related quality of life among adults who participated in a cognitive–behavioral treatment plus asthma education intervention compared to wait-list control participants.

Overall, these studies indicate the importance and benefits of utilizing multicomponent, behavioral interventions (e.g., Lehrer et al., 2008) in treating comorbid asthma and panic disorder. However, there is still limited research examining treatment outcomes in this population. In addition, no studies to date have examined the effectiveness of such behavioral interventions among adolescents with comorbid asthma and panic disorder. The following case study illustrates in detail the implementation of a multimodal treatment approach (i.e., relaxation, cognitive restructuring, and symptom education), largely based off Feldman, Giardino, and Lehrer’s (2000) proposed treatment guidelines, to prevent and address panic symptoms in an adolescent with asthma.

### Method

#### Referral

“Mark,” a 16-year-old White male, was referred to our university-based psychology clinic by a pediatric allergist for evaluation and treatment of possible anxiety surrounding his asthma. Mark attended the intake session with his biological mother, “Mrs. Sims,” and his maternal grandmother. At the time of the intake, Mark resided with his biological parents and his 13-year-old brother in a rural town in the eastern United States. Both his parents work outside of the home.

#### Case Description

**Presenting concerns.** Mark reported a high frequency of “asthma attacks” and anxiety surrounding these attacks. From Mark’s description, however, some of these attacks may have been panic attacks in actuality. Mark typically had an asthma attack every 2 weeks. Mrs. Sims stated that Mark has had asthma attacks and anxiety symptoms since he was in fourth grade,
when he was diagnosed with exercise-induced asthma. In ninth grade, he began to notice that his asthma attacks were not always exercise-induced. For example, he often had asthma attacks in an honors music class, sometimes surrounding breathing while singing, and when feeling stressed in general. According to Mark, almost all of his asthma attacks were at school; only one occurred at home. During attacks at school, Mark typically breathed deeply through a paper bag or used albuterol. It was not unusual for Mark to seek care at the emergency room for his asthma episodes; however, data on frequency and specific dates of emergency room visits are not available. He stated that paint fumes, heat, dehydration, and emotional arousal (e.g., anxiety and anger) were triggers of his asthma attacks. He frequently experienced hyperventilation, chest tightness, feelings of suffocation, physical shakiness and trembling, sweaty palms, and tachycardia during asthma attacks. Fear of dying also accompanied many of these attacks. When his episodes were at their worst, Mark occasionally “blacked out” and reportedly experienced memory loss. Mark stated that his asthma caused some degree of stress and anxiety for him. For his asthma, Mark was prescribed two tablets of Accolate daily, Serevent inhaler twice a day, and albuterol inhaler as needed to treat asthma exacerbations.

In the year before the intake, many of Mark’s asthma attacks reportedly occurred when he was feeling particularly stressed, anxious, or overwhelmed. However, he never indicated awareness that some of his asthma exacerbations may have been panic attacks. Mark indicated feeling some degree of stress and anxiety on a daily basis (minus some weekend days) for over a year. When asked to rate his stress on a scale from 1 to 10, with 1 being "no stress" and 10 being “maximum stress,” Mark indicated feeling a stress level of “7” on a typical day, “6” on a good day, and “9” or “10” on a bad day. Mark explained that his anxiety presented itself primarily in the form of edginess, physical shakiness, and worrisome thoughts (e.g., about school performance). All of these symptoms were difficult for Mark to control. In conjunction with anxiety, Mark described sleep disturbance (approximately three times per week) and chronic fatigue. In contrast, he denied appetite disturbance. At the time of the intake, Mark was taking 10 mg of Paxil per day for his anxiety, which reportedly had been somewhat effective, as well as Ativan on an as-needed basis; his primary care physician prescribed both medications. It also was reported that physicians often treated Mark with Ativan when he presented to the emergency room with asthma symptoms. However, Mark was not aware that Ativan was an anxiolytic medication and did not seem to understand that the emergency room physicians were prescribing this medication to treat anxiety symptoms rather than asthma symptoms. In addition, information on the frequency of use and other specific situations in which Mark took Ativan were unknown.

**Developmental and behavioral history.** Mrs. Sims reported that Mark was born 1 month premature and was hospitalized because of breathing problems for 1 month postbirth. There were no reported delays in Mark’s early development. He had no behavior problems as a child and discipline was reported to be consistent and appropriate. Nothing traumatic happened to Mark, outside of the death of his paternal grandmother and his aunt, the latter to suicide.

Mrs. Sims reported an absence of parent-adolescent conflict. She said that the family was close. Mark’s grandmother reported (and Mark confirmed) that he got frustrated when others did what Mark believed to be an inadequate, dishonest, or unfair job. He reportedly had high standards for his and others’ behavior in all areas of his life (e.g., school, work). Mark put himself in positions where high standards were expected (e.g., volunteering as an emergency aid for an ambulance service) and was never satisfied if he performed short of the best of his abilities. This sense of perfectionism apparently created significant stress for Mark.

**Medical and psychiatric history.** Mark had a history of asthma and allergies. Although Mark reported having numerous emergency room visits for asthma exacerbations, he reportedly never had been hospitalized for them. For a description of Mark’s asthma symptoms at intake, see presenting concerns. Mark had no previous history of psychological or psychiatric services. No one in his family had been diagnosed with a psychological disorder.

**Academic, social, and recreational history.** Mark was in the 10th grade at the time of the intake. He indicated enjoying school, but also
stated that school made him feel stressed at times. He reported no grade failures and an average course grade of A/B+. Mark indicated no history of special education, suspensions, truancy, or homework difficulties. He explained that he made most of his friends at school and they tended to be older. He had no history of involvement in romantic relationships. Mark partook in many extracurricular activities, most with leadership roles. He said that he used to play sports (e.g., basketball) but discontinued them because of a loss of interest, not as a result of exercise-induced asthma.

**Behavioral observations.** Mark was appropriately dressed and well groomed. He appeared taller and somewhat older than an average 10th grader. His verbal behavior was mature and his affect was appropriate. His speech was linear and coherent. His thought process did not suggest any psychotic content. Mark answered all questions directly and demonstrated good eye contact. Mutual respect and open and positive communication were observed among family members. Rapport with Mark and his family was established easily.

**Pretreatment Assessment**

On the Beck Anxiety Inventory (BAI; Beck & Steer, 1990), a self-report screening instrument for anxiety symptoms with particular sensitivity to physiological components of anxiety, Mark obtained a score of 15 indicating a mild to moderate level of anxiety. Some symptoms that Mark indicated being “moderately” bothered by included heart pounding or racing, inability to relax, and hand trembling.

The Spielberger State-Trait Anxiety Index (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is a self-report questionnaire comprised of two anxiety scales, one designed to examine trait anxiety symptoms (i.e., in general) and one to measure anxiety symptoms at a particular moment in time (i.e., state). On the trait scale, Mark obtained a raw score of 51 ($T$ score = 60, 87th percentile), which is slightly above the average range compared with a same-aged, male normative group. Because the therapists were interested in monitoring Mark’s perspective on his anxiety symptoms during his asthma attacks throughout treatment, he rated his symptoms as he would imagine them to be during an asthma attack on the state measure. He obtained a raw score of 64; however, because the instructions of this measure were altered, his score was not compared with normative data. Item stems on this scale to which Mark responded “very much so” included “jittery,” “nervous,” and “tense.” It should be noted, however, that on the state scale, Mark’s “above average” ranking was derived from comparing his score to same-aged males in the normative sample who rated their anxiety at the moment, not in the state of an asthma attack.

On the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), a self-report screening instrument for depression in older adolescents and adults, Mark obtained a score of 16, which placed him in the mildly depressed range. An item-by-item analysis revealed that Mark frequently criticized himself and entertained notions of failure.

The Minnesota-Multiphasic Personality Inventory-Adolescent (Minnesota Multiphasic Personality Inventory (MMPI)-A; Butcher et al., 1992) provides a self-reported, objective assessment of personality traits and psychological adjustment in adolescents. The MMPI-A was administered to Mark because the therapists suspected he had limited awareness of the role of his anxiety in his asthma attacks and the MMPI-A assesses this tendency. The validity and basic scales of the MMPI-A provide a profile of the client’s patterns of responding. Mark’s validity scales were within normal limits, suggesting that he responded to items in an open and forthright manner, suggesting a valid clinical profile. Mark’s profile indicated clinical elevation on scales 1, 3, and 2, suggesting that Mark was overly focused on his health, had difficulty coping with stress, and was not satisfied with his life. Of particular importance was a conversion “V” response pattern on Mark’s profile for basic scales. This pattern suggests that Mark may have been underestimating the role of psychological factors in his physical symptoms. It was likely that he was unaware of the full involvement of psychological factors in his asthma attacks and may have interpreted symptoms (i.e., shakiness) connected to psychological problems (i.e., anxiety) as largely somatic problems.
Case Conceptualization

Interview results clearly suggested that Mark was experiencing high levels of anxiety, particularly surrounding his asthma. Questionnaire scores were consistent with interview results in that Mark’s score on the STAI state measure (i.e., an asthma attack) and BAI were clinically significant. Closer examination of Mark’s anxiety symptoms revealed significant difficulties with what appeared to be panic attacks without agoraphobia. Because Mark’s asthma symptoms (e.g., chest pain, difficulty breathing) overlap with characteristics of panic attacks, it is possible that Mark may have misinterpreted panic symptoms as physiological complaints representative of an asthma exacerbation at least some of the time. Although Mark understood that anxiety and stress were triggers of his asthma attacks, he seemed unaware that some of his asthma attacks may have been completely psychological in nature (i.e., panic attacks). Because of the ease in which this type of misinterpretation could occur, and the fact that most of Mark’s asthma attacks reportedly occurred at school where his stress was reported to be high, it was believed that some of Mark’s reported asthma attacks were panic attacks. This case conceptualization is consistent with that proposed in the existing literature (e.g., Carr, 1996, 1999; Lehrer, 1998; Zanbergen et al., 1991) and is also supported by Mark’s profile on the MMPI-A (i.e., “Conversion V”). Overall, Mark’s panic symptoms not only triggered some of his asthma attacks, but also may have exacerbated his asthma symptoms. Similarly, Mark’s treatment of a perceived asthma attack involved using a bronchodilator (i.e., albuterol), which stimulates the sympathetic nervous system, and in turn likely exacerbated his panic symptoms, creating a vicious cycle and ineffective treatment approach. Taken together, it seemed that a primary diagnosis of panic disorder without agoraphobia was relevant; however, given the interactive nature of his panic with asthma and its treatment, a secondary diagnosis of mental disorder (panic disorder) affecting a medical condition (asthma) also seemed appropriate, particularly given the reason for referral.

Based on the report of multiple informants in clinical interview and Mark’s scores on the STAI trait scale, it also was thought that some of Mark’s anxiety was more generalized and pervasive (e.g., experienced in school and in response to other people’s actions and inadequacies). Specifically, it appeared that Mark regularly put an undue amount of responsibility and pressure on himself in numerous areas (e.g., volunteer work, school) as well as high expectations for others, thereby inadvertently setting himself up for chronic anxiety and periodic feelings of failure. Indeed, Mark reported significant and persistent symptoms of fatigue, irritability, tension, and sleep disturbance, all of which are consistent with a diagnosis of generalized anxiety disorder (GAD). Although Mark’s score on the BDI-II suggested a mild level of depressive symptomatology, items endorsed as being problematic were related to self-criticism and notions of failure, both of which likely pertain to Mark’s perfectionistic style, rather than significant depression. Indeed, Mark typically showed positive affect in session, but appeared to be tense and anxious much of the time. Although he reported losing interest in some activities across time (e.g., sports), it appeared that this decrease was not characteristic of anhedonia, but rather a change in preference for how Mark spent his time as he participated regularly in extracurricular activities. Taken together, it did not appear that Mark’s symptoms met criteria for a depressive disorder; however, it was thought that it would be important to monitor these symptoms across therapy given his potential risk for these concerns.

Treatment Course

Treatment goals and plan. The primary goal of therapy was to decrease Mark’s general anxiety to (a) reduce the frequency and intensity of his asthma and panic attacks, (b) increase the manageability of these attacks, and (c) improve Mark’s general functioning (e.g., increase his sense of accomplishments). It was felt that reducing Mark’s anxiety, which seemed to be primary, likely would in turn ameliorate symptoms of self-criticism and thus likely prevent the likelihood of significant depression evolving across time. We were, however, prepared to treat depressive symptoms secondary to his anxiety, if necessary.

To accomplish the primary goal of therapy, several evidence-based cognitive–behavioral treatment techniques were utilized including PMR and guided positive imagery (two ses-
imagery scene. We used feedback and praise to frequent sessions, we asked Mark to describe his positive, relaxing material for him. In subsequent sessions, we asked Mark to describe his imagery scene (e.g., encouraging ample detail). After he acquired mastery of relaxation skills, PMR later was condensed for Mark to make the technique more portable and to facilitate generalization to the school environment.

**Problem solving and cognitive restructuring.** Mark was taught problem solving skills also in an effort to reduce his general level of anxiety. Sessions were devoted to practicing problem solving regarding real problems that Mark encountered. Like problem solving skills, cognitive restructuring skills also were introduced to decrease Mark’s general anxiety. Mark was educated about several maladaptive thought processes (e.g., probability overestimation, catastrophic thinking) and taught how to challenge and decrease such thinking. Relatedly, he was taught how to develop adaptive explanations for anxiety-provoking events, as opposed to maladaptive, self-harmful explanations. He was given problem solving and cognitive restructuring worksheets and monitoring forms to practice these skills at home.

**Symptom education and differentiation.** To address more directly Mark’s asthma and panic attacks, we discussed specific instances of asthma and panic attacks experienced by Mark, and reviewed symptoms characteristic of each condition, highlighting those symptoms that Mark had experienced. We informed Mark of ways in which asthma and panic attacks may be similar (e.g., recurrent, unexpected, precipitated by worry, and characterized by difficulty breathing) and ways in which they may differ (e.g., panic attacks usually have a faster onset than asthma attacks). We also helped Mark recognize differences in the manner in which he personally experienced asthma and panic attacks. For example, Mark tended to experience body temperature changes (e.g., chills, hot flashes, and sweating) during panic attacks, but not during asthma attacks. We gave Mark a grid listing symptoms that he reported during asthma attacks in one column and symptoms that he reported during panic attacks in another column, with overlapping symptoms listed in the same row. This grid provided Mark with a visual representation of symptoms shared by his asthma and panic, and symptoms unique to each condition. In addition, we taught Mark how to differentially respond to panic versus asthma symptoms. We educated Mark on using relax-
ation strategies to reduce panic symptoms. For asthma symptoms, we encouraged him to follow his prescribed asthma management plan and to remain calm in an effort to prevent anxiety-induced asthma symptoms. Given the potentially life-threatening nature of asthma attacks, it was crucial that symptom differentiation be accurate for Mark. He was highly receptive to the concept of symptom differentiation and understood it well after explanation.

**Interoceptive exposure exercise.** With physician approval, we encouraged Mark to apply relaxation skills to the experience of an asthma or panic attack at home or school to lessen the severity and duration of each. We assessed which relaxation skills were working best for Mark and under what conditions. In session, Mark practiced interoceptive exposure, in which he breathed quickly in and out of a straw until he reported experiencing some of the physical sensations of a panic attack. This exercise re-exposed Mark to his physical sensations during a panic attack and allowed him to endure these sensations and realize that nothing catastrophic resulted from them. The exercise also allowed him to practice the relaxation skills that were most effective for him to return to a relaxed state after physiological arousal. Mark was asked to practice this exercise in his home (when an adult was in the house) after the exercise was practiced in session. It is noteworthy that asthma rescue medication was available in session and at all subsequent practice sessions in home that Mark experienced sustained difficulty with breathing as a result of asthma; however, Mark never needed to use the medication during the interoceptive exposure exercises.

**Relapse prevention and termination.** Because of Mark’s steady progress, we gradually began fading Mark out of therapy after ~8 months. We gave him extra forms to monitor his SUDS ratings and practice PMR, imagery, problem solving, cognitive restructuring, and interoceptive exposure exercises as necessary and at his discretion over a 2-month period during which no therapy sessions were scheduled. We also encouraged Mark to telephone our clinic if he needed help managing his symptoms while he was fading out of therapy, though he did not call. After this period, Mark’s progress was evidenced by his own report and we established a final therapy closure session at 10 months postintake. After 14 sessions (including the intake) and 14 cancellations (mostly because of respiratory infections), therapy was terminated.

**Results**

**Relaxation Skills**

Mark reported that the PMR helped him feel more relaxed in general. His SUDS ratings after PMR were consistently lower than those before PMR. After the implementation of PMR, which Mark continued to use across therapy, his average daily SUDS ratings were, on average, half as high as what they were at baseline. Specifically, whereas his average daily SUDS rating before being taught PMR was 32 (0 = no subjective distress to 100 = maximal subjective distress), his average daily SUDS rating after PMR was taught was 16. Because other treatments were added across therapy, however, it is unclear how much PMR alone contributed to this reduction in subjective distress. It is important to note that Mark may have gained some benefit from simply making a commitment to therapy and having a good relationship with the therapists as his SUDS rating of 32/100 before learning PMR was lower than his intake VAS stress scale rating of 7/10. It also should be noted that Mark was on medication for his anxiety across much of therapy; thus, the benefits of medication in conjunction with the cognitive–behavioral treatments that were introduced also could not be ruled out. However, it is noteworthy that this medication was not a change from intake. Mark stated a preference for using PMR and imagery combined over PMR alone and reported that using the condensed version of PMR at school helped him feel more relaxed. Finally, he reported that using PMR before he went to bed helped him fall asleep easily and sleep well through the night; however, Mark was not asked to provide sleep-monitoring data.

In addition to helping reduce Mark’s general anxiety, imagery in particular helped Mark manage several asthma and panic attacks. For example, a couple months into treatment, Mark reported using imagery in the ER after receiving oxygen for hyperventilation after an asthma attack; this reportedly prevented him from needing to receive oral steroid medication to breathe properly, which previously had been the typical...
outcome of an ER visit. Three months into treatment, Mark was able to terminate an anxiety attack related to school exams with imagery and without using anxiolytic medication. Of interest to the authors, after learning multiple relaxation skills, Mark indicated that imagery usually was the relaxation skill that worked best for him.

Problem Solving and Cognitive Restructuring Skills

Mark stated that he used problem solving skills outside of therapy to resolve real life problems, and that these skills reduced his general anxiety. Mark also reported that he was able to use cognitive restructuring to talk himself out of worrying over schoolwork. Unlike in the past, Mark had no panic attacks during his final exams. He was able to evade a panic attack during a particularly stressful event by not dwelling on the event and distracting himself. Mark described excellent cognitive restructuring skills in response to an anxiety-provoking situation in which his relatives did not return his greeting in a grocery store. He also offered appropriate alternative explanations (e.g., biological) for the hand trembling that he tended to experience.

After Mark had learned PMR, guided imagery, problem solving, and cognitive restructuring (i.e., 6 months into therapy), his physician discontinued Ativan upon Mark’s request. Mark later explained that the relaxation skills that he learned were equally effective on their own as they were while taking Ativan.

Interoceptive Exposure Exercise

After interoceptive exposure exercises during which Mark experienced a high level of distress, he was able to apply the relaxation and cognitive restructuring techniques that he had learned to return to a low level of distress. Specifically, Mark initially rated his SUDS as 25, using the aforementioned scale of 0 to 100, before completing the interoceptive exposure exercise. Mark then reported a SUDS rating of 60 during the exercise and was able to return to his initial SUDS rating of 25 after the completion of the exercise.

Number of Panic Attacks

The frequency of Mark’s panic attacks decreased significantly over the course of therapy, from 13 panic attacks in the first 3 months of therapy to zero panic attacks in the last 2 months of therapy in which Mark was fading out of treatment (see Figure 1).

Posttreatment Assessment Measures

Mark’s scores on the measures of anxiety and depression that he completed at intake were greatly reduced at termination. On the BAI, Mark obtained a total score of 7, which was within normal limits and lower than the total score of 15 that he obtained at intake. At the end of treatment, Mark obtained a total score of 37 ($T$ score = 47, 43rd percentile) on the STAI trait scale. This score is below average in comparison with the normative sample and lower than the total score of 51 that he obtained at intake. On the STAI state scale, using the state of an asthma attack, Mark obtained a total score of 50 at the termination of therapy. It is noteworthy that Mark’s total score on the STAI state scale at termination was substantially lower than his total score of 64 at intake. On the BDI-II, at termination, Mark obtained a total score of 4, which is significantly below the clinically depressed range compared with the normative sample and lower than the total score of 16 that he obtained at intake. This latter result suggested that, as we had hoped, reducing Mark’s anxiety led to a reduction in potentially depressive symptoms.
Client Report at Termination

At Mark’s last session, he reported that he was having a good year in the 11th grade and achieving all As across academic subjects. He was happy about having reduced his involvement in extracurricular activities, which was an environmental modification we had suggested at the beginning of therapy to potentially reduce Mark’s stress level. He gave a few examples of anxiety-provoking events that occurred over the past 2 months when he was not in therapy (because of gradual fading of treatment) and demonstrated appropriate interpretations of, and problem-solving skills for, those events. Mark believed that he no longer needed to receive psychological services for the distress with which he initially presented or for any other reason.

Posttreatment Diagnostic Impressions

In summary, we terminated therapy for Mark after 10 months of treatment in response to the treatment-outcome data, which suggested that he no longer needed psychological services. Because of the recurrent nature of panic disorder and the fact that Mark had two panic attacks over the last 3 months of treatment, however, we suspected that Mark’s symptoms of panic disorder were in full remission as opposed to no longer having the diagnosis at all. Consequently, with Mark’s consent, we gave a written report to Mark, his family, his family physician, and his asthma physician encouraging these individuals to watch for the possibility of recurrent symptoms of panic, especially over the first 6 months after the termination of therapy. Additionally, Mark no longer met diagnostic criteria for GAD or mental disorder (panic disorder) affecting asthma. We discussed Mark’s improvement with him, and in an effort to prevent relapse, advised him to periodically review the anxiety management techniques and related materials (e.g., handout exercises and audio cassette tapes). Further, Mark was informed of the possibility of panic attacks in the future, but reminded that he had demonstrated mastery in managing such attacks should they arise.

Two-Year Follow-Up Data

Because Mark was a highly motivated client who had worked consistently to learn the coping skills, we were interested in his treatment maintenance. Thus, we spoke with him by phone a few times to check in and asked if he would be willing to attend a follow-up appointment 2 years after the termination of treatment, to which he gladly agreed. Mark looked well and happy on observation, and he described high functioning across personal, social, academic, and work-related areas. He indicated that he had not had a panic attack over the past 2 years and no longer was taking any psychotropic or asthma medication. He also was no longer attending medical appointments for asthma and reportedly had no asthma exacerbations since treatment termination. Mark was administered the BAI and BDI-II, and he scored within normal limits on both measures. Only a few symptoms were endorsed at the mildest severity on each measure. We did not administer STAI state version in reference to an asthma attack as had been done previously because of the fact that Mark had not had an asthma attack since the termination of treatment.

Discussion

Treatment results indicate an effective reduction in panic and anxiety symptoms, via various forms of relaxation training, cognitive restructuring, and symptom education. However, the effectiveness of the treatment intervention must also be considered in the context of preexisting pharmacological therapies. Chiefly, Mark was taking Paxil and Ativan at the time of referral and continued to take the latter through the first 6 months of treatment, during which time a marked drop in panic attacks was observed. Baron and Marcotte (1994) have noted the effectiveness of tricyclic antidepressants and benzodiazepines in treating chronic hyperventilation, a frequently noted feature of panic disorder. This in turn allows traditional asthma medications to treat asthma attacks effectively, and may prevent the parasympathetic response to rescue medications from cueing a panic attack. According to Baron and Marcotte, asthma attacks that are not effectively treated by two to three doses of albuterol should serve as an indicator for clinicians to consider a co-occurring anxiety disorder. However, the potential adverse effects of benzodiazepines and tricyclic antidepressants in larger doses may increase asthma susceptibility via respiratory depression.
physical and mental health interact and that Overall, our results support the implication that sess treatment outcomes of such interventions. should include larger, controlled studies to as-
comorbid panic and asthma, future research modal behavioral interventions in patients with offers additional support for the use of multi-
come. Although the current case study pro-
tiates as a potential moderator in assessing treatment out-
objectives measures (e.g., medical record review of physician appointments and hospitalizations). Future research should examine the effects of be-
behavioral treatment on panic and asthma out-

References


It is worth noting that Mark was particularly adherent in rehearsing the PMR and imagery skills taught in therapy. The generalization of these skills to other activities likely benefited from such rehearsal, and less adherent patients may obtain less favorable results without additional family and provider support. Future studies may benefit from examining adherence as a potential moderator in assessing treatment outcomes. Although the current case study provides additional support for the use of multi-modal behavioral interventions in patients with comorbid panic and asthma, future research should include larger, controlled studies to assess treatment outcomes of such interventions. Overall, our results support the implication that physical and mental health interact and that targeting psychological concerns can in turn have an important impact on physical health.


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