

**ASSESSMENT OF PANIC FREQUENCY: RELIABILITY AND VALIDITY
OF A TIMELINE FOLLOW-BACK METHOD**

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(ABSTRACT)

Given the central role of panic attacks in the diagnosis of panic disorder, an adequate measure of panic attacks is essential. Panic frequency is routinely assessed either by simply asking individuals to estimate the number of panic attacks experienced during a given time in a questionnaire or assessment interview or by having them continuously self-monitor. Panic frequency obtained by such methods is unreliable and invalid or time-consuming, respectively. The purpose of this project was to investigate the reliability and validity of a Panic Attack Frequency Calendar (PAFC), modeled after a time-line follow-back (TLFB) procedure (e.g., Sobell & Sobell, 1979) that has been used for years to reliably and validly assess daily alcohol use through self-report over extended periods of time.

The participants consisted of 74 adult individuals (ages 18-57) who indicated that they had experienced a panic attack within the past two weeks. Participants completed a battery of self-report questionnaires, including a retrospective frequency measure, and administered an 8-week PAFC. Participants were then randomly divided into either a self-monitoring group that recorded information in a diary about any panic attacks that they experienced over the following two weeks or a non-self-monitoring control group. All participants were administered another retrospective frequency questionnaire and a 10-week PAFC two weeks after the administration of the first PAFC.

Reliability was determined from the two-week stability estimates across the PAFCs for the eight-week period that overlapped both assessments. This was done with several composite panic behavior variables; daily and weekly test-retest reliabilities were also calculated. Concurrent validity was established by comparing panic frequency from the PAFC with that obtained from the diary and the retrospective frequency measure. Further validity was established via correlating the PAFC with the self-report questionnaires. Results are discussed in light of their implications for the assessment of panic attacks.

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CHAPTER 1: INTRODUCTION

Given the central role of panic attacks in the diagnosis of panic disorder, with and without agoraphobia, an adequate measurement of panic attacks is essential. However, many studies reporting on phenomenological aspects of panic suffer from methodological deficiencies. Panic frequency is routinely assessed by simply asking individuals to estimate the number of panic attacks experienced during a given period of time. Typically, this is accomplished by asking the panic disordered individual to give a retrospective account of the number of panic attacks, as well as the accompanying cognitions and symptoms, in a questionnaire (such as the Panic Attack Symptoms and Cognitions Questionnaire [PASQ, PACQ]; Clum, Broyles, Borden, & Watkins, 1990 or the Body Sensations and Agoraphobic Cognitions Questionnaire [BSQ, ACQ]; Chambless, Caputo, Bright, & Gallagher, 1984) or in an assessment interview (such as the Anxiety Disorders Interview Schedule - revised [ADIS-R]; DiNardo, O'Brien, Barlow, Waddell, Blanchard, 1983).

The reliability and validity of data about panic frequency obtained by such methods is controversial for several reasons. First, retrospective recall may produce distortions. When compared to an event sampling approach (i.e., a strategy in which recordings are made contingent upon the occurrence of the target event(s)), the retrospective method results in both overestimation of the frequency of panic attacks (de Beurs, Lange, & Van Dyck, 1992; Margraf, Taylor, Ehlers, Roth, & Agras, 1987) and overestimation of the incidence of symptoms during panic (Margraf et al., 1987; Rapee, Craske, & Barlow, 1990). Second, a variety of panic attacks may be experienced by the same patient, differing in severity, duration, symptoms, and precipitating circumstances, thus making it difficult for the panicked individual to give an account of a "typical" panic attack (de Beurs et al., 1994).

A more sophisticated method of investigating the phenomenology of panic is continuous self-monitoring, in which the individual suffering from panic is asked to chronicle each attack immediately after its occurrence. Panic attacks, being discrete events, lend themselves particularly well to such a method of measurement. It has been suggested that such a chronicle should include the frequency, intensity, and duration of the attacks, as well as any situational cues thought to precede the attacks (Barlow & Cerny, 1988). Additionally, the expectedness of onset, the presence of others, as well as all cognitions and physiological symptoms associated with the attacks should likewise be recorded. With the methods available to us today, self-monitoring is the only practical way to obtain information on a day-to-day basis about the frequency, intensity, and duration of panic attacks (Beck & Zebb, 1994).

Research indicates that self-monitoring produces greater accuracy than retrospective recall, particularly as the criteria for experiencing a panic attack become more stringent (i.e., follows more closely the criteria set forth by the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* [DSM-IV; American Psychiatric Association (APA), 1994]; de Beurs et al., 1992). In a treatment study, de Beurs et al.

(1992) found that panic disordered individuals tended to report nearly twice as many panic attacks at pretest using a retrospective estimation when compared to self monitoring. At posttest, however, retrospective recall estimates matched daily monitoring “perfectly.” Such a finding may give the researcher using retrospective recall the mistaken impression that the treatment effect was greater than it actually was. Potential explanations for this disparity between self-monitoring and retrospective estimates include a response demand to present more severely in order to be accepted into treatment, reactivity, and actual improvement (Rapee, Craske, & Barlow, 1990).

Inaccurate accounts of panic may be due to several other reasons. First, the criteria necessary to define a panic attack may be unclear. It has been demonstrated that more stringent definitions lead to greater overestimations in retrospective accounts (de Beurs et al., 1994), possibly due to considering one severe symptom or a set of mild symptoms sufficiently distressing to warrant a label of panic attack (i.e., confusing a panic attack with limited symptoms with a full-blown panic attack). It is obviously not in the best interest of researchers to reduce the prerequisites of defining an anxious episode as a panic attack to reduce disparities between retrospective accounts and self-monitoring. Second, it is entirely possible that the panic disordered individual cannot remember how many attacks he/she has had and the accompanying symptoms and cognitions accompanying each attack. Furthermore, even if the individual can recall an attack, he or she may experience fluctuating symptoms between attacks and thus, cannot differentiate the limited-symptoms attacks from the full-blown panic attacks.

However, the alternative to retrospective recall, daily self-monitoring, despite being more accurate, is cumbersome and time-consuming for the panicked individual. Oftentimes, the individual will not complete certain aspects of self-monitoring, rendering data analysis difficult (e.g., Barlow et al., 1989) or will fail to comply at all, necessitating reminder phone calls from the researchers (e.g., Gould & Clum, 1995). Thus, to retrospectively reconstruct an individual’s pattern of panic attacks, a procedure is needed that will combine the accuracy of daily monitoring with the efficiency of a questionnaire.

For a number of years, alcohol researchers have utilized a time-line follow-back (TLFB) procedure (Sobell & Sobell, 1979; Sobell et al., 1980) to assess daily alcohol use through self-report over extended periods of time. The TLFB was developed as a procedure to aid recall of past drinking (Sobell & Sobell, 1992). The TLFB method presents individuals with a calendar of the time period of interest and asks them to provide retrospective estimates of their daily drinking over a specified time period ranging up to 12 months. Several memory aid procedures have been developed to help people recall their drinking when completing the TLFB (i.e., using a visual calendar, listing key dates [holidays, paydays, various newsworthy events, and events that were personally important to the individual during the time period, such as birthdays and anniversaries] on the calendar, identifying periods of regular drinking patterns or extended abstinence, and using these key dates and periods of regular drinking patterns to provide anchors for reporting drinking that occurred around these episodes (Sobell & Sobell, 1992).

Some of the advantages this method holds for alcohol research, in contrast to summary measures of quantity and frequency (e.g., Cahalan, Cisin, & Crossley, 1985), include not only providing the researcher with the number of days drinking at certain levels, but also with (a) drinking patterns over time, which can subsequently be linked to other events in the person's life; (b) flexibility to summarize drinking data over varying intervals; and (c) sensitivity to the range (maximum, minimum, and mode) of quantities consumed (Sobell & Sobell, 1992). As a result, the TLFB can provide a great deal of useful information for the purposes of treatment planning.

This methodology has been shown to be a valid and reliable means of assessing alcohol use outcomes (Maisto, Sobell, Cooper, & Sobell, 1979; Sobell, Maisto, Sobell & Cooper, 1979; Sobell & Sobell, 1979). Studies that have compared the TLFB to quantity-frequency approaches have generally found higher estimates of overall consumption reported by the TLFB interview (O'Hare, 1991, Sobell, Celluci, Nirenberg, & Sobell, 1982). This finding is to be expected if the TLFB interview is indeed a reliable and valid instrument, since it is widely considered that quantity-frequency approaches underestimate consumption, based on production, sales, imports, and exports of alcohol (Millwood & McKay, 1978). Two studies to date, however, have reported negative findings when comparing a retrospective weekly recall method with a self-monitoring method (Corti, Binns, Howat, Blaze-Temple, & Lo, 1990; Lemmens, Knibbe, & Ten, 1988), finding that individuals using the retrospective method underestimated consumption relative to self-monitoring diaries. However, neither study employed memory aid procedures, the feature that makes the TLFB interview unique.

More recently, Ehrman and Robbins (1994) found that extensions of this methodology to the assessment of heroin and cocaine use were also reliable and valid. A TLFB method has also recently been adapted to, and strong reliability and validity evidence found for, assessing smoking outcomes (Sobell et al., 1996).

While the TLFB technique has been shown to be a reliable and valid way to gather information about the use of several substances, the TLFB technique has yet to be used outside of substance disorders. A TLFB, it seems, would be a beneficial tool in assessing any behavior that can be counted. Thus, substance use frequency is an ideal candidate for such a technique. A bulimic individual's frequency of binges might be another behavior well suited to be counted by this technique. This study sought to examine a TLFB for panic attack frequency. A TLFB designed for panic, hereafter referred to as the Panic Attack Frequency Calendar (PAFC), would enable the panic disordered individual to recall the number of panic attacks, specifically full-blown panic attacks, more accurately. The PAFC also has the potential to provide a rich source of data regarding the individual's pattern of panic attacks over extended time periods as well as be an invaluable tool in treatment planning. The present study is designed to compare panic data derived from the commonly used, but inaccurate method of today, the retrospective questionnaire, and the accurate, but cumbersome method, self-monitoring, to data obtained through the PAFC method. This study will attempt to establish both test-retest reliability and concurrent validity of the PAFC for panic in a clinical sample. To do

that, it will be necessary to both compare the PAFC to the two methods of panic frequency assessment in use today, and to correlate it with other indices of panic and measures of pathology.

While no correlational data between panic frequency and Anxiety Sensitivity Index (ASI; Reiss & McNally, 1985) scores have been reported, higher scores on the ASI have been found to reliably discriminate people with panic disorders from those with other anxiety disorders (Peterson & Reiss, 1992). Clum et al. (1990) also did not report correlations between panic frequency and scores on the Panic Attack Cognition Questionnaire (PACQ) and Panic Attack Symptoms Questionnaire (PASQ); however, they too found that participants suffering from panic attacks scored significantly higher than those without panic attacks on the total score of the PACQ and PASQ. Previous findings have indicated that panic frequency and scores on the Avoidance Alone (MI-AAL) and Avoidance Accompanied (MI-AAC) subscales of the Mobility Inventory (MI; Chambless et al., 1985) are significantly positively correlated at 0.67 and 0.23 with one another, respectively. Two measures of general psychopathology, the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1983) and Beck Depression Inventory (BDI; Beck, Ward, Mendelson, & Erbaugh, 1961) have been found to be significantly positively correlated at 0.33 and 0.31 with panic frequency, respectively (Chambless, Caputo, Jasin, Gracely, & Williams, 1985).

When undertaking a study such as this, one confound in particular needs to be addressed. Self-monitoring is particularly susceptible to reactivity and seems to produce variable results. On the one hand, it has been suggested that self-monitoring may provide more reliable estimates of change in panic frequency than information based on retrospective recall (Beck & Zebb, 1994). On the other hand, it has been suggested that self-monitoring may cause patients to become more sensitive to what constitutes a panic attack and they may thus begin to record less intense feelings of anxiety as panic attacks, or, alternatively, record only the most severe experiences of anxiety as panic attack (Barlow & Cerny, 1988). This can lead to the appearance of the frequency, intensity, and duration of attacks increasing, decreasing, or showing no change over time. Concordance at posttest between the two approaches of the de Beurs et al. (1992) study mentioned previously suggests that individuals may become better estimators over time. This is likely due to the fact that individuals tend to base estimations on their own monitoring (de Beurs et al., 1994). Thus, it is important to assess whether self-monitoring has an impact on an individual's reporting of panic attacks.

CHAPTER 2: HYPOTHESES

1. It was hypothesized that the PAFC will show high test-retest reliability. It was expected that the PAFC is a stable measure of an individual's panic attack frequency. It was hypothesized that both the dates of panic attacks and the estimation of the number of attacks on those dates would be highly correlated between the PAFC in phase I and the PAFC administered two weeks later in phase II. Specifically, it was

hypothesized that the estimations of frequency of panic attacks during the eight weeks in phase I would be highly correlated to the estimations of the first eight weeks in phase II, since these respective time periods are identical.

- 2a. Concurrent validity of the PAFC was assessed in a variety of ways. First, it was hypothesized that there would be a positive correlation between panic attack frequency assessed from the PAFC administered in phase II and panic attack frequency reported from the diary. Thus, individuals who evidenced higher panic attack frequency with the PAFC would evidence higher panic frequency with the diary than individuals who reported fewer panic attacks on the PAFC. Likewise, low panic individuals, as indicated by the PAFC, would report fewer panic attacks in the diary than high panic individuals. This correlation would be significantly higher than the correlations of panic frequency between the diary and retrospective frequency questionnaire administered in phase II.
- 2b. Furthermore, both the PAFC and the diary were hypothesized to yield significantly lower estimates of panic frequency than the retrospective frequency method.
- 2c. Second, it was hypothesized that the frequency of panic attacks reported on the PAFC administered in phase I would show moderate concurrent validity with other established self-report measures of panic. It was expected that higher scores on the Anxiety Sensitivity Index (ASI), the Panic Attacks Cognitions and Symptoms Questionnaires (PACQ & PASQ), the two subscales of the Mobility Inventory (MI-ACC & MI-AL), the STAI, and the BDI would be positively and significantly correlated with a greater number of overall panic attacks and a greater number of panic attack days.
- 2d. Third, it was hypothesized that the pattern of panic attacks revealed using the PAFC would be highly correlated with the pattern evidenced in the diary. Specifically, it was expected that the dates of panic attacks and frequency of panic attacks on those dates obtained from the PAFC would be highly correlated with the dates and frequency reported in the diary.

CHAPTER 3: METHOD

Participants

A total of 98 participants responded to advertisements soliciting volunteers for a study of assessment of panic attacks. Advertisements were posted on the internet and flyers were posted on the Virginia Polytechnic Institute and State University campus and at several locations around Blacksburg, Virginia. Furthermore, announcements were made and flyers handed out to students in Psychology classes at Virginia Polytechnic Institute and State University. Each potential participant was screened over the telephone or via e-mail to ensure they were at least 18 years of age and had had at least one panic

attack over the previous two weeks. Twenty-four participants were eliminated for not meeting these criteria, leaving 74 individuals who participated in the study. After phase I, one participant was eliminated for not indicating having had a panic attack over the previous eight weeks on either the frequency measure or on the PAFC. Six more did not return for the second phase, leaving 67 individuals, aged 18 to 57 who completed the study. Eighty-five percent of the sample was comprised of undergraduates (N=57), while 15% were members of the community (N=10). Seventeen participants were males and 50 were females. All but seven of the participants were Caucasian. Six participants were currently in psychotherapy for anxiety, while a subset of two was also currently on anti-anxiety medication.

Measures

A fairly wide variety of self-report instruments exist in the panic literature (for a review, see Beck & Zebb, 1994; Bouchard, Pelletier, Gauthier, Cote, & Laberge, 1997). Because most inventories that are used in panic research today have good psychometric properties, it becomes quite a task to decide which to select since many are repetitive in the information obtained. Thus, it is not feasible or advisable to administer them all. Beck and Zebb (1994) suggest that when assessing panic, it is important that both the cognitive/subjective and physiological/somatic response systems are assessed. They also recommend that, in addition to administering inventories which specifically assess panic symptomatology, more general measures of anxiety and depression may also provide useful information and should be included in a self-report assessment package. The following is a list of the measures used in this study, following the guidelines set by Beck and Zebb (1994).

Frequency of Panic Attacks (FPA). To retrospectively assess the frequency of panic attacks as is typically done in practice and research (e.g., through a diagnostic interview such as the ADIS-R; DiNardo et al., 1983), the definition of a panic attack according to the DSM-IV (APA, 1994) was provided and two questions were asked to determine the number of full-blown and limited-symptoms panic attacks experienced over the past month.

Panic Attack Symptoms Questionnaire (PASQ). The PASQ (Clum et al., 1990) assesses the severity of 36 symptoms that can potentially occur during a panic attack. Items were initially generated from DSM-III descriptions of panic symptoms, the anxiety literature, and self-report data gathered from panic disordered patients. Subjects rate, on a 5-point Likert-type scale, the duration of each symptom that occurs during a panic attack or an anxiety episode. The global score is obtained by summing the ratings of each item. For participants reporting panic attacks (not only those with the diagnosis of panic disorder), the mean score reported in the Clum et al. (1990) study was 87.53. Correlations of each item with the total score were significant and higher than .25, except for three items (#15, 25, 36). PASQ scores of anxiety disorder participants with panic attacks were compared with those of anxiety disorder participants without panic attacks. The total score as well as 18 of the 36 items were significantly higher for the first group.

This finding was confirmed in a stepwise discriminant function analysis, which demonstrated that there was incremental validity in the prediction of panic beyond that provided by state and trait anxiety measures (Clum et al., 1990). Internal consistency is acceptable with a Cronbach alpha of .88 (Clum et al., 1990).

In a recent review of the literature of instruments that assess panic related symptoms, Bouchard et al. (1997) discovered there to be only two validated questionnaires that assess panic symptoms, the PASQ and the BSQ (Chambless et al., 1984). While both report good psychometric properties, the PASQ was chosen over the BSQ because, not only does it contain the items of the BSQ, but it also has the advantage of assessing twice as many symptoms as the BSQ and measures symptom duration.

Panic Attack Cognition Questionnaire (PACQ). The PACQ (Clum et al., 1990) assesses severity of negative cognitions associated with panic attacks. The items were generated from DSM-III cognitive symptoms associated with panic attacks, from a literature review, and from interviews with panic disorder patients. A 4-point Likert-type scale is used to rate the severity of 25 catastrophic cognitions before, during, and after an anxiety episode. The global score is obtained by summing the ratings of each item. Correlations of each item with the total score were significant and higher than .24 for 23 of the 25 items (#15 and 21 withstanding). Evidence for construct validity was observed when Clum et al. (1990) found panic sufferers (as defined in DSM-III-R) scored significantly higher than other anxious, non-panicking individuals on the total score and on 6 of the 25 items. This finding was confirmed in a stepwise discriminant function analysis which showed that even when entering trait anxiety first in the discriminant analysis, the PACQ total score still contributed significantly to the total variance. Internal consistency reliability is adequate with a Cronbach alpha of .88 for the entire PACQ (Clum et al., 1990).

Assessment of the cognitive components of panic has received a great deal of attention. Bouchard et al. (1997) found there to be eight validated questionnaires commonly used that address the cognitive dimension of panic attacks and panic disorder. Although they all possess adequate psychometric properties, the various instruments differ in terms of assessment targets (e.g., fear of negative consequences, catastrophic cognitions or consequences) and underlying theories (e.g., fear of fear, cognitive misinterpretation of sensations). In addition to possessing good psychometric properties itself, the PACQ was selected because it incorporates and extends one of the most frequently used measures, the Agoraphobics Cognitions Questionnaire (ACQ; Chambless et al., 1984).

Anxiety Sensitivity Index (ASI). Anxiety sensitivity was defined by Reiss and McNally (1985) as individual differences about sensitivity to anxiety sensations. This concept can be measured by the strength of beliefs about personal consequences of experiencing anxiety (Reiss & McNally, 1985). These consequences may be physiological manifestations (e.g., fainting) or external events (e.g., being laughed at, losing control). They argued that the fear of anxiety represents a risk factor for the

development of panic disorder and other anxiety disorders. The 16 items in the ASI (Reiss, Peterson, Gursky, & McNally, 1986) are rated on a 5-point Likert-type scale. Participants rate each item by selecting one of 5 phrases. The phrases are “very little” (scored as 0 points), “a little” (1 point), “some” (2 points), “much” (3 points), and “very much” (4 points). An individual’s ASI score is the sum of the scores of the 16 items. The ASI is designed to assess the construct of anxiety sensitivity and was initially described as a measure of “the possible negative consequences of anxiety” (Reiss et al., 1986). The structure of the ASI has been found to be unifactorial (Reiss et al., 1986; Taylor, Koch, McNally, & Crockett, 1992) with good psychometric properties. Taylor et al. (1992) found that scores among panic disordered participants were significantly higher than any of the other anxiety disorders, with the exception of posttraumatic stress disorder.

Mobility Inventory (MI). Devised by Chambless et al. (1985), this scale measures self-reported avoidance of 29 situations. The participants indicated on a 5-point Likert-type scale their level of avoidance of various situations while accompanied (MI-AAC) and alone (MI-AAL). Higher total scores indicate greater avoidance. Measures of internal consistency for both the MI-AAC and MI-AAL scales are high, with median Cronbach alpha coefficients ranging from .88 to .97 and .88 to .96, respectively. The MI has been shown to reliably differentiate panic disorder patients with agoraphobia from panic disorder patients without agoraphobia (Chambless et al., 1985; Swinson, Cox, Shulman, Kuch, & Woszczyzna, 1992).

State-Trait Anxiety Inventory (STAI). The STAI (Spielberger et al., 1983), consists of separate self-report scales for measuring state (STAI-S) and trait (STAI-T) anxiety. State anxiety is defined as feelings of apprehension, tension, nervousness, and worry that an individual is feeling “right now” at this moment. Trait anxiety refers to how people generally feel. Both the STAI-T and the STAI-S are 20-item measures in which participants rate their level of anxiety to each item on a 4-point Likert-type scale (1 to 4). Responses are summed across items to arrive at the respective scores. Measures of internal consistency for both state anxiety and trait anxiety scales are high, with median Cronbach alpha coefficients ranging from .83 to .93 and .86 to .92, respectively. The range of test-retest reliability is .73 to .86 for the STAI-T and .33 to .54 for the STAI-S. Lower stability findings for the STAI-S are not surprising, since a state anxiety measure should reflect unique situational factors existing at the time of testing (Clum et al., 1990).

Beck Depression Inventory (BDI). The BDI (Beck et al., 1961) is a widely used measure of the severity of depression. The BDI is composed of 21 items scored on a 4-point Likert-type scale (0 to 3). The BDI score is calculated by summing across the items, with higher scores indicative of a greater level of depression. The BDI was utilized as an index of severity, rather than as an instrument with diagnostic validity. The psychometric properties of the BDI have been reviewed by Beck, Steer, and Garbin (1988).

Panic Attack Frequency Calendar (PAFC). The PAFC was an interview technique for gathering retrospective, reported information about panic attack frequency behavior

each day for 8 weeks in phase one and 10 weeks in phase two, respectively. The interviewer presented a calendar and asked the participant to recall how many panic attacks she or he had on each day over the previous 8 or 10 weeks. As is standard in the TLFB (Sobell & Sobell, 1992), the interviewer helped participants remember the behavior of interest (in this case, their panic attacks) by having a calendar preprinted with holidays and other key dates, asking participants to report dates of personally significant events. A variety of events and situations that have been associated with panic attacks were presented to the participant to aid in memory recall. A definition of a panic attack, as defined by the DSM-IV, was also provided to help the participant differentiate between a full and a limited symptoms panic attack. This definition was the same as the one provided on the FPA.

Participants recorded the number of full-blown panic attacks (four or more symptoms) experienced each day into a small box in the bottom-left hand corner of the corresponding day on the calendar. If difficulties completing this task occurred, the interviewer prompted the participant's recall by querying the participant to whether or not he/she experienced a string of consecutive days of panic attacks during the period of interest (or consecutive days of no panic), experienced any pattern of panic from day to day (i.e., certain days of the week or on weekends), and whether he/she experienced any spontaneous panic attacks not associated with any events/situations. If difficulties persisted, participants were told to narrow the time down and give it their best guess as to which day(s) he/she had a panic attack. Each participant was also encouraged to use an appointment book or daily diary if they had one. Limited symptoms panic attacks (three or less symptoms) were not recorded. Thus, the PAFC provided the number of full-blown panic attacks experienced each day over the period of interest. This information was then summed to provide the total number of panic attacks experienced. The number of days the participant experienced a panic attack and the number of days with no panic were also calculated. Days with at least one panic attack were also broken down into the number of days with one panic attack, days with two panic attacks, and days with three panic attacks. The longest number of consecutive days with panic and the longest number of consecutive days without having a panic attack was also determined from the participants' PAFCs.

Panic Attack Diary. The diary that was used was modeled after one used frequently in the panic literature (Rapee et al., 1990). Because panic attacks are subjective phenomena, it has been suggested that it is necessary for the patient to continuously self-monitor and keep a record of their occurrence (Cote, Gauthier, Laberge, Cormier, & Plamondon, 1994). Information recorded in the diary allows the assessor to determine whether the panic episodes recorded by the participants meet DSM-IV (APA, 1994) criteria. Participants required to keep the diary monitored their current levels of anxiety, depression, and worry on a 9-point Likert-type scale (0 to 8), four times a day (morning, afternoon, evening, and bedtime). Furthermore, the following information about each panic attack experienced by the participants over the two week period was recorded in the diary: (a) date and time of onset; (b) duration of the panic; (c) maximum level of anxiety experienced (on a 9-point Likert-type scale from 0 to 8); (d) number of

symptoms during the panic attack; and (e) whether the panic was expected or unexpected. In addition, the diary allowed the participant to indicate if the attack occurred in a stressful situation, alone, or accompanied. The maximum level of anxiety experienced reflects the intensity of both anxiety and panic episodes. The expectedness of the panic attack, or the lack thereof, allows for the differentiation of panic attacks from chronically heightened levels of symptoms. Indicating that the panic attack occurred in a stressful situation or not allows for the differentiation of uncued or spontaneous from cued panic attacks (Barlow, Craske, Cerny, & Klosko, 1989). By carefully discussing the diagnostic criteria of panic attacks beforehand and providing a hard copy of the criterion in the diary, participants were able to identify and record panic attacks according to DSM-IV criteria (APA, 1994). Again, this definition of a panic attack was the same definition as the one used on the FPA and PAFC. A panic attack counted only when there had been a sudden rise in anxiety, and at least 4 of the symptoms were indicated. Frequency of panic attacks was assessed by summing over the assessment interval.

Procedure

This study involved two phases. In the first phase, potential participants were screened by the primary researcher over the phone or via e-mail, eliminating individuals who had not had a panic attack over the past two weeks and individuals under the age of 18. The researcher then coordinated a time and date with the participant to conduct the initial assessment. The assessment was conducted individually and took approximately one hour to complete per participant. Upon arrival, the researcher introduced himself and then read a brief description of the study. The participant was told that all of his/her responses would remain confidential, and that he/she could withdraw from the study at any time. After going over the consent form with the participant (see Appendix A for consent forms), he/she read and signed it; the researcher then collected it and distributed the assessment packet (See Appendix B for assessment packet). The participants were told to take their time, answer the questions honestly, and to ask the researcher for help if they did not understand. A break was permitted at any time if the participant requested one.

Upon completion of the initial battery of questionnaires, the researcher explained the PAFC (see Appendix C). After answering any questions the participant had about the calendar, the researcher administered the 8-week PAFC to him/her. Although it is possible that reporting the number of panic attacks experienced in a self-report format will influence reports of panic frequency using a PAFC format, there does seem to be a stronger possibility of the converse affecting reporting. That is, the PAFC may sensitize participants to the number of panic attacks they have recently experienced and hence, influence self-reporting of panic attack frequency. Thus, counterbalancing the PAFC with the battery of self-report measures was deemed to be more problematic than beneficial and was not included in the design of this study.

Upon completion of the PAFC, the researcher made sure that the calendar was filled out completely and properly. Specifically, the researcher made sure that there was

something written in every date and that all information was clear and legible. The researcher thanked the participant for his/her participation and invited the individual to the second phase of the study if he/she indicated experiencing at least one panic attack over the past eight weeks, either on the Frequency of Panic Attack questionnaire or on the PAFC.

In the second phase, participants were randomly divided into two groups. The first group (self-monitoring; SM) was given the Panic Diary (see Appendix D for Panic Diary). They were informed how to differentiate panic attacks from nonpanic episodes of anxiety. The participants were then instructed to carry the self-monitoring forms with them at all times and record information about any panic attacks they experienced as soon as the attack was over on the Panic Attack Record forms provided in the Panic Diary. A separate form was completed for each full-blown panic attack. A detailed description of what was to be recorded has already been discussed. The Panic Diary also required the participant to fill out the Daily Distress Log four times a day (morning, afternoon, evening, and bedtime) to encourage daily adherence to self-monitoring. The information provided on the Daily Distress Logs was not used for any further analyses. After explaining the procedure to fill out the diary, the researcher answered any questions that the participant may have had. The participant completed the diary for two weeks. At the end of each week, the participant mailed back the diary to the researcher in an envelope provided by the researcher. The second group (non-self-monitoring; non-SM) was not given the diary and not instructed to monitor.

The researcher coordinated another meeting date and time, two weeks (plus or minus one day) following the initial assessment, with each of the participants to conduct the follow-up assessment. This assessment took approximately half an hour to complete. Upon arrival, the researcher gave a brief description of the study again and gave the participant another consent form to read and sign (See Appendix A for consent form). The participant was reminded that all of his/her responses would remain confidential, and that he/she could withdraw from the study at any time. The researcher then collected the consent form and distributed the retrospective frequency measure from the assessment packet used in phase I. Upon completion, the researcher explained the PAFC again. After answering any questions the participant had about the calendar, the researcher administered the 10-week PAFC to him/her.

Upon completion of the PAFC, the researcher again made sure that the calendar was filled out completely and properly. Specifically, the researcher made sure that a number indicating number of panic attacks experienced was written in every date and that all information was clear and legible. The researcher thanked the participant for participating in the study, solicited feedback about the PAFC, and debriefed him/her.

CHAPTER 4: RESULTS

The initial self-report measure composite scores and panic frequency estimates from both the PAFC and the retrospective questionnaire of panic frequency were calculated for both groups (SM and non-SM) to determine if there were any initial significant differences between the two groups prior to this study (See Table 4.1). The self-monitoring group was significantly more severe on the PASQ [$t(65) = 2.106, p = .039$], PACQ [$t(65) = 2.747, p = .008$], and ASI [$t(65) = 2.459, p = .017$]. There were no significant differences on the PAFC [$t(65) = -1.721, ns$] or on the retrospective measure [$t(65) = -1.408, ns$] as expected. Furthermore, to test whether self-monitoring had an effect on the reporting of panic frequency, paired sample t-tests and Wilcoxon matched-pairs signed-ranks tests were conducted comparing the self-monitorer's aggregate two weeks prior to self-monitoring with the aggregate two weeks of self-monitoring. Participants tended to report more panic attacks while self-monitoring on the retrospective measure [$t(33) = -1.830, ns$], but less on the PAFC [$t(33) = 1.089, ns$]. However, as expected, neither was significant; self-monitoring did not affect the reporting of panic frequency. Nevertheless, as can be seen from Table 4.2, self-monitoring appears to diminish the discrepancy between retrospective panic frequency reporting and panic frequency reporting via the PAFC.

Test-retest reliability of the timeline follow-back interview for panic was examined using two-week stability estimates. This was computed by comparing the responses across the two PAFCs for the eight-week period that overlapped both assessments. Two sets of reliability analyses were performed, first of composite variables derived from the raw data and second of the data for each date. For the first set of analyses, Pearson correlation coefficients, comparing the first and second calendars for composite variables derived from the PAFCs, were calculated. This was done with the following panic behavior variables: a) number of days no panic was reported; b) days with 1 panic attack; c) days with 2 or more panic attacks; d) total number of panic attacks reported over the eight-week overlap; e) greatest number of panic attacks on any one day; f) longest run of consecutive days without panic; and g) longest run of consecutive panic days. These analyses yielded seven stability estimates (See Table 4.3).

Although summary variables derived from the PAFC data across all participants are clinically the most relevant (Cohen & Vinson, 1995), test-retest reliability of the data for each individual for the overlapping 8-week period from the two calendars were also calculated (See Table 4.4). For this set of analyses, Pearson correlation coefficients for each of the 56 days, matching date to date across all participants, were calculated. Due to the high prevalence of days with no panic attacks, data from each date on both PAFCs were categorized into four groups (no panic attacks, 1 panic attack, 2 panic attacks, and 3 or more panic attacks) to compare global reports of panic. The level of agreement was then translated into a kappa coefficient (See Table 4.5).

With respect to the second hypothesis, concurrent validity of the PAFC was computed in several ways. First, the PAFC from phase II and diary were compared to test

hypothesis 2a. Initially, data on each measure was categorized as above to compare global reports of panic. The level of agreement was also then translated into a kappa coefficient (See Table 4.6). Next, the degree of association between the three estimates of 2-week panic frequency (PAFC, retrospective measure, and diary) was evaluated. Mean estimates of panic frequency and Pearson product-moment correlations between the number of reported panic attacks on the three measures were calculated for the self-monitoring group (See Table 4.7). The group that did not self-monitor was not included in these analyses since they did not estimate panic frequency via the diary. As can be seen, mean estimations were not in the expected direction (i.e., overestimation of retrospective measure). Z-tests of significance were computed on the correlations of the three measures of panic frequency with one another. Week 2 (i.e., the more recent week) was significantly higher between the PAFC and diary than between the retrospective measure and diary ($z=2.00$, $p<.05$). No significant differences were found between these correlations for week 1 and over both weeks, but as can be seen from Table 4.7, there is a slight trend suggesting that the PAFC is more highly correlated with the diary than the retrospective frequency measure. Further evidence that the PAFC is a more valid measurement of panic frequency is the relatively low finding of test-retest reliability for the retrospective measure (See Figure 4.1) across all weeks when compared to the PAFC. The average weekly test-retest reliability for the PAFC was .756 (range: .688-.799), while the mean weekly test-retest reliability for the retrospective measure was .434 (range: .218-.622). These differences were significant for seven of the eight weeks, with only week seven failing to reach statistical significance ($z=1.69$, $p=.09$). The overall difference between the test-retest reliabilities of these two estimations of panic frequency was also statistically significant ($z=2.04$, $p<.05$). Low reliability obviously limits the validity of a measure.

Second, in testing hypothesis 2c, Pearson product-moment correlations between the number of reported panic days and number of panic attacks from the first administration of the PAFC and the aggregate scores of the self-report measures administered were calculated (See Table 4.8). Using both the PAFC and the retrospective method to assess panic attack frequency, individuals who were more severe as indicated by the MI-AAL and BDI reported more panic attacks and more panic attack days than individuals who were less severe. The ASI was also significantly related to the number of panic days but only when panic was correlated using the PAFC. No other correlations were significant.

Finally, to test hypothesis 2d, the pattern of panic attack frequency from the second administration of the PAFC was compared to the pattern obtained by the diary. Pearson correlation coefficients were calculated for each matching date and on weekly and overall frequency estimations. These results are shown in Table 4.9. PAFC and diary were also compared across the two-week time period on several panic variables (See Table 4.10). Pearson correlation coefficients were calculated for the following panic behavior variables: a) number of days no panic was reported; b) days with 1 panic attack; c) days with 2 or more panic attacks; d) total number of panic attacks reported over the

eight-week overlap; e) greatest number of panic attacks on any one day; f) longest run of consecutive days without panic; and g) longest run of consecutive panic days.

While validity is best established by comparing the PAFC to the *gold standard* (i.e., diary), further evidence of validity is established if one examines this evidence using the PAFC as the *gold standard*. As has been shown, the PAFC is a more reliable instrument than the retrospective frequency measure. Also evidenced was the finding that self-monitoring has no significant effect on the reporting of panic frequency via the PAFC or via retrospective estimation. However, as can be seen in Table 4.11, self-monitoring increases the correlation between the PAFC and retrospective estimation over the week prior to administration of the PAFC ($t(33) = 2.236, p = .025$), thereby increasing the accuracy of the retrospective estimation. Self-monitoring did not increase the correlation, however, between the PAFC and retrospective estimation over the first week of self-monitoring (i.e., 2 weeks prior to administration of the PAFC).

CHAPTER 5: DISCUSSION

Results of the present study suggest several different conclusions. First, timeline reports of panic frequency show strong test-retest reliability over a two-week interval. This finding holds whether panic frequency is examined daily, weekly, or cumulatively over the eight-week period. Furthermore, higher test-retest reliabilities are found when number of days is the variable of interest rather than the number of panic attacks. Second, the PAFC was found to be more reliable than a retrospective estimation. While panic frequency was not assessed retrospectively day by day, weekly and cumulative estimates were found to be significantly less reliable across a two-week period. The average weekly test-retest reliability was .322 higher on the PAFC than on the retrospective estimation, with far less variability. This suggests that the PAFC is less prone to idiosyncrasies for individual reports of panic. It seems that panickers tended to report the number of panic attacks and the number of panic attack days at the second session approximately the same way they did the first time two weeks prior. This was not true for retrospective panic attack estimations, particularly when asked to provide estimations more than two weeks prior to the original session. The reasons for this might be many, but most likely the results imply that individuals make a haphazard guess when asked a broad question such as “How many panic attacks have you had over x weeks?” The PAFC, on the other hand, forces panickers to link the events in their life with panic attacks, thereby making their “guesses” more salient to the events in their life, hence creating more accurate estimates.

Second, timeline reports provide valid information about the frequency of panic attacks over an 8-week period. When compared to the diary, widely considered the gold standard of accurate panic assessment, the PAFC demonstrates high concurrent validity via its high daily, weekly, and overall correlations with the diary. Again, when the relationship between number of days on which a panic attack was reported on the PAFC and the number of days on which a panic attack occurred according to the diary was

examined an extremely high correlation was found. Likewise, a high relationship between the two measures was found for total number of panic attacks. These correlations were higher than the correlations between the diary and retrospective estimations, although only significant for the second week of monitoring. Unfortunately, one of the limitations of this study is that participants were only asked to monitor their panic attacks for two weeks. While it is impossible to tell whether, if asked to monitor longer, correlations between the diary and retrospective measure would be significantly less than correlations between the diary and the PAFC for time periods farther back, the low test-retest reliabilities of the retrospective measure relative to the PAFC the likelihood of this. Thus, while the retrospective questionnaire seems to be accurate for short periods of time, the PAFC is slightly more accurate for those same short periods and much more accurate for periods over a month.

Furthermore, moderate concurrent validity was established with other self-report measures of panic and psychopathology. While most of these correlations were not significant, all correlations were in the expected direction. Thus, greater severity, as defined by the scores on these measures, was related to higher reporting of number of panic attacks and higher reporting of panic attack days on the PAFC. These correlations were essentially equivalent to the relationships found between the retrospective questionnaire and the self-report measures. Again, it is worth noting that the correlations between severity on the self-report measures of panic and psychopathology and the number of panic attack days was higher than the correlations found with sheer number of panic attacks. This suggests that the critical factor in panic severity might not be how many panic attacks an individual has, but how many days on which that individual has a panic attack. This deduction has several implications. First, an individual who experiences panic attacks daily may be more severe (i.e., functioning poorer and coping less well) than an individual who has several panic attacks on one day. For example, it seems that an individual who experiences a single panic attack on seven different days over a two-week period would have a more severe disorder than an individual who has seven panic attacks over that same time period, but only on two days. This conclusion was suggested by the consistently higher correlations between number of panic days and associated panic measures (especially anxiety sensitivity) than between number of panic attacks and these same measures. Higher levels of anxiety sensitivity – a trait measure – may lead to chronic anticipatory anxiety and, subsequently, a chronic pattern of panic attacks. Another implication of this finding is that our ideas of how to treat panickers might need to be adjusted. An important facet to treatment might be to focus on reducing the number of days on which an individual has a panic attack, rather than on reducing the number of panic attacks. This might be accomplished by focusing on daily coping strategies rather than on coping strategies for problem events or situations.

Another interesting finding in this study was that retrospective estimates were not higher than panic frequency ascertained via the PAFC. It has been reported for several years (e.g., deBeurs et al., 1992) that panickers tend to overestimate the number of panic attacks they experience. When compared to the diary, it appears that participants report fewer panic attacks on the retrospective measure than they chronicled in their diary. On

the other hand, they reported more panic attacks on the PAFC than they did in the diary. In the self-monitoring group, panickers reported 69% *more* panic attacks over a two-week time period after self-monitoring on the retrospective measure. This finding is opposite of what has been reported, suggesting that panickers either underreported initially or were sensitized to the number of panic attacks by completing the diary. On the other hand, these same individuals reported on the PAFC 15% *less* panic attacks after self-monitoring. This leads to the possibility that they are overestimating on the PAFC. It is argued here, however, that self-monitoring had a more reactive effect on retrospective recall than on the PAFC. Although given a detailed definition of what constituted a panic attack on the retrospective measure, it appears that participants were sensitized to what a panic attack is after self-monitoring, and thus reported significantly more panic attacks at the second session. Self-monitoring, however, had less of an impact on panic attacks reported via the PAFC.

There are several limitations to this study. First, as was alluded to earlier, the overlapping time periods between the PAFC, diary, and retrospective measure was only two weeks. This is particularly problematic when one is asking for a retrospective weekly estimate of panic attacks, because the number of comparisons that can be made with other measures is limited. A longer monitoring phase would yield more interesting results, particularly on issues related to the accuracy of recall over longer periods of time. Because many of the participants who responded to this study were from the university, another limitation is that sample demographics reveal a more highly educated sample than comparative studies on panic. This calls into question whether the results are generalizable to the population for which it is targeted. This seems unlikely to be a problem, in that the education level of individuals in the community who assess trials of panic treatments are typically found to exceed 12 years, a level similar to that of the present study. Third, the participants in this study were a non-clinical sample. While many of them manifested symptoms of panic disorder, no formal diagnostic assessment procedure was carried out. While the PAFC was highly reliable and valid on clinical and non-clinical panickers combined, its utility on a clinical population is unknown. Thus, it would behoove future studies to incorporate a clinical sample when using this instrument to determine its applicability to the population for which it was designed.

It is clear that the PAFC is a more reliable and valid way of ascertaining panic frequency than a retrospective estimation, particularly as the time period of interest grows beyond a couple of weeks. While not as quick to administer as a retrospective questionnaire, the PAFC takes, on average, 20-30 minutes per individual. When a clinician or clinical researcher is interested in an immediate estimate of a new client's rate of panicking the improved reliability and validity obtained justifies the PAFC with the additional time it takes to administer. Furthermore, while the PAFC was administered in a one-on-one format, its parent, the TLFB, has been administered via a computer for years to ascertain accurate substance use. This format is ideal, in that it requires no more therapist time than administering a self-report retrospective questionnaire, while providing a richer source of information to the therapist. The PAFC has these same advantages. It provides the researcher/clinician with the number of days in which the

individual suffered from a panic attack(s), which as was explained above may be a more accurate index of panic severity. Furthermore, panic patterns can be ascertained using the PAFC, which can subsequently be linked to other events in the person's life. For example, by completing the PAFC the panicked individual may learn to identify certain events/situations or sets of events/ situations that propagate panic attacks. This information may itself be therapeutic or may lead to other conclusions that are therapeutic. Nonetheless, with the increase in reliability and validity afforded by using this approach the clinician/researcher can have greater confidence in the estimates of panic provided by this tool.

CHAPTER 6: REFERENCES

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Table 4.1

Mean Scores (and Standard Deviations) on Several Self-Report Measures
and Mean Weekly Estimations of Panic Frequency

<u>Measure</u>	<u>Self-Monitorers (N=34)</u>	<u>Non-Self-Monitorers (N=33)</u>
PASQ	58.88 (26.13)	46.36 (4.89)
PACQ	26.88 (10.53)	20.39 (8.69)
ASI	31.03 (8.94)	25.70 (8.81)
MI-AAC	1.41 (.48)	1.50 (.52)
MI-AAL	2.07 (.68)	2.12 (.73)
STAI-S	48.21 (10.54)	44.12 (8.82)
STAI-T	49.62 (10.76)	47.85 (9.91)
BDI	16.74 (7.54)	16.12 (7.97)
FPA - T1*	.70 (.81)	.45 (.61)
FPA - T2*	1.09 (1.22)	.67 (.74)
PAFC - T1*	1.85 (2.29)	1.07 (1.29)
PAFC - T2*	1.71 (2.18)	1.02 (1.27)

* T1 - measure administered in phase I; T2 - measure administered in phase II

Table 4.2

The Effects of Self-Monitoring on Two-Week Estimates (SDs) of Panic Frequency

	<u>Phase I</u>	<u>Phase II</u>
<u>Self-Monitoring Group</u>		
Retrospective	2.00 (2.32)	3.38 (4.96)
PAFC	4.68 (5.04)	3.97 (4.56)
<u>Non-Self-Monitoring Group</u>		
Retrospective	1.30 (1.40)	1.18 (2.02)
PAFC	3.09 (3.32)	1.79 (2.88)

Table 4.3

Two Week Test-Retest Reliabilities of PAFC on Several Panic Variables

<u>Panic Variable</u>	<u>Reliability</u>
Number of days no panic was reported	.898*
Days with 1 panic attack	.900*
Days with 2 or more panic attacks	.649*
Total number of panic attacks reported	.807*
Greatest number of panic attacks on any one day	.717*
Longest run of consecutive days without panic	.770*
Longest run of consecutive panic days	.641*

* p<.001

Table 4.4

Two Week Test-Retest Reliabilities of PAFC (Pearson Correlations)

DAYS							WEEK
1	2	3	4	5	6	7	1
.310*	.839***	.463***	.370**	.065	.714***	.493***	.688***
8	9	10	11	12	13	14	2
.131	.381**	.779***	.302*	.553***	.500***	.276*	.774***
15	16	17	18	19	20	21	3
.535***	.536***	.815***	.638***	.684***	.760***	.569***	.799***
22	23	24	25	26	27	28	4
.650***	.596***	-.101	.525***	.389**	.610***	.434***	.743***
29	30	31	32	33	34	35	5
.333**	.795***	-.015	.465***	.753***	.648***	.613***	.760***
36	37	38	39	40	41	42	6
.506***	.431***	.476***	.692***	.607***	.472***	.466***	.785***
43	44	45	46	47	48	49	7
.724***	.587***	.547***	.803***	.489***	.541***	.465***	.735***
50	51	52	53	54	55	56	8
.533***	.457***	.694***	.207	.707***	.632***	.677***	.767***
OVERALL							.807***

* p<.05, **p<.01, *** p<.001

Note: Week 1 corresponds to the first week of the PAFC (i.e., 8 weeks before administration of first PAFC); Week 8 corresponds to the last week of the PAFC (i.e., the week immediately preceding first administration).

Table 4.5

Agreement Between PAFCs (Kappa Coefficients)

DAYS							WEEK (avg.)
1	2	3	4	5	6	7	1
.475***	.605***	.456***	.394**	.125	.475***	.358**	.413**
8	9	10	11	12	13	14	2
.219*	.325**	.648***	.359**	.375**	.490***	.396**	.402**
15	16	17	18	19	20	21	3
.526***	.457***	.797***	.428***	.681***	.578***	.531***	.571***
22	23	24	25	26	27	28	4
.488***	.259*	-.093	.493***	.328**	.492***	.396**	.338**
29	30	31	32	33	34	35	5
.245*	.738***	.025	.413**	.565***	.565***	.454***	.429***
36	37	38	39	40	41	42	6
.456***	.369**	.586***	.743***	.461***	.394**	.325**	.476***
43	44	45	46	47	48	49	7
.549***	.428***	.652***	.605***	.549***	.468***	.203	.493***
50	51	52	53	54	55	56	8
.491***	.549***	.490***	.369**	.643***	.549***	.607***	.528***
OVERALL							.456***

* p<.05, **p<.01, *** p<.001

Note: Week 1 corresponds to the first week of the PAFC (i.e., 8 weeks before administration of first PAFC); Week 8 corresponds to the last week of the PAFC (i.e., the week immediately preceding first administration).

Table 4.6

Agreement Between PAFC and Diary During Two-Week Self-Monitoring
(Kappa Coefficients)

DAYS							WEEK (avg.)
1	2	3	4	5	6	7	1
.512**	.284	.640***	.452**	.396*	.525**	.531**	.477**
8	9	10	11	12	13	14	2
.673***	.858***	.595**	.640***	.821***	.595**	.746***	.704***
OVERALL (avg.)							.591**

* p<.05, **p<.01, *** p<.001

Note: Week 1 corresponds to the first week of self-monitoring

Table 4.7

Estimated Means (SDs) of Panic Attack Frequency and Their Respective Correlations

	<u>Retrospective</u>	<u>PAFC</u>	<u>Diary</u>
Week 1	1.71 (2.71)	1.85 (2.36)	1.76 (2.49)
Week 2	1.68 (2.43)	2.12 (2.99)	1.79 (2.40)
Total	3.38 (4.96)	3.97 (4.55)	3.56 (4.63)
	<u>Retrospective/PAFC</u>	<u>Retropsective/Diary</u>	<u>PAFC/Diary</u>
Week 1	.561*	.674*	.734*
Week 2	.787*	.896*	.948*
Total	.743*	.838*	.885*

* p<.001

Note: Week 1 corresponds to the first week of self-monitoring

Note: Mean estimations are calculated only on the group that self-monitored.

Table 4.8

A Comparison of the PAFC with Several Self-Report Measures

<u>Measure</u>	PAFC Measures	
	<u>Number of Panic Attacks</u>	<u>Number of Panic Days</u>
PASQ	.148	.232
PACQ	.199	.232
ASI	.187	.251*
MI-AAC	.067	.059
MI-AAL	.255*	.260*
STAI-S	.107	.159
STAI-T	.078	.111
BDI	.268*	.308*

* p<.05

Table 4.9

Correlations Between PAFC and Diary

DAYS							WEEK
1	2	3	4	5	6	7	1
.342*	.216	.545**	.594***	.597***	.371*	.622***	.734***
8	9	10	11	12	13	14	2
.768***	.829***	.735***	.776***	.791***	.616***	.772***	.948***
OVERALL							.885***

* p<.05, **p<.01, *** p<.001

Note: Week 1 corresponds to the week immediately preceding the PAFC;
 Week 2 corresponds to the week 2 weeks prior to the PAFC

Table 4.10

Correlations Between PAFC and Diary on Several Panic Variables

<u>Panic Variable</u>	<u>Correlation</u>
Number of days no panic was reported	.954*
Days with 1 panic attack	.913*
Days with 2 or more panic attacks	.713*
Total number of panic attacks reported	.885*
Greatest number of panic attacks on any one day	.699*
Longest run of consecutive days without panic	.777*
Longest run of consecutive panic days	.973*

* $p < .001$

Table 4.11

Correlations Between PAFC and Retrospective Estimations

	<u>Self-Monitoring Group</u>	<u>Non-Self-Monitoring Group</u>
<u>Phase I</u>		
Week 1	.611**	.601**
Week 2	.608**	.432*
<u>Phase II</u>		
Week 1	.862**	.716**
Week 2	.584**	.422*

* p<.05, ** p<.001

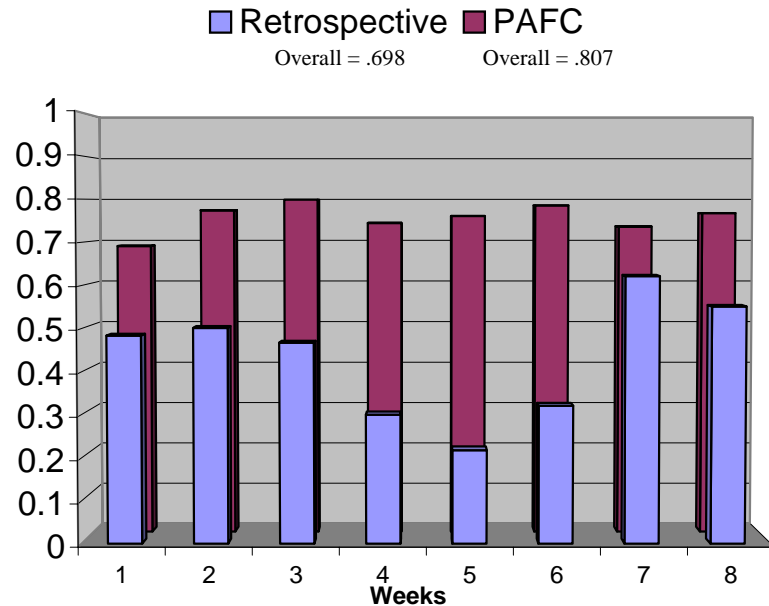
Note: Week 1 corresponds to the week immediately preceding the PAFC;

Week 2 corresponds to the week 2 weeks prior to the PAFC;

The weeks of Phase I refer to the 2 weeks prior to the administration of the first PAFC;

The weeks of Phase II refer to the 2 weeks prior to the administration of the second PAFC.

Two-Week Test-Retest Reliabilities of PAFC Compared with a Retrospective Estimation



Note: Week 1 corresponds to the first week of the PAFC (i.e., 8 weeks before administration of first PAFC); Week 8 corresponds to the last week of the PAFC (i.e., the week immediately preceding first administration).

Figure 4.1. Two-Week Test-Retest Reliabilities of PAFC Compared With a Retrospective Estimation

Appendix A

“Panic Attack Frequency Calendar” (PAFC) [Adapted from the Timeline Follow-back Interview]

Using the attached calendar, I would like you to reconstruct your panic attacks for the time period indicated on the calendar. We will begin by reconstructing this time period by using points on the calendar to help you remember things or events that have happened to you over the past 8 weeks. Then we will use these events on the calendar to help you remember when you have experienced a panic attack on each of these days. Although it sounds like a difficult task, it can be done – especially when you use the calendar for reference. Calendars can be a useful tool in helping people recall past events. Remember that everything you say here is held in confidence and the information you give will not be linked with your name in any way. Are there any questions?

INSTRUCTIONS

1) The first step is to identify key dates and events important to you that have occurred over the last 8 weeks and to write them down on the calendar. It is important to remember both negative events that may have occurred in your life as well as positive occasions. *The following list is intended for the researcher to use as a guide in reconstructing events that have occurred in the participant’s life.*

- | | |
|--|---|
| <ul style="list-style-type: none">• holidays (already on the calendar)• birthdays/anniversaries• parties or other social events• weddings• vacations/business trips• sporting events (football, basketball, auto racing, etc.)• gambling outings• beginning or termination of employment• changes in work schedule• job promotion/demotion• meetings• tests/quizzes (mid-terms, finals)• term papers• class presentations• public speaking/performances• absences from school/work• marital arguments• fights/arguments with significant others/family members/friends/boss• separations/reconciliations• left home/moved• death in family/friends | <ul style="list-style-type: none">• traumatic events (witness of)• court appearances• hospitalizations• illnesses• physical problems• vertigo/loss of consciousness/loss of bladder or bowel control/seizures• exposure to blood/toxins• fainting episodes• periods of insomnia/sleep disturbance• nightmares• pre-menstrual periods• injections• other medical procedures (lab tests/physicals)• doctor/dentist appointments• accidents• contact with frightening animal or insect• other stressful situations• embarrassing/humiliating situations |
|--|---|

Are there any other events that have been important to you that I have not mentioned?
Please write these down too.

- Situations that you normally try to avoid but were required to do:
 - local driving
 - long distance/interstate driving
 - riding in a car
 - grocery stores
 - malls or other stores
 - classrooms
 - crowds
 - public transportation (e.g., bus, train, subway)
 - air travel
 - boats
 - hairdresser
 - waiting in line
 - writing in public
 - taking walks/walking on street
 - crossing bridges
 - being at home alone
 - being out of town
 - storms (snow, thunder)
 - deep water
 - going to movies or concerts
 - restaurants
 - museums
 - church
 - elevators
 - auditoriums/stadiums
 - parking garages
 - high places
 - enclosed spaces (small rooms/tunnels)
 - open spaces (e.g., parks, parking lots)
 - work

Are there any other situations that you normally avoid that I have not mentioned? Please write these down too.

2) The second step is to understand the definition of a panic attack. It is important that for *each* day listed on the calendar, there is a number indicating the number of panic attacks you experienced. In reporting your total daily number of panic attacks, we would like you to report only full-blown panic attacks. A panic attack is a discrete period of intense apprehension, fearfulness, or terror, often associated with feelings of impending doom. It comes on suddenly and reaches its peak of intensity within 10 minutes. To qualify as a full panic attack, you must have experienced a sudden unexpected increase in anxiety with at least four of the following symptoms occurring at the same time. (*Give participant a list of these symptoms*).

- palpitations, pounding heart, or accelerated heart rate
- sweating
- trembling or shaking
- sensations of shortness of breath or smothering
- feeling of choking
- chest pain or discomfort
- nausea or abdominal distress
- feeling dizzy, unsteady, lightheaded, or faint
- feelings of unreality or being detached from oneself
- fear of losing control or going crazy
- fear of dying
- numbness or tingling sensations
- chills or hot flushes

*** **Note:** Limited symptoms attacks are panic attacks with three or less of the above symptoms. These will not be recorded on this calendar today. Also, it is important to remember that panic attacks are not the same thing as persistent or excessive anxiety and worry. Panic attacks are distinct episodes of intense fear or discomfort.

3) The third step is to use the events on the calendar to trigger the recollection of **full-blown panic attacks** experienced over the past 8 weeks and then record these panic attacks on the calendar.

- Looking at the calendar and thinking about these events in your life that are written on the calendar, what is the longest number of days you went without having a **full-blown panic attack**, not even one? When did that occur? In the boxes located in the bottom left-hand corners of those days, put a 0 for each day.
- Were there other times during the last 8 weeks when you did not have a panic attack? On the days that you did not experience a **full-blown panic attack** mark the bottom left-hand corner of those days with a “0”.
- Looking at the calendar and thinking about these events in your life that are written on the calendar, what is the longest number of continuous days in a row you experienced at least one **full-blown panic attack**? Write in the total number of panic attacks that you experienced in the bottom left-hand corner on each of those days. This includes days when the symptoms listed above vary. For example, if you experienced a panic attack in the morning while driving and experienced five of the symptoms listed above and then endured another panic attack with seven of the symptoms while at the supermarket in the afternoon, you would count that as 2 panic attacks for that day.
- During the period when you did experience panic attacks, was there any pattern from day to day? Did you tend to have panic attacks on certain days of the week or on weekends? Again, write in the total number of **full-blown panic attacks** that you experienced for each day.
- Did you have any spontaneous panic attacks that were not associated with being in any particular situation like those listed above? On the days that you did experience a panic attack, write in the total number of **full-blown panic attack** that you experienced on those days.
- Were there other times during this period when you had a panic attack? On the days that you did experience a **full-blown panic attack** mark those days with the total number of panic attacks that you experienced on those particular days.
- **The important thing is to make sure that something is filled in for each day.** In filling out the calendar, we would like you to be as accurate as possible. However, if you cannot recall whether you experienced a panic attack on Monday or Tuesday of a certain week, or whether it was the week of November 9th or the week of November 16th, **give it your best shot!** The purpose of the calendar is to get as accurate a picture of what your panic attacks have been like for the indicated time period in terms of number of panic days and number of panic attacks per day.

HELPFUL HINTS

→ Encourage the participant to use an **appointment book** or a **daily diary** if they have one to help them identify events or situations associated with having panic attacks.

→ After marking off all significant events over the past month, it will probably be easiest to start with today and work backwards in reconstructing their panic attacks during step 3. However, allow them to work forward if they feel it would be easier.

→ If the participant appears to have difficulty remembering the days that he/she had a panic attack, try to pinpoint the exact date by using the above list of strategies. If all else fails, have them narrow the week down and guess as to which day(s) they had a panic attack. Encourage them to give it their best shot.

VITA

William Andrew Nelson

PERSONAL INFORMATION

Born: April 1, 1973, Whiteman AFB, MO
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EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg, VA
Master of Science candidate, Clinical Psychology
Title of thesis: Assessment of Panic Frequency: Reliability and Validity of a Timeline
Follow-Back Method
Major Advisor: Dr. George A. Clum
GPA: 3.73

The University of Texas, Austin, TX
Bachelor of Arts, 1995
Major: Psychology
Minor: Mathematics, Sociology
GPA (last 58 hours): 3.84

Graduate coursework

Intellectual Assessment
Personality Assessment
Behavioral Assessment & Treatment
Clinical Neuropsychology
Psychopathology
Interventions in Psych. Systems
Biological Bases of Behavior
Personality Processes

Cognitive Psychology
Ethics
Research Methods
Statistics for Social Sciences I
Statistics for Social Sciences II
Adv. Statistics: Multiple Regression

CLINICAL TRAINING

- 1998 Veterans Hospital, Salem, VA – Clinician
Extern position, specializing in the individual assessment and treatment of a variety of psychological disorders, including depression, bipolar disorder, PTSD, OCD, social phobia, adjustment disorder, antisocial & borderline personality disorders. Responsibilities also included conducting group therapy for depression, PTSD, and smoking cessation and conducting assessments for decisions of hospitalization in the psychiatric emergency room.
Supervisor: Dr. M. K. Johnson, Licensed Clinical Psychologist
Approximate number of hours: 500
- 1997-1998 Psychological Services Center at Virginia Tech – Graduate Clinician
Graduate level team specializing in the assessment and treatment of a variety of psychological disorders, including panic, OCD, PTSD, GAD, substance dependency, anger management, and relationship problems. Responsibilities also included conducting group therapy for panic disorder.
Supervisor: Dr. George A. Clum, Licensed Clinical Psychologist
Approximate number of hours: 500
- 1996-1997 Psychological Services Center at Virginia Tech – Graduate Clinician
Graduate level team specializing in the assessment and treatment of a variety of psychological disorders, including depression, attention deficit disorder, substance dependency, anger management, and relationship problems.
Supervisor: Dr. Richard Eisler, Licensed Clinical Psychologist
Approximate number of hours: 250

EMPLOYMENT

- 1999 Psychological Services Center – Assessment Clinician
Virginia Polytechnic Institute and State University, Blacksburg, VA
Duties include administering comprehensive intellectual and achievement batteries for children and administering structured comprehensive clinical interviews to parents.
Supervisor: Dr. Tom Ollendick, Licensed Clinical Psychologist
- 1999 Psychological Services Center – Web Page Designer
Virginia Polytechnic Institute and State University, Blacksburg, VA
Duties include integrating the Psychological Services Center with the electronic community via an interactive web page.
Supervisor: Dr. Lee Cooper, Licensed Clinical Psychologist

- 1998 Teaching Assistant
Virginia Polytechnic Institute and State University, Blacksburg, VA
Teaching assistant for Psychopathology graduate course. Duties included designing and grading quizzes, and providing individual assistance for graduate students.
Supervisor: Dr. Richard Eisler, Licensed Clinical Psychologist
- 1998 Teaching Assistant
Virginia Polytechnic Institute and State University, Blacksburg, VA
Teaching assistant for Research Methods graduate course. Duties included running review sessions and providing individual assistance for graduate students.
Supervisor: Dr. Robert S. Stephens, Licensed Clinical Psychologist
- 1997-1998 Introductory Psychology Office Assistant
Virginia Polytechnic Institute and State University, Blacksburg, VA
Responsibilities included maintaining an interactive web page for Introductory Psychology, including developing and linking to interactive tutorials, lecture outlines, and chapter objectives.
Supervisor: Dr. Jack W. Finney, Licensed Clinical Psychologist
- 1996-1997 Teaching Assistant
Virginia Polytechnic Institute and State University, Blacksburg, VA
Taught four (4) Introduction to Psychology laboratories (30-35 students per class). Duties included developing lesson plans, facilitating discussion, and lecturing in a laboratory section associated with an undergraduate psychology course, writing and administering exams, grading essays, and providing individual assistance to students.
Supervisor: Dr. Jack W. Finney, Licensed Clinical Psychologist

TEACHING EXPERIENCE

- 1998 Teaching Assistant – Psychopathology Teaching Assistant
(previously discussed)
- 1998 Teaching Assistant – Research Methods Teaching Assistant
(previously discussed)
- 1996-1997 Teaching Assistant – Introductory Psychology Teaching Assistant
(previously discussed)

RESEARCH EXPERIENCE

- 1996 – present Researcher in Anxiety and Panic Disorder Lab, Virginia Tech
Assessment of the reliability and validity of a timeline follow-back interview for panic frequency
Assessment of a web-based panic assessment
Meta-analytic review of current self-help interventions in psychological disorders
Assessment of a coping inventory for post-traumatic stress disorder
Evaluation of a personal problem-solving protocol
Development and testing of a multimedia intervention in the treatment of panic disorder
Comparison of the effects of audio tapes on the efficacy of self-help treatment for panic disorder.
Supervisor: Dr. George A. Clum, Licensed Clinical Psychologist
- 1994-1996 Research Assistant in Anxiety Disorders Lab, University of Texas at Austin
Responsibilities included identifying potential subjects for the project, administering questionnaires, participating in the treatment of the identified claustrophobics (cognitive aversion training) to help them reduce their fear, recording data, and assisting in the writing of the script and the design of the distraction task for the study.
Supervisor: Dr. Michael J. Telch
- 1995 Research Assistant in Social Personality Lab, University of Texas at Austin
Responsibilities included administering questionnaires, coding and entering data, and helping in the analysis and interpretation of some of the results.
Supervisor: Dr. Kelly A. Brennan

REFEREED PUBLICATIONS

- Clum, G. A., Roodman, A., Nelson, W. A., Hirai, M., Febraro, G. (in review).
Reliability and validity of the Panic Coping Inventory. Journal of Psychopathology and Behavioral Assessment.

PROCEEDINGS OF MEETINGS AND SYMPOSIA

- Nelson, W. A. & Clum, G. A. (1999, March). A timeline follow-back technique applied to panic attacks. In G. A. Clum (Chair), Advancements in the Assessment of Anxiety Disorders. Symposium conducted at the meeting of the Southeastern Psychological Association , Savannah, GA.
- Nelson, W. A., Esposito, C., Hirai, M., & Clum, G. A. (1999, March). The relative importance of diagnostic and psychosocial factors in predicting suicidality. In G. A. Clum (Chair), Recent Advances in Models of Suicide Prediction. Symposium conducted at the meeting of the Southeastern Psychological Association , Savannah, GA.
- Nelson, W. A., & Clum, G. A. (1999, March). Assessment of panic frequency utilizing a timeline follow-back method. Poster session presented at the annual meeting of the Southeastern Psychological Association , Savannah, GA.
- Hirai, M., Nelson, W. A., & Clum, G. A. (1999, March). A program for panic sufferers. In G. A. Clum (Chair), Advancements in the Assessment of Anxiety Disorders. Symposium conducted at the meeting of the Southeastern Psychological Association , Savannah, GA.
- Clum, G. A., Nelson, W. A., & Hirai, M. (1999, March). The validation and clinical utility of the Panic Coping Inventory. In G. A. Clum (Chair), Advancements in the Assessment of Anxiety Disorders. Symposium conducted at the meeting of the Southeastern Psychological Association , Savannah, GA.
- Jeffrey, A., Clum, G. A., Nelson, W. A., & Hirai, M. (1999, March). Assessment of trauma coping skills. In G. A. Clum (Chair), Advancements in the Assessment of Anxiety Disorders. Symposium conducted at the meeting of the Southeastern Psychological Association , Savannah, GA.
- Nelson, W. A., Hirai, M., & Clum, G. A. (1997, April). An examination of the coping strategies of panic sufferers. Poster session presented at the annual meeting of the Virginia Polytechnic Institute and State University Psychology Conference, Blacksburg, VA.