PHYSIOLOGICAL RESPONSE TO PHOBIC IMAGERY SCRIPTS: AN EXAMINATION OF THE INFLUENCE OF COGNITIVE RESPONSE CUES AND INTERACTIVE PRESENTATION

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(ABSTRACT)

Twenty-four anxiety disorder subjects, 12 simple phobics and 12 panic disorders with agoraphobia, were assessed for physiological response (SCL, HR and EMG) to phobic imagery scripts. Subjects were instructed to image during tape-recorded scripts of standardized neutral (Neutral) and personally relevant fear (Phobic) scripts. All scripts contained both stimulus and response cues; however, subjects were presented four versions of a script which varied in response cue (propositional) content and presentation style: a version presented non-interactively which contained no cognitive cues (meaning propositions), a version presented non-interactively which contained cognitive cues, a version presented interactively which contained no cognitive cues, and a version presented interactively which contained cognitive cues. Both diagnostic groups produced significantly increased HR and SCL in response to Phobic scripts which contained cognitive cues and were presented interactively. Phobic Scripts which contained cognitive cues and were presented non-interactively produced significantly increased arousal only in the panic disorder group as measured by HR. Simple phobics also responded with significantly increased SCL to Phobic

scripts presented interactively with no cognitive cues. Neither diagnostic group responded with increased arousal to the Phobic script presented non-interactively with no cognitive cues. Contrary to previous research, these results indicate that subjects with panic disorder with agoraphobia are capable of producing significantly increased physiological arousal in response to phobic imagery. The crucial importance of imagery script content and presentation style are highlighted by the results. Furthermore, the current investigation differed from previous investigations in that the parameters of an actual therapy session were more closely approximated by having the subjects image during script presentation rather than subsequent to script presentation. Finally, frontalis EMG did not prove to be a sensitive measure of anxiety in these subject populations pointing to the need for multiple channels of physiological measurement. Implications for content and methodology of future research studies in this area are discussed.

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INTRODUCTION

The phenomenological experience of "images" lead the Greek philosophers to speculate on the role of imagery in thought. Indeed, many of these early thinkers proposed images as the fundamental unit of cognition, thereby equating the very nature of cognition with images (Horowitz, 1983). Subsequent cognitive theories have assigned widely varying degrees of importance to imagery in cognition with a period of almost 50 years (ending in the late 1960's) during which the study of imagery was essentially eschewed by the field of psychology. (Plyshyn, 1973). Today, a renewed interest in imagery continues with psychological theorists and researchers not only returning to the examination of the role of imagery in cognition, but also turning efforts toward exploring the use of imagery in assessment and therapeutic interventions. (Horowitz, 1983).

In the wake of this research, questions regarding the efficacy of imaginal therapy techniques have arisen. Some researchers have suggested that imaginal techniques are not an appropriate treatment for certain populations as well as that in general, imaginal techniques are not as efficacious as other exposure techniques (Brehony & Geller, 1981; Emmelkamp, 1979; Lang, 1985; Mathews Gelder & Johnston, 1981; Mavissakalian & Barlow, 1981). Such conclusions are based at least in part on data indicating the failure of imaginal techniques to produce arousal commensurate with that produced by other more direct exposure techniques such as in vivo flooding. Furthermore, results of some recent research have suggested that agoraphobics (with panic attacks) are not consistently physiologically responsive to phobic imagery (Levin, Cook & Lang, 1982; McNeil,

Melamed, Cuthbert & Lang, 1984). However, other data has indicated that imagery can evoke significant increases in physiological arousal in a similar population, (subjects with panic disorder both with and without agoraphobic symptoms) and therefore may be a viable treatment strategy with this population (Watkins, Clum, Borden, Broyles & Hayes, 1986).

Clearly, this area is in need of further examination and exploration. The purpose of the present investigation is to delineate and empirically evaluate two variables which may influence the efficacy of imagery techniques with regard to producing physiological arousal: cognitive response cues and script presentation style. Initially, a review of relevant literature will be presented to clarify issues critical to the proposed investigation. The bio-informational theory of emotional imagery (Lang, 1979) will be presented in some detail as an understanding of this conceptualization of imagery is crucial to the proposed empirical investigation. Lang's (1985) conceptualization of the imaginal representation of fear in agoraphobics will then be challenged by examining the cue structure of imaginal scripts and the method used to present scripts in his research. While the scripts used by Lang and his associates include the presentation of both stimulus and response cues (which has been demonstrated to be crucial), these scripts do not include cognitive response cues. For example, these scripts do not contain any cues representing catastrophic thoughts which are often experienced by individuals diagnosed as having panic disorder with agoraphobia. Evidence will be presented which highlights the importance of presenting cognitive response cues in imaginal phobic scripts for individuals diagnosed as having panic disorder

with agoraphobia. Furthermore, Lang and his associates have presented phobic scripts to subjects simply by reading them to the subjects. Information will be offered which suggests that an interactive style of presenting phobic scripts (i.e. presentation which requires that subject verbally reply with response cues during script presentation) would result in more responsiveness to the script.

To summarize, literature supporting the hypothesis that these two variables, response cue type and presentation style, influence access to and retrieval of emotional memories in agoraphobic individuals will be reviewed. Following this review, an empirical assessment of the influence of these variables will be offered.

Bio-informational Theory of Emotional Imagery

Lang (1979) has developed a cognitive theory of imagery which focuses primarily on the type of imagery that would be utilized in a therapeutic setting -- emotional imagery. He has agreed with Plyshyn in his conceptualization that an image is a an "internally constructed perceptual description" (p. 500). Lang has further proposed that images are "functionally organized, finite sets of propositions" (Lang, 1977, p. 864). Lang uses the term proposition as it is used in the study of logic; that is a proposition is the "logical relationship between concepts" (Lang, 1979, p. 499). Essentially, Lang has taken a position similar to that of other cognitive psychologists, such as Kieras (1978), who have also proposed that knowledge is organized and stored by the brain in propositional networks. The thrust of propositional theory is that all knowledge is translated into a common underlying code in order to be stored by the brain. That common code is the propositional network. Propositional networks contain a wide variety

of information descriptive of the relationship of concepts to one another including both semantic and perceptual information. Lang presented the diagram in figure 1 as a schematic representation of a propositional network for the information that "you are alone watching a nearby snake, one meter in length, and you are afraid" (Lang, 1979).

Insert Figure 1 about here

As is demonstrated by Figure 1, the propositional network contains information not only about the stimuli perceived (the one meter snake), but also regarding responses to the stimuli (fear). Response propositions have been divided into three categories: verbal responses (including both overt and covert), overt motor acts, and physiological responses (Lang, 1968). More specifically, Lang (1977) has delineated the following taxonomy for the propositional units of affective imagery. Stimulus propositions include auditory, visual, tactile, cutaneous, olfactory, vestibular and kinesthetic information. Turning to the three categories of response propositions, verbal responses include overt vocalizations as well as covert verbalizations: emotional labelling, self-evaluative statements and attribution of attitudes to others. Somatomotor events include muscle tension, uncontrolled gross motor behavior and organized motor acts such as freezing, approaching or avoiding. Finally, visceral events are postulated to include heart rate, sweating, vascular changes, pilomotor responses, salivation, respiration, gastro-intestinal distress and urinary dysfunction.

Support for Lang's conceptualization has come from a variety of research studies. Numerous studies have demonstrated the presence of actual efferent activity when subjects are engaged in imaginal reproductions (Deckert, 1964; Brady & Levitt, 1966; Lang, 1978; Weerts & Lang, 1978; Lang, Kozak, Miller, Levin, & Mclean, 1980). For example, Weerts and Lang (1978) found that occular movement coincided with occular movements required to successfully perform a word detection task when subjects were asked to imagine performing the just completed task. Additionally, another study from Lang's laboratory (Lang, Kozak, Miller, Levin & McClean, 1980) indicated that increases in somato-visceral responding (as measured by heart rate and respiration) could be produced to fearfully rated imaginal scenes in subjects trained to be attuned to response cues. In a further examination of affective imagery, this group (Lang, Levin, Miller and Kozak, 1983) found that the physiological response to phobic relevant imagery in response-trained subjects paralleled physiological responses to actual phobic stimuli. Data such as these lend support to the notion of the propositional network as conceived by Lang; that is as containing both stimulus and response information. In summary, propositional theory proposes that imagery is the phenomenological experience of retrieving information from the propositional network in which all knowledge is stored. When subjects are instructed to image and do so, an information processing function occurs which results in retrieval of select information from the underlying propositions (Plyshyn, 1973). Imagery might be conceived of as a by-product of this retrieval process.

Response propositions are perhaps the most critical element of the propositional network with regard to the use of imagery in psychotherapy (Lang, 1977). The course of therapy using imaginal techniques usually involves having the patient image actual events via verbal presentation of a script by the therapist. By presenting the script, the therapist is attempting to have the client re-create in imagination an event which contains both stimulus information and critically, the client's response to the stimuli. The goal of many psychotherapies is to change the client's responses (be they verbal, behavioral or physiological) in certain situations. If a close approximation of the client's response in an actual situation can be reproduced imaginally, then it follows that imagery could be used to facilitate in vivo behavior change. Indeed, Lang has suggested that imaginal therapy can be characterized as "the reorganization of the image unit in a way that modifies the affective character of its response elements" (Lang, 1977, p. 867). As conceptualized by Lang (1979):

> the image is a prototype in the brain for overt responding... it has a perceptual-motor set which controls contextual behavior... it is the processing of the affective image in therapy, the alteration of its cognitive and programmatic motor structure which mediates significant behavior change. (p. 506)

Imaginal Exposure Therapy Techniques

Among clinical researchers in the field of anxiety disorders, one major treatment strategy adopted has been to expose anxious subjects to feared stimuli in order to extinguish their fear or to re-condition their response to the feared stimuli (Chambless & Goldstein, 1982; Emmelkemp, 1982; Marks, 1972; Stampfl & Levis, 1967; Wolpe, 1958). The use of imaginal exposure techniques can offer a

decided advantage over in-vivo or media presentation of anxiety provoking stimuli. Anxiety provoking stimuli are not always easily produced in vivo. In fact, early in the course of therapy the exact nature of the anxiety provoking stimuli may not be clear, requiring exploration of potential sources of anxiety. Clearly, in most cases, it would be impractical to have to rely on a series of in vivo presentations of stimuli during this exploratory phase of therapy. However, even in those cases in which the anxiety stimuli can be identified from the outset, in-vivo presentation may still present significant obstacles. For example, a therapist might not be able to arrange therapeutic in vivo exposure for a patient experiencing anxiety in the work place involving interactions with superiors. Likewise, some stimuli, such as those involved in specific combat trauma, are virtually impossible to present in vivo. Media presentations suffer from the shortcoming of being more generic, as they are usually standardized, (for financial and pragmatic reasons) rather than specific to a patient's anxiety provoking stimuli. Finally, it is difficult to conceive of how one would arrange for in vivo exposure for individuals who experience anxiety in response to cognitions, such as thoughts of illness and injury (Norton, Harrison, Hauch, & Rhodes, 1985).

Imaginal exposure techniques are essentially devoid of the problems delineated above. Imaginal techniques lend themselves readily to exploratory assessment, allow the tailoring of stimuli to the specific fears of the individual patient, and can be adapted to include cognitive elements or stimuli that are impossible to reproduce in-vivo. Consequently, various imaginal approaches including imaginal flooding, (Marks, 1972) implosion, (Stampfl & Levis, 1967) and

systematic desensitization (Wolpe, 1958) have been used therapeutically with anxiety disorders. While the psychotherapy outcome research examining the efficacy of imaginal techniques for the treatment of anxiety disorders is far from definitive, some patterns have emerged. In general it has been determined that in vivo exposure produces superior treatment outcome for anxiety disorders than does imaginal exposure (Brehony & Geller, 1981; Emmelkamp, 1979; Mathews, Gelder, & Johnston, 1981; Mavissakalian & Barlow, 1981). However, the many difficulties associated with in vivo presentation have already been addressed. Furthermore, this conclusion can be made only tentatively due to methodological inadequacies and methodological variation across studies in this literature (Brehony & Geller, 1981).

It has also been suggested that imaginal exposure techniques are more successful with simple phobics than with agoraphobics (Emmelkamp, 1979; Lang, Melamed & Hart, 1970; Levin et al., 1982; McNeil et al., 1982). Levin et al. (1982) found that agoraphobics produced little physiological arousal in response to personally relevant fear scripts. Likewise, when McNeil et al. (1984) presented five agoraphobics with imagery scripts of personally relevant scenes rated by these subjects as being anxiety provoking, subjects did not respond physiologically.

A recent study, (Cook, Melamed, Cuthbert, McNeil and Lang, 1987) has offered one possible explanation for the differential results found using imaginal techniques with simple phobics versus agoraphobics. Cook et al. examined subjective arousal and physiological responsiveness (as measured by heart rate

and skin conductance) to personal phobic imagery scripts, danger, active and neutral scripts as well as standard fear, active and neutral scripts for 13 simple phobics, 14 social phobics, and 11 agoraphobics with panic attacks. These researchers also assessed imagery ability, dominance of imagery, vividness of imagery, and affective appraisal of imagery to determine the possible contributions of these factors to arousal level. It is important to note that imagery scripts included stimulus cues as well as somato-visceral response and motor response cues. Lang (1979) has previously demonstrated that the inclusion of both stimulus and response cues in imagery scripts is critical for the production of efferent activity. Results indicated no differences in arousal level among the diagnostic categories for non fear scenes. However, significant differences in arousal level were found among the diagnostic groups for personal phobic scenes and standard fear scenes. In general, there was a significantly larger increase in arousal for personal as compared to standard fear scenes. In addition, increases in arousal were greater for a standard speech scene than a standard dental scene with only those subjects who were good imagers showing increased arousal to the dental scene. Furthermore, social phobics showed greater physiological responsiveness to the speech scene than the other diagnostic categories.

The primary analyses of interest in the Cook et al. study involved the examination of arousal to personal phobic scenes as a function of diagnostic category. Simple phobics and agoraphobics differed significantly on both measures of physiological arousal with simple phobics showing the greater physiological arousal to personal phobic scripts. Mean increases in heart rate and

skin conductance displayed by social phobics fell between the means of the two other diagnostic groups and did not differ significantly from either. Vividness of imagery was not related to results. As expected the good imaging simple phobics showed the greatest increases in physiological arousal with a linear reduction in visceral responding for good images from simple to social to agoraphobics. When examining poor imagers, results indicated no significant differences for heart rate, but unexpectedly poor imaging agoraphobics actually had higher skin conductance responses than good imaging agoraphobics.

Cook et al. interpret their data based on Lang's bio-informational model of emotional imagery. They suggest that the configuration of the propositional network for fear memories of agoraphobics differs from that of simple phobics. Specifically, their data is taken as supportive of Lang's contention that the propositional networks of agoraphobics are more diffuse and less coherent (Lang, 1985) than are those of simple phobics which presumably have a highly integrated propositional network. Consequently, the simple phobic can readily access the full propositional network (including, stimulus, and response information) through imagery. Contrastingly, the agoraphobic fear memory structure is postulated as "much less specific in its conceptual contents and/or less reliable in the associative connections between concepts" (Cook et al., 1987, p. 5). Therefore, it is proposed that the agoraphobic cannot always evoke a fear memory representation because "the stimulus settings, subjective interpretations and response patterns which define their stress are unstable" (Cook et al., 1987, p. 5).

If agoraphobics cannot produce increased physiological arousal through imagery, and increased arousal similar to that encountered in-vivo is necessary for successful treatment outcome, (Lang, 1977; Levis, 1980; Solomon, Kamin & Wynne, 1953) then one would expect the poor treatment outcome that has been found when using imaginal techniques to treat agoraphobia. Furthermore, Cook et al.'s findings do not bode well for the future of imaginal techniques with agoraphobics.

While the conceptualization offered by Cook et al. is most certainly a cogent presentation, it seems somewhat premature at this stage to conclude that agoraphobics are incapable of consistently evoking imaginal representations of their fear. An alternate conceptualization of the data based upon recent research examining the role of cognitions in agoraphobia and upon the examination of variables which may influence retrieval of information from the propositional network is offered. Following this presentation, an empirical examination of the alternate conceptualization is proposed.

Cognitive Aspects of Agoraphobia

Westphal coined the word agoraphobia (literally "fear of the marketplace") in the late 1800's as a term for fear of public places. Refinements in the understanding of the nature of agoraphobia has lead researchers to propose that the fear stimulus for agoraphobia is indeed quite broad and general (Brehony & Geller, 1981; Chambless & Goldstein, 1982; Mathews, Gelder & Johnston, 1981). Agoraphobics do not experience anxiety related symptoms to specific stimuli, rather they experience a more generalized anxiety in the presence of a variety of

stimuli which involve "leaving one's place of refuge...and entering the outside world" (Brehony & Geller, 1981, p.2). It has additionally been noted that considerable stimulus generalization usually occurs during the course of this disorder with many agoraphobics also displaying fear of closed places, fear of being alone, fear of travelling, fear of social situations, and panic attacks (Brehony & Geller, 1981; Chambless & Goldstein, 1982; Marks, 1970). With regard to panic attacks in this population, Chambless (1982) has proposed that experiencing panic attacks leads agoraphobics to anticipate and fear the recurrence of panic in similar situations and to avoid or retreat from those situations. Essentially, she posits that agoraphobics fear no specific situations, but potentially can fear any situation from which escape is tentative. Consequently, Chambless and other researchers have conceptualized agoraphobia primarily as a "fear of fear" (Weekes, 1976). Recent revisions in the Diagnostic and Statistical Manual - Revised (DSMIII-R: American Psychiatric Association, 1987) are consistent with this conceptualization of the nature of agoraphobia.

DSM-IIIR has reclassified Agoraphobia with Panic Attacks under the rubric Panic Disorder with Agoraphobia. The diagnostic criteria specify that individuals diagnosed with this disorder must experience the full symptom picture of panic disorder. Additionally, the criteria further require that the following indications of agoraphobia be present:

> fear of being in places or situations from which escape might be difficult (or embarrassing) or in which help might not be available in the event of a panic attack....As a result of this fear, the person either restricts travel or needs a companion when away from home, or else endures agoraphobic situations despite intense anxiety. (Diagnostic and Statistical Manual, APA, 1987, p. 238).

An examination of the diagnostic criteria and the conceptualization of agoraphobia as "fear of fear", reveals that the potential role of cognitions in symptom development and maintenance would be considerable. Indeed, cognitions would seem to be the crucial variable in determining situations in which panic attack symptoms would be displayed. That is, the situation would have to be interpreted as one from which escape would be difficult or embarrassing or in which help might not be available. Therefore, it seems reasonable to postulate that without the cognitive interpretation, a situation would not be feared, panic symptoms would not be displayed, and the situation would not be avoided.

Theoretician/researchers have expounded on the importance of cognitions in agoraphobia. For example Mathews, Gelder and Johnston (198) propose that thoughts that the somatic symptoms of anxiety will produce catastrophic consequences results in further increases in anxiety. Burns and Thorpe (1977) have documented that agoraphobics experience the following fear cognitions in relation to increases in anxiety: fear of fainting, death, personal illness, losing control, causing a scene, being unable to get home to place of safety, becoming mentally ill, and having a heart attack. Last, O'Brien and Barlow (1985) have indicated that negative cognitions are corrrelated with anxiety in agoraphobics with panic attacks.

A related literature has examined the role of cognitions in panic attacks. In a model developed by Clum and Pickett (1984), predisposing factors are hypothesized to interact with triggering events and cognitions to produce an acute

panic attack. Following such an attack, future somatic sensations similar to those of the acute panic attack are interpreted as indicative of the initial stages of a panic attack which in turn precipitates the onset of another panic attack. Evidence of the role that cognitions play in panic disorder has been provided by Hibbert (1984) who identified cognitive themes related to personal harm and danger in panic patients.

Treatment outcome studies examining the use of cognitive behavioral techniques with both agoraphobic and panic disordered individuals offer further support for the mediational role of cognitions in these disorders. Using a crossover design, Ascher (1981) compared a cognitive intervention with in vivo exposure in agoraphobics with results indicating that the cognitive intervention produced superior results following the first phase of treatment. In another treatment comparison study, Michelson, Mavissakalian & Marchione (1985) explored the efficacy of paradoxical intention (cognitive intervention), graduated exposure and muscle relaxation in panic subjects with results indicating improvement for all treatment groups on both behavioral avoidance and self-report measures.

In a recent pilot investigation conducted with patients diagnosed as having panic disorder (Borden & Hayes, 1986), a relationship has been established between coping effectiveness, panic thoughts and panic symptoms. This same investigation examined the efficacy of a new treatment technique, Guided Imaginal Coping (GIC), (Clum, 1986) as compared to flooding and no treatment control. Results indicate that GIC produced greater reduction in number of panic

attacks, and a reduction in catastrophic thoughts. These findings offer evidence that catastrophic cognitions co-vary with panic attack symptoms.

In a subsequent examination of the effectiveness of GIC by Borden (1987), similar results were borne out with regard to the influence of cognitions on anxiety symptoms in panic disorder. Based on self- efficacy theory, Borden proposed that individuals with panic disorder would not feel that they are capable of coping with their symptoms, would consequently focus on their lack of coping ability which would in turn produce catastrophic thoughts and an exacerbation of symptomatology. This study examined changes in self-efficacy and the influence of self-efficacy on coping skills, catastrophic thoughts, panic symptoms and level of avoidance as a function of treatment group. Twenty subjects diagnosed as having either Panic Disorder or Agoraphobia with Panic Attacks were randomly assigned to one of two treatment groups: Guided Imaginal Coping or Panic Education. Results indicated that self-efficacy was significantly increased in the both the GIC group and the educational group. Furthermore, data revealed a bi-directional relationship between self-efficacy and coping ability, symptoms, level of avoidance and catastrophic thoughts. Additionally, improvements in self-efficacy resulted in reduced symptoms, reduced avoidance, and reduced catastrophic thoughts and increased coping strategies. Likewise reductions in symptoms, reduced avoidance, reduced catastrophic thoughts and increased coping strategies produced higher self- efficacy. Data from this study again demonstrate that catastrophic thoughts co-vary with panic attack symptoms as well as offering additional evidence of the

mediational role of self-efficacy cognitions in the development and maintenance of agoraphobic and panic symptoms.

In summary, both assessment and treatment studies have indicated the importance of cognitions (both catastrophic thoughts and self- efficacy) in the etiology and maintenance of symptoms of panic attack with agoraphobia. Additionally, an individual's interpretation of a situation is crucial to the diagnostic criteria for Panic Attack with Agoraphobia as defined in the DSMIII-R.

Covert Verbal Responses and Imaginally Evoked Arousal

Bearing in mind the proposed crucial role of cognitions in agoraphobia, the results of Cook et al. (1987) will now be re-examined. In the discussion of findings from their study, these authors suggest that perhaps no significant increases in somato-visceral responding were found in the agoraphobic population because the scripts used "failed to capture the essence of their prototypical fear situations, or did not include the propositions which prime physiological reactivity". This possibility is then dismissed based on an examination of the phobic scenes questionnaire used to develop scripts used in their study. This questionnaire consisted of 52 response descriptors of physiological and behavioral responses. Subjects were asked to endorse items that coincided with those they experienced during the situations upon which their phobic scripts were based. Cook et al. reasoned that because the agoraphobic subjects actually endorsed significantly more response items than the other two subject groups, it is doubtful that the scripts were missing critical information. However, it is most important to note that the items on this questionnaire are descriptors of behavioral and

physiological responses only; Cognitive responses were not represented on the questionnaire. Therefore, the comparison of responses endorsed among the groups may be irrelevant to the question of whether or not the scripts were adequate to produce physiological reactivity. Furthermore, an examination of sample scripts from previous research conducted by researchers associated with Lang's laboratory reveals that scripts used by these researchers focus on physiological and behavioral responses excluding cognitive responses(Lang, 1979; Lang, Kozak, Miller, Levin & McLean, 1980; Lang, Levin, Miller & Kozak, 1983). As previously noted, Lang has postulated the importance of covert verbal responses in the taxonomy of the affective image. From his description, covert verbal responses are synonymous with cognitions as used by this investigator (Lang, 1977). Yet, it appears that he and other researchers in his laboratory have neglected to attend to the potential importance such cues would play in evoking anxiety responses.

Based on data reviewed previously suggesting the mediational role of cognitions in the production of panic and agoraphobic symptoms, it was proposed that Cook et al. failed to find physiological responsiveness to phobic imagery because relevant cognitive response cues were not systematically presented in the imagery script. This interpretation is consistent with previous research indicating that relevant response cues are necessary to produce physiological responsivity (Lang, 1979). Furthermore, the current investigation does not necessarily challenge Lang's contention that the propositional network of agoraphobics is more diffuse than that of simple phobics. It may well be that the propositional network of fear memories of agoraphobics are less cohesive than

that of simple phobics in the sense that anxiety is not tied consistently to a specific stimulus. However, fear memories of agoraphobics may be consistently tied to certain mediating cognitions (e.g. catastrophic thoughts, low self-efficacy). Consequently, presentation of these cognitions as cues in the phobic imagery script should produce concomitant physiological arousal.

A recent investigation by Watson et al., (1990) offers support for the crucial role of cognitive cues in phobic imagery scripts. In this investigation heart rate in response to imagery scripts was examined in subjects diagnosed as having panic disorder. Researchers measured heart rate during baseline, and during one minute imagery periods. Scripts utilized were individualized relaxation, neutral, stress and panic scripts. Stress scripts included stimulus cues whereas panic scripts included both stimulus and response cues. However, researchers conducting this investigation conceptualized cognitions as playing a mediating role in the production of panic symptoms. That is, cognitive cues were not classified exclusively as either stimulus or response cues and therefore appeared in both stress and panic scripts. Results from this study indicated a significant difference in physiological arousal level from baseline to both stress and panic imagery periods. There was no significant difference in heart rate between the stress and panic imagery periods. Differences obtained in heart rate from baseline to panic imagery period in this study are similar to differences obtained in Cook et al. for simple phobics from baseline to phobic imagery period. These data indicate that panic attack subjects can evoke imagery in response to scripts which will produce significant physiological reactivity. The number of subjects

with agoraphobic symptoms was not specified in this study, therefore the population may be somewhat different than the subjects in the Cook et al. study designated as agoraphobic with panic attacks. Nevertheless, results from this study highlight the need for further and systematic investigation of the role of cognitions in evoking physiological responses particularly in a Panic Attack with Agoraphobia population.

Avoidance and Imagery Script Presentation

One unexpected finding by Cook et al. (1987) was that poor imaging agoraphobics actually experienced more physiological arousal to phobic imagery scripts than did good imaging agoraphobics. Initially, these results seem particularly puzzling. However, an examination of Dominance ratings of imagery may provide some insight into these data. Dominance ratings in this study were designed to measure whether subjects felt in control of the image or controlled by the image. Ratings of phobic imagery by simple and social phobics produced lower dominance scores indicating that these subjects tended to feel controlled by the images. However, results were reversed in agoraphobic subjects with poor imagers reporting significantly lower dominance scores than good imagers. These results indicate that poor imaging agoraphobics tended to feel more controlled by their phobic images than did the good imaging agoraphobics. Although agoraphobic patients did not report their images to be less vivid or arousing than the other diagnostic groups, ratings on dominance of imagery indicate that the good imaging agoraphobics felt more in control of their images than did the other two diagnostic groups. Additionally, the mean Dominance rating for phobic

imagery for the poor imaging agoraphobics was equivalent to that of the good imaging simple phobics. One possible explanation for these findings is that good imaging agoraphobics were "avoiding" some aspect of the image during phobic script presentation. Given that avoidance of anticipated anxiety is characteristic of this population, and those subjects who are good imagers would most likely experience the most anxiety, avoidance is a strategy likely to be adopted by these subjects. Although no empirical data is available at present, clinical evidence suggests that agoraphobics employ this strategy to manage their anxiety.

These results suggest that the mode of script presentation should be designed to prevent avoidance. Levis (1980) has recommended that imagery scripts (in implosion) be presented in an interactive fashion to prevent avoidance and to increase responsiveness. Implosion sessions involve not only the presentation of an imagery script, but also the responses of the subject are reported verbally during the session so that the session takes on an interactive quality. Presenting, an imagery script in an interactive fashion would more closely approximate the parameters of an actual therapy session as well as potentially making avoidance of relevant phobic cues more difficult. Furthermore, although no empirical studies have directly addressed this issue, there is a conceptual basis for the expectation that an interactive presentation of phobic imagery scripts, which elicits response cues from the subject, will produce better memory access. Specifically, this mode of presentation should force subjects to engage in a more active memory search and thus should produce better access to stored information (H. E. Ellis, personal communication, November 9, 1987).

Current Investigation

The present investigation was designed to evaluate the effect of including individualized cognitive response cues in imagery scripts with subjects diagnosed as Panic Disorder with Agoraphobia (PDA) as compared to subjects diagnosed as Simple Phobia (SP). Furthermore, the influence of presenting scripts in an interactive fashion was investigated. Additionally, in order to increase the sensitivity of this investigation as compared to previous investigations, multiple channels of physiological responsivity were examined. As was noted by Cook et al. (1987) it is possible that significant results were not obtained because the response patterns of the agoraphobic population is manifested in some way that was not assessed by heart rate or skin conductance. In fact, it was noted by the investigators that the agoraphobic group reported significantly more muscle tension responses than the other two subject groups. Therefore, heart rate, skin conductance and electromyogram will all be assessed in this study.

These physiological measures also provided preliminary data for validation of self-report of panic symptoms as well as addressing the question of response synchrony in this population. A recent analysis of data obtained using two self-report measures, the Panic Attack Symptom Questionnaire (PASQ) and the Panic Attack Cognitions Questionnaire (PACQ) (Clum, Broyles, Borden & Watkins, 1987), has identified the presence of eight symptom factors and eight cognitive factors. Symptom factors identified included: disorientation, general autonomic arousal, stomach distress, parasthesia, chest discomfort, nausea, and two unnamed factors (factor 7 contains these items: difficulty swallowing, hands or

feet feel cold, sensitivity to loud noises; factor 8 contains these items: hands or feet feel cold, mouth dry, nerves feel wired, vision becomes blurred or distorted). Factor analysis of the PACQ resulted in these factor structures: general loss of control, physical disaster, public scrutiny, loss of bodily control, mental fitness, stroke, brain tumor, and claustrophobia. An exploratory examination of the relationship of these factors to actual physiological responses was conducted. Specifically, physiological responsivity was compared to symptom endorsement on the PASQ, PACQ and factors to determine criterion validity of these instruments and their factors. Additionally, these data were used to examine response synchrony and desynchrony in this population.; that is, concurrence of subjective report of physical symptoms and actual physiological response was computed.

Specific Hypotheses

Both cognitive cues and interactive presentation were expected to impact upon physiological responsiveness. Specifically, it was predicted that:

1. Both SP and PDA subjects would display more arousal to personally relevant fear scripts (collapsing across versions of scripts) as compared neutral imagery scripts.
2. PDA subjects would produce significantly more physiological arousal to personally relevant fear scripts containing cognitive cues as compared to arousal levels during neutral scripts containing cognitive cues.
3. PDA subjects would produce significantly more physiological arousal to personally relevant fear scripts presented interactively as compared to arousal levels during neutral imagery scripts presented interactively.

4. Personally relevant fear scripts which were presented interactively and which contained cognitive cues would produce the highest levels of physiological arousal as compared to other versions of fear scripts in PDA subjects.

5. SP subjects would respond with increased physiological arousal to all versions of personally relevant fear scripts as compared to arousal during corresponding neutral imagery scripts regardless of whether scripts were presented interactively or had cognitive cues. However, it was expected that fear scripts presented interactively which contained cognitive cues would also produce the highest levels of arousal as compared to other versions of fear scripts in SP subjects.

6. Subjective ratings of arousal in the SP group would be consistent with actual physiological arousal across all scripts. However, in the PDA group it was expected that subjective ratings of anxiety for phobic scripts would be most consistent with physiological measures of arousal for scripts presented interactively and which contained cognitive cues.

Method

Design

A mixed model experimental design was used with one between subjects factor, diagnostic group, and three within subject factors, type of script, presentation style, and cue type. The design is as follows: 2 (Diagnostic group: Simple Phobia, Panic Disorder w/ Agoraphobia) x 2 (Script Type: Neutral script, Phobic script) x 4 (Script Version: Non-cognitive, Cognitive, Interactive Non-cognitive, Interactive Cognitive). Figure 2 is a graphic presentation of the study design.

Insert Figure 2 about here

Physiological reactivity as well as subjective ratings of anxiety in response to each imagery script were the primary dependent measures. Additionally, imagery ability was assessed using a standardized measure of imagery ability to determine if this variable should be used as a covariate. Self-report measures of panic symptoms and panic cognitions were used to assist in script preparation and to examine the relationship between these measures and actual physiological symptoms.

Subjects

Subjects were recruited from the Blacksburg community. Fliers (See Appendix A) were mailed out to all graduate student, staff and faculty of Virginia Tech University. Additionally, fliers were placed on public bulletin boards around campus, in dormitories, and in the downtown area of Blacksburg. Subjects were screened from the subject pool using the Anxiety Disorders Interview Schedule-Revised (ADIS-R: DiNardo, Barlow, Cerny, Vermilyea, Vermilyea, Himadi & Waddell, 1985). The ADIS-R (Appendix B) is a structured interview based on DSMIII-R diagnostic criteria for anxiety disorders. Reliability studies conducted on the previous version of the ADIS (DiNardo, O'Brien, Barlow, Waddell, & Blanchard, 1983) demonstrated high diagnostic reliability for all categories of anxiety disorders except Generalized Anxiety Disorder (range: k=.658 to .853).

Forty-one potential subjects were screened before identifying 12 individuals who met the DSMIII-R diagnostic criteria for Simple Phobia and 12 subjects who met the diagnostic criteria for Panic Disorder with Agoraphobia. Subjects with evidence of major depression or psychotic thought processes were ruled out for participation in the study. Each diagnostic group contained 3 men and 9 women. All subjects were White with the exception of one PDA subject who was Indian. Subjects ranged in age from 22 to 53 with a mean age of 30.48. Educational level of subjects ranged from 12 to 20 years with a mean educational level of 16.48 years.

Materials and Apparatus

Subjects identified for participation in the study completed the revised version of the Betts' Questionnaire upon Mental Imagery (QMI: Betts, 1909: Sheehan, 1967), the Panic Attack Cognitions Questionnaire (PACQ: Clum et al., 1987), the Panic Attacks Symptom Questionnaire (PASQ: Clum et al., 1987), and the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch & Lushere, 1970).

The revised QMI (Appendix C) assesses imagery ability and has been demonstrated to have adequate construct validity (White, Ashton, & Law, 1978). The range of possible scores on the revised QMI is 35 - 245 with lower scores being indicative of better imagery ability.

The PACQ (Appendix D) consists of 25 items descriptive of frightening thoughts that may accompany panic attacks. Subjects rate how much they are pre-occupied by these thoughts before, during, and after a panic attack on a scale of 1 to 4. The PACQ has been demonstrated to have both high internal

consistency (Cronbach alpha = .88) and discriminant validity. The PASQ (Appendix E) is a 36 item questionnaire that lists physical symptoms often experienced during panic attacks. Subjects rate items on a scale of 1 to 6 in terms of how long each symptom was experienced during an attack. This questionnaire was demonstrated to have adequate reliability as measured by internal consistency (Cronbach alpha = .88) and discriminant validity.

The STAI (Appendix F) includes two 20 item forms designed to measure State anxiety (a transitory emotional condition characterized by subjective feelings of tension and apprehension) and Trait anxiety (a relatively stable anxiety-proneness). The psychometric properties of the STAI have been established through extensive research and revision of the questionnaires (Anastasi, 1982). The STAI has been used widely for assessment of anxiety disorders.

A Coulbourn Instruments polygraph was used to obtain physiological data. Heart rate data was taken from blood volume pulse (BVP) and presented as beats per minute. Skin conductance was measured in millivolts per micromho and was expressed as mean skin conductance level (SCL) during the measurement period. Assessment of muscle tension was obtained from EMG measured in microvolts and expressed as mean level for the measurement period. The Coulbourn was interfaced with an IBM personal computer via a Lablinc analog input port using Labtech Notebook software program. Data management was performed by Lotus 1- 2-3 and data was stored on floppy disks for subsequent editing and reduction.

A subjective self-report rating of anxiety (Subjective Units of Distress Scale - SUDS) was used to measure level of anxiety. Ratings were made on a 10 point fear thermometer (0 = not at all anxious, 10 = the most anxious I have ever felt, See Appendix G) (Malloy, Fairbank, & Keane, 1983; Zimering, Caddell, Fairbank & Keane, 1987). Vividness of each imagery script was rated using the 7 point likert developed for the QMI (1=Perfectly clear & vivid as the actual experience, 7 = No image present at all, you only know that you are thinking of the object, See Appendix H).

Procedure

Screening and Diagnosis. Subjects were screened and diagnosed by the author, an advanced clinical psychology graduate student with 10 years experience with anxiety disorder patients. Assessment sessions were videotaped and diagnosis was independently confirmed by another member of the Anxiety Disorders Clinic Staff. Diagnostic disagreements were settled by the Director of the Anxiety Disorders Clinic. Out of 44 subjects screened, there were two diagnostic disagreements. Before participating in the initial screening interview, subjects read and signed an informed consent statement (Appendix I) explaining the evaluation procedure and that he/she might be asked to participate in further assessment. Subjects not appropriate for the study were offered appropriate treatment through the Anxiety Disorders Clinic of the Psychological Services Center at Virginia Polytechnic Institute and State University or through treatment referral to another agency. Subjects who met inclusion criteria were asked to participate in further psychophysiological assessment. Subjects who

agreed to participate, then completed the QMI, the State-Trait Anxiety Inventory, the PACQ, and the PASQ. The PACQ and PASQ were used in phobic imagery script construction.

Following completion of the questionnaires, subjects supplied descriptions of two of their most memorable and distressing panic attacks or encounters with phobic stimuli which had occurred within the past year. Answers on the PASQ and PACQ were used to guide the author in questioning subjects about relevant cognitive, physiological, and behavioral responses experienced during the scene described. Subjects supplied ratings of how distressing these experiences were using the Fear Thermometer rating scale. Subjects were then scheduled to return for the laboratory imagery assessment. After the subjects left, the author constructed a 2 minute imagery script of the most distressing scene supplied by the subject. If both scenes were rated as equally distressing by the subject, one scene was chosen randomly by the author.

Script Construction. Four versions of each script were prepared. The Non-Cognitive (Non-C) version of the script contained stimulus cues as well as behavioral and physiological response cues. The Cognitive (C) version of the script contained the same stimulus and responses cues as well as the addition of cognitive (or meaning) cues. The Interactive Non-cognitive (INC) was identical in content to the Non-Cognitive version, but included asking the subject to respond to four questions about the image. First, subjects were asked a question designed to elicit descriptions of the stimulus cues (e.g., What do you see in the bar?; What do you hear as you ride in the car?). Then subjects were asked three standard

questions to elicit response cues: 1. What are you feeling now?; 2. What are you thinking now?; 3. What are you thinking and feeling now? These questions were spaced throughout the script. The Interactive Cognitive version (IC), contained stimulus and response cues identical to the Cognitive version and included the interactive questions. Appendix J contains sample Phobic scripts for a PDA subject and an SP subject.

Four versions of a standardized neutral script were also developed. Script content was chosen so that both stimulus and response cues could be presented without presenting a situation which might elicit a panic attack or fear response. The Neutral script presented cues of an individual at home watching colorful autumn leaves falling outside a window (See Appendix K). Scripts were recorded by the author on cassette tape using a recording input level of 4 for both right and left channels maintaining a recording level meter needle deflection within the range of -5 to 0 decibels.

Laboratory Imagery Assessment. The laboratory assessment session was conducted during one 75 - 90 minute session. All four versions of the Neutral and Phobic scripts were presented in the assessment session. In an attempt to control for order effects, order of the presentation of the four versions of the two types of scripts were counterbalanced within script type. All four neutral scripts were presented prior to presentation of phobic scripts to avoid carry-over effects from phobic imagery. Appendix L contains the order that scripts were presented for each subject.

The laboratory assistant greeted subjects and seated them in a sound attenuated dimly lit room. The procedure was explained to each subject and the laboratory assistant attached the electrodes and bvp finger clip. A clip mounted infra-red plethysmograph was placed on the middle digit of the right hand on the distal phalange. Skin conductance electrodes were attached to the thenar and hyperthenar eminences of the left palmer surface. EMG electrodes were placed bi-laterally over the frontalis muscles. The laboratory assistant read standard instructions (Appendix M) to the subjects. Subjects were instructed to relax during the 15 minute adaptation period and that they would be given further instructions when the baseline period was about to begin. The author observed from the adjoining equipment room through a one-way mirror. The author monitored hear rate (HR), skin conductance (SCL) and electromyogram (EMG) signals and informed the laboratory assistant when clean signals were being produced. Headphones were then placed on the subject and the laboratory assistant left the subject room. Music from the second movement of Mozart's Symphony #40 in D Minor was played through the headphones during the adaptation period. Following the adaptation period, taped baseline instructions were played for the subjects and physiological recording for the 5 minute baseline period began. At the end of the 5 minute baseline period, taped instructions for the imagery trials were played for the subjects that indicated that they should experience the scenes as if they were actually there (See Appendix N).

Imagery trials consisted of the presentation of the four versions of a standard neutral script (sitting at home looking out the window at leaves falling off trees)

followed by the four versions of the individualized phobic script. Physiological measurements were taken simultaneously throughout imagery script presentation. Each script was presented for two minutes with an inter-trial interval which varied randomly from 180 to 270 seconds in length. To distract the subjects from the content of the previous script, Mozart's Symphony No. 40 was played during the first segment of the inter-trial interval. The last 30 seconds of the inter-trial interval was treated as an inter-trial measurement period during which no music was played while HR, SCL and EMG data were collected. Imagery scripts were presented on tape through the headphones with the author pausing the tape for subjects to respond to questions during the interactive presentation. Use of the pause feature on the cassette deck produced no audible sound over the headphones.

Following each imagery period, subjects verbally rated their level of anxiety during imaging and imagery vividness using the Fear Thermometer and Vividness Rating Scale. Ratings were recorded by the experimenter. Subjects were then instructed to relax and await the start of the next imagery period.

Following completion of the laboratory procedure, subjects were debriefed regarding the purpose of the study and the author assisted subjects with reducing any anxiety they were still experiencing by instructing subjects in diaphragmatic breathing techniques. Subjects were offered treatment free of charge in a time-limited education and skills training group conducted by the author at the Psychological Services Center (PSC). Following completion of this group, subjects wanting additional treatment were referred to other therapists at the PSC or in

the community. Subjects who were not interested in the group, but still desired treatment were referred for individual therapy at the PSC or other community treatment facilities.

Data Analysis

Cleaning and Editing of Physiological Data. Physiological measures were monitored throughout the imagery assessment session, and subject movements which produced artifacts in the data were noted on a marker channel on the physiological record. Likewise, when subjects responded to questions during the interactive presentation of scripts, it was noted on the marker channel. Using a customized Turbo Pascal program, movement artifacts were edited out of the physiological data. Measurements taken while the subject responded verbally during interactive presentation were also edited out of the record to avoid confounds from increases in arousal caused purely by speaking. Speech segments were edited out from the time the subject began to speak to four seconds after the subject stopped speaking. The Turbo Pascal program also produced summary data (means) for identified periods of interest from the physiological record.

Preliminary Analyses. Relevant demographic variables (age, sex, race, educational level) were analyzed across diagnostic groups via independent t-tests and Chi-Square statistics. Questionnaire data were also compared across diagnostic groups using independent t-tests.

Primary Analyses. Data from the initial baseline period, inter-trial intervals and imagery periods were summarized for physiological measures (Heart Rate, Skin Conductance, and Electromyogram). The two minute imagery

period was divided into 30 second intervals and average values for those thirty second periods were calculated. Difference scores for each variable were calculated by subtracting the 30 second inter-trial interval measurement period which preceded each imagery period from the 30 second imagery period interval scores. Additionally, the 30 second imagery period interval which produced peak values on each variable were analyzed separately (also using difference scores calculated from subtracting the inter-trial interval values). Average values from the last sixty seconds of the initial baseline were summarized for analysis. Skin Conductance Level (SCL), Heart Rate (HR) and Electromyogram (EMG) were initially analyzed via separate 2 (Diagnostic Group) x 2 (Script Type) x 4 (Script Version) x 4 (Interval) repeated measures analyses of Covariance (ANCOVAs) with baseline values of these variables as the covariate. The first factor was measured between subjects (Diagnostic Group: Simple Phobia, Panic Disorder with Agoraphobia), while the second and third factors were measured within subjects (Script Type: Neutral, Phobic), (Script version: Non-cognitive, Cognitive, Interactive Non-cognitive, Interactive Cognitive), (Interval: 1st 30 seconds, 2nd 30 seconds, 3rd 30 seconds, 4th 30 seconds). Values from the peak thirty second interval were analyzed via separate 2 (Diagnostic Group) x 2 (Script Type) x 4 (Script Version) repeated measures ANCOVAs. Newman-Keuls tests were used for Post-hoc comparisons of means when ANCOVAs and ANOVAs revealed significant effects. Greenhouse-Geisser corrected probability levels were used when appropriate. Planned comparisons of corresponding Neutral vs. Phobic versions of scripts and among the Phobic versions of scripts were conducted on

peak interval difference scores and 30 second interval difference scores for each Diagnostic Group and for both Groups combined using F-ratio statistics and t values derived from the F-ratio statistic.via paired t-tests using (30 second) peak interval difference scores.

The order of presentation of script versions was counterbalanced within script type to control for effects of order when examining the effects of script version. However, given that subjects were presented variations of the same basic neutral and phobic scripts, it is possible that habituation/extinction occurred to the script content. Therefore, separate 2 (Diagnostic Group) x 2 (Script Type) x 4 (Presentation Order) x 4 (Interval) repeated measures ANCOVAs (again using difference scores calculated by subtracting the inter-trial interval measurement period value with initial baseline value as the covariate) were conducted to assess the effects of order of script presentation.

Vividness ratings and fear thermometer ratings were analyzed via separate 2 (Diagnostic Group) x 2 (Script Type) x 4 (Script Version) repeated measures analyses of variance (ANOVAs).

Correlations were computed between HR, SCL and EMG peak interval scores and PASQ, PASQ factors, PASQ, and PACQ factors. Correlations among State, Trait , PASQ and PACQ were also calculated.

Results

Preliminary Analyses.

Demographics. There were no significant differences between diagnostic groups on age, race, sex, or education level. Because Diagnostic groups did not differ on these variables, they were not used as covariates. Table 1 presents mean scores and frequency counts for these variables for both diagnostic groups.

Insert Table 1 about here

Questionnaires. Scores on the PASQ [t (22)=3.07,p<.05], PACQ [t (22)=4.39, p<.05], State [t (22)=2.40, p<.05], and Trait [t(22)=2.57, p<.05] were significantly different across diagnostic groups. Because Diagnostic Groups differed significantly on self-reported levels of anxiety indicating a difference in intial levels of anxiety between groups, baseline values on physiological measures were used as covariates in subsequent primary analyses. Diagnostic groups did not differ significantly on QMI scores, therefore imagery ability was not entered as a covariate in additional analyses. Table 2 presents mean scores on questionnaires by Diagnostic Group.

Insert Table 2 about here

Primary Analyses

Heart Rate. Repeated measures ANCOVA using 30 second interval difference scores revealed no significant effects of Diagnostic Group or Group interaction effects. Likewise, effect of Script type was not significant. Script Version effect was significant, $F(3,66) = 3.82$, $P<.05$. The Interactive Cognitive (IC) version of the imagery script produced the highest heart rate followed by Interactive Non-cognitive (INC), Cognitive (C) and Non-cognitive (NonC), respectively. Newman-Keuls analysis indicated that both the IC and INC versions produced heart rates that were significantly greater than heart rates in response to the NonC script. Type x Version interaction was also significant, $F(3,66) = 3.20$, $P<.05$. Newman- Keuls analyses revealed that the Phobic Interactive Cognitive (PIC) Script produced the highest heart rate of all neutral and phobic scripts and was significantly higher than HR during the Phobic Non-cognitive (PNC).

Repeated measures ANCOVAS on the Peak 30 second interval for heart rate indicated that there was no effect of Diagnostic Group, no Group interaction effects or Script Type effect. Analyses did reveal a significant Version effect, $F(3,66) = 4.32$, $P<.05$. Newman-Keuls analyses indicated that the IC elicited the highest heart rate which was significantly higher than heart rates elicited during the NonC. The INC script also produced significantly higher heart rates than the NonC and C scripts. Type x Version effect was significant $F(3,66) = 2.73$, $P<.05$. PIC script produced the highest heart rate which was significantly higher than HR in response to PNC scripts.

Planned comparisons of corresponding Neutral vs. Phobic Scripts across both Diagnostic Groups using 30 second interval difference scores revealed that PIC produced higher heart rates than did NIC [$t(1,66) = 1.72$, $p<.05$ one-tailed] and the PC scripts elicited higher heart rates than NC [$t(1,66) = 2.15$, $p<.05$ one-tailed]. PNC and PINC scripts did not produce higher arousal as compared to NNC and NINC respectively. Comparison of PIC to other Phobic scripts indicated that the PIC script produced more arousal than the PNC script [$t(1,66) = 3.52$, $p<.05$ one-tailed] but not more than the PINC and PC scripts.

Conducting planned comparisons on corresponding Neutral vs. Phobic scripts for the 30 second interval data for the Panic Group alone, revealed that only the PC scripts produced higher heart rates than NC scripts [$t(1,66) = 1.75$, $p<.05$ one-tailed]. PIC, PINC, and PNC did not elicit higher heart rates than the corresponding Neutral Versions: NIC, NINC, and NNC. Comparisons of HR responses to PIC scripts with responses to other Phobic scripts within the Panic Group indicated that PIC produced higher arousal than PNC [$t(1,66) = 1.67$, $p<.05$ one-tailed], but not than PINC and PC.

Within the Simple Phobic Group, planned comparison of corresponding versions of Neutral vs. Phobic scripts using 30 second interval data indicated that PIC scripts produced higher heart rates than did NIC scripts [$t(1,66) = 1.80$, $p<.05$ one-tailed] while other comparisons were not significant: PINC vs. NINC, PC vs. NC and PNC vs. NNC. Among the phobic scripts, PIC elicited higher heart rates than did PNC [$t(1,66)=2.78$, $p<.05$ one-tailed] but not higher than did PINC and PC.

Turning to Peak interval data for both Diagnostic Groups combined, planned comparisons of corresponding versions of Neutral vs. Phobic scripts revealed that the PC script produced higher heart rates than NC [$t(1,66) = 2.13$, $p<.05$ one tailed] and the PIC script elicited higher heart rates than NIC [$t(1,66) = 2.14$, $p<.05$ one-tailed]. PNC and PINC scripts did not differ from their neutral counterparts NNC and NINC. Comparisons of phobic scripts indicated that PIC scripts elicited higher heart rates than PNC [$t(1,66) = 3.35$, $p<.05$ one-tailed] but not PINC and PC scripts.

Conducting planned comparisons on corresponding Neutral vs. Phobic scripts for the Peak interval data for the Panic Group alone, revealed that only the PC scripts produced higher heart rates than NC scripts [$t(1,66) = 1.71$, $p<.05$ one-tailed]. PIC, PINC, and PNC did not elicit higher heart rates than the corresponding Neutral Versions: NIC, NINC, and NNC. Comparisons of HR responses to PIC scripts with responses to other Phobic scripts with the Panic Group indicated that PIC produced higher arousal than PNC [$t(1,66) = 2.32$, $p<.05$ one-tailed], but not than PINC and PC scripts.

Within the Simple Phobic Group, planned comparison of corresponding versions of Neutral vs. Phobic scripts using 30 second interval data indicated that PIC scripts produced higher heart rates than did NIC scripts [$t(1,66) = 1.85$, $p<.05$ one-tailed] while other comparisons were not significant: PINC vs. NINC, PC vs. NC and PNC vs. NNC. Among the phobic scripts, PIC elicited higher heart rates than did PNC [$t(1,66) = 2.45$, $p<.05$ one-tailed] but not higher than did PINC and PC.

Means and standard deviations of HR difference scores are presented in Table 3.

Insert Table 3 about here

Skin Conductance. Repeated measures ANCOVA using 30 second interval difference scores revealed no significant effects of Diagnostic Group or Interaction effects. Analyses indicated a significant effect of Type of script with Phobic scripts producing higher SCL than Neutral scripts, $F(1,21) = 10.50$, $P<.05$. Script Version effect was also significant $F(3,63) = 11.16$, $P<.05$. Newman-Keuls analysis indicated that significantly higher SCL was produced in response to the IC than to the NonC or C scripts. Additionally, the INC elicited higher SCL than NonC or C scripts.

Repeated measures ANCOVAs on the Peak interval SCL difference scores indicated no effect of Diagnostic Group, and no significant two-way interactions. Data analyses did reveal a significant Type effect [$F(1,21) = 6.03$, $P<.05$] with Phobic scripts producing higher SCL than Neutral Scripts. Script Version effect was also significant $F(3,63) = 12.11$, $P<.05$. IC and INC scripts produced higher SCL than NonC and C as indicated by Newman-Keuls analyses.

Planned comparisons of corresponding Neutral vs. Phobic Scripts across both Diagnostic Groups using 30 second interval difference scores revealed that PIC produced higher skin conductance levels than did NIC [$t(1,63) = 3.20$, $p<.05$ one-tailed]. PNC, PC, and PINC scripts did not produce higher arousal as compared

to NNC, NC, and NINC respectively. Comparison of PIC to other Phobic scripts indicated that the PIC scripts produced more arousal than the PNC script [$t(1,63) = 4.88$, $p<.05$ one-tailed] and PC scripts [$t(1,63) = 5.55$, $p<.05$ one-tailed], but not more than the PINC scripts.

Conducting planned comparisons on corresponding Neutral vs. Phobic scripts for the 30 second interval data for the Panic Group alone, revealed that only the PIC scripts produced higher SCL than the NIC scripts [$t(1,63) = 2.16$, $p<.05$ one-tailed]. PC, PINC, and PNC scripts did not elicit higher SCL than the corresponding Neutral Versions: NC, NINC, and NNC. Comparisons of SCL during PIC scripts with SCL during other Phobic scripts within the Panic Group, indicated that PIC scripts produced higher arousal than PNC [$t(1,63) = 3.10$, $p<.05$ one-tailed] and PC scripts [$t(1,63) = 3.49$, $p<.05$ one-tailed], but not than PINC scripts.

Within the Simple Phobic Group, planned comparison of corresponding versions of Neutral vs. Phobic scripts using 30 second interval data indicated that PIC scripts produced higher SCL than did NIC scripts [$t(1,63) = 2.41$, $p<.05$ one-tailed] and PINC scripts produced higher SCL than did the NINC script [$t(1,63) = 1.67$, $p<.05$ one-tailed] while other comparisons were not significant: PC vs. NC and PNC vs. NNC. Among the phobic scripts, PIC scripts elicited higher SCL than did PNC [$t(1,63) = 3.84$, $p<.05$ one-tailed] and PC scripts [$t(1,63) = 4.41$, $p<.05$ one-tailed], but not higher than did PINC scripts.

Turning to Peak interval data for both Diagnostic Groups combined, planned comparisons of corresponding versions of Neutral vs. Phobic scripts revealed that

PIC scripts elicited SCL than NIC [t(1,63) =2.57, p<.05 one-tailed]. PNC, PC, and PINC scripts did not differ from their neutral counterparts NNC, NC and NINC. Comparisons of phobic scripts indicated that PIC scripts produced higher skin conductance levels than PINC [t(1,63) = 5.25, p<.05 one-tailed] and PNC [t(1,63) = 5.08, p<.05 one-tailed] but not PC scripts.

Conducting planned comparisons on corresponding Neutral vs. Phobic scripts for the Peak interval data for the Panic Group alone, revealed that only the PIC scripts produced higher SCL than NIC scripts [t(1,66) = 1.79, p<.05 one-tailed]. PINC, PC, and PNC did not elicit higher skin conductance levels than the corresponding Neutral Versions: NINC, NC, and NNC. Comparisons of SCL in response to PIC scripts with SCL in response to other Phobic scripts within the Panic Group indicated that PIC produced higher arousal than PNC [t(1,66) = 3.28, p<.05 one-tailed] and PC [t(1,66) = 3.24, p<.05 one-tailed], but not higher than PINC.

Within the Simple Phobic Group, planned comparison of corresponding versions of Neutral vs. Phobic scripts using Peak interval data indicated that PIC scripts produced higher skin conductance levels than did NIC scripts [t(1,66) = 1.87, p<.05 one-tailed] and PINC produced higher SCL than did NINC [t(1,66) = 1.99, p<.05 one-tailed] while other comparisons were not significant: PC vs. NC and PNC vs. NNC. Among the phobic scripts, PIC elicited higher SCL than did PNC [t(1,66) = 3.84, p<.05 one-tailed] and PC [t(1,66) = 4.12, p<.05 one-tailed] but not higher than did PINC.

Means and standard deviations of SCL difference scores are presented in Table 4.

Insert Table 4 about here

Electromyogram. There were no significant Main effects or two way interaction effects for EMG when analyzing 30 second interval difference scores or peak interval difference scores. Planned comparisons of corresponding neutral and phobic versions of scripts and comparisons among the Phobic versions of scripts also failed to yield significant differences for both Diagnostic Groups combined or each Diagnostic Group alone. Means and standard deviations of EMG difference scores are presented in Table 5.

Insert Table 5 about here

Vividness and Fear Thermometer Ratings. Repeated measures ANOVA on Vividness ratings revealed a significant Type x Version interaction $F(3,66) = 2.96$, $P<.05$. No simple comparisons of means via Newman-Keuls were significant. Type x Version x Group interaction was also significant $F=(3,66) =2.90$, $P<.05$. Newman-Keuls analyses of simple comparisons of cell means revealed that PDA subjects rated imagery during the NNC as being more vivid than did SP subjects. Additionally, within the PDA group, subjects rated imagery during the NNC as being more vivid than during the PNC script.

Correlational analyses of Vividness ratings of phobic imagery scripts with peak interval physiological arousal indicated no significant correlations for HR or EMG measures. However, Vividness ratings were significantly related to SCL during PNC ($r=-.61$, $p<.05$), PC ($r=-.48$, $p<.05$) and PINC ($r=-.47$, $p<.05$) when examining data from both diagnostic groups combined. Likewise, in the PDA group SCL was significantly related to Vividness ratings during PNC ($r=-.72$, $p<.05$), PC ($r=-.64$, $p<.05$), and PINC ($r=-.61$, $p<.05$). There were no significant relationships in the SP group.

Repeated measures ANCOVA of Subjective Unit of Distress (SUDS) ratings indicated a significant Type effect with subjects rating the Phobic scripts as being more anxiety provoking than Neutral scripts $F(1,22) = 156.99$, $P<.05$. Version effect was also significant $F(3,66) = 4.24$, $P<.05$. Both IC and INC versions of scripts were rated as producing more anxiety than C versions of scripts but not as more anxiety provoking than the Non-C scripts (as revealed by Newman-Keuls analyses).

Correlations computed between SUDS ratings during phobic imagery scripts and peak interval physiological data recorded during presentation of the corresponding phobic imagery script indicated no significant relationships when examining HR and EMG data. Correlations were significant for SCL and SUDS ratings during PNC ($r=.43$, $p<.05$), and PINC ($r=.67$, $p<.05$) for both diagnostic groups combined. Within the PDA group, SUDS ratings were consistent with SCL during PINC ($r=.77$, $p<.05$), and PIC ($r=.61$, $p<.05$). Subjective ratings of anxiety in the SP group was related to SCL during the PINC script only ($r=.58$, $p<.05$).

Means of Vividness and SUDS ratings are presented in Table 6. Correlations computed on Vividness and SUDS ratings with SCL during phobic imagery scripts are presented in Table 7.

Insert Table 6 & Table 7 about here

Order Effects. No Order effects were indicated for HR data. There was a significant Order effect for SCL data $F(3,63) = 8.51$, $P<.05$. Newman-Keuls analyses indicated that the SCL was highest during the script presented first and was higher than the SCL for scripts presented second third and fourth. Type x Order effect was also significant for SCL $F(3,63) = 12.75$, $P<.05$. The phobic script presented first elicited higher SCL than all other scripts as tested by Newman-Keuls analyses. Order effect was also significant for EMG data $F(3,66) = 3.47$, $P<.05$. Newman-Keuls indicated that the first script presented produced significantly lower EMG than scripts presented second third and fourth. Means of these variables as a function of order of presentation are shown in Table 8.

Insert Table 8 about here

Additional Correlations. Correlations of HR during phobic scripts with PASQ, PACQ and their factors revealed no significant correlations between these variables when combining both Diagnostic Groups. When examining the Simple Phobia Group alone, the Nausea Factor of the PASQ was significantly correlated

with HR during PC, PINC and PIC scripts (r=.64, r=.62, r=.57, p<.05). Factor 7 (Unnamed) on the PASQ was significantly correlated with HR during PC (r=.59, p<.05) and PINC (r=.58, p<.05). Within the Panic Group the overall PASQ score was significantly correlated with HR during PNC (r=.56, p<.05) and PINC (r=.67, p<.05). Additionally four other PASQ factors were significantly correlated with HR during Phobic scripts in the Panic Group: Stomach distress (r=.67, p<.05), Parasthesias (r=.64, r=.56, p<.05), Chest Discomfort (r=.64, r=.59, r=.80, p<.05) and Factor 8- Unnamed (r=.58, p<.05).

SCL during PNC and PC were negatively correlated with the PASQ Stomach Distress factor (r=-.49, r=-.43, p<.05) when data from both Diagnostic Groups were combined. When examining the relationships in the Simple Phobia group alone, SCL during PNC was also found to be negatively related to scores on the Stomach Distress Factor (r=-.59, p<.05). No correlations were found between the SCL and PASQ, PACQ, and questionnaire factors in the Panic group alone.

There were no correlations between EMG and PASQ, PACQ and questionnaire factors with both Diagnostic Groups combined nor in the Simple Phobia Group. However in the Panic Group PASQ Factor 7 (Unnamed) was negatively correlated with EMG during all Phobic scripts (r=-.68, r=-.65, r=- .73, r=-.68, <.05), and the Stroke factor of the PACQ was negatively correlated with all versions of Phobic scripts (r=-.68, r=-.61, r=- .72, r=-.70, p<.05).

QMI scores were not correlated with HR, SCL or EMG during Phobic Scripts. Correlations computed among the State, Trait, PASQ and PACQ indicated that all questionnaires were significantly corrrelated to each other with the exception

of the PASQ which was not correlated with the State. Correlations among these questionnaires are found in Table 9.

Insert Table 9 about here

Discussion

Results of previous research has indicated that agoraphobics do not produce physiological arousal in response to imagery scripts of fearful scenes while simple phobics do. Contrary to these studies, results of this study indicate that subjects with panic disorder with agoraphobia do not differ from simple phobics in their ability to produce physiological arousal to such scripts. Furthermore, results highlight the extreme importance of experimental design, selection of dependent measures and methods of data reduction when examining research questions.

Data from the current investigation offer support for the prediction that both SP and PDA subjects would display more arousal to personally relevant fear scripts as compared to neutral imagery scripts. Likewise, results offered some support that PDA subjects produce more arousal to personally relevant fear scripts containing cognitive cues as compared to arousal levels during a corresponding neutral script. Inconsistent with predicted results, interactive presentation alone did not produce increased physiological responses to phobic imagery scripts as compared to physiological response to neutral scripts presented interactively in the PDA group. As predicted, phobic imagery scripts which contained cognitive cues and were presented interactively produced the highest

levels of arousal in both diagnostic groups. Additionally, as expected, data offered some support that SP subjects respond with increased arousal to phobic scripts presented interactively which do not contain cognitive cues. However, contrary to a major hypothesis, SP subjects did not respond with significantly increased physiological arousal to non-interactive, non-cognitive phobic scripts or non-interactive cognitive phobic scripts. This finding may be explained as a function of the non-patient subject population. The hypothesis that PDA subjects' ratings of anxiety would be most consistent with arousal for scripts presented interactively which contained cognitive cues was supported only by skin conductance data. Additionally, data did not support the hypothesis that SP subjects' ratings of anxiety would be consistent with actual arousal across all phobic scripts.

Heart rate data offers support that for PDA subjects, inclusion of cognitive cues in phobic imagery scripts enhances the potency of these scripts. SCL data indicates that for SP subjects, interactive presentation alone can produce increased arousal to Phobic imagery scripts as compared to Neutral scripts presented interactively. However, the results of this study also offer considerable support that scripts which include both cognitive cues and interactive presentation are the most potent phobic scripts for both Diagnostic Groups. Only heart rate data from the PDA group did not offer (statistically significant) support for this conclusion, although the mean for the heart rate data for the PIC script was higher than that for all other scripts versions within the PDA Group. Presentation of a Phobic script without the inclusion of cognitive cues and without

interactive presentation never produced significantly increased physiological arousal as compared to arousal during that version of the Neutral script.

The current findings indicate that the failure of Cook et al. to systematically include cognitive or meaning cues in imagery scripts could have likely reduced responsivity to scripts in agoraphobic subjects. Indeed, the inclusion of cognitive cues in scripts enhanced the potency of imagery scripts in the current investigation for the PDA group when examining HR data. Physiological responsivity for both Diagnostic Groups was further enhanced by presenting scripts interactively. In fact, interactive presentation alone (in the absence of cognitive or meaning cues) produced increased arousal for the SP group when examining skin conductance data. Most importantly, script potency was maximally enhanced for both Diagnostic groups when scripts contained cognitive cues and were presented interactively. That is, those scripts most consistently produced the highest levels of physiological arousal as measured by heart rate and skin conductance. Another recent investigation of the response of agoraphobics to phobic imagery scripts failed to find increased arousal in response to phobic scripts containing cognitive and meaning cues (Zander & McNally, 1988). However, scripts in that study were not presented interactively which offers further evidence for the additive effect of cognitive cues plus interactive presentation.

Lang's bio-informational theory proposes that the diffuse nature of the fear memory network in agoraphobics prohibits ready access to these memories via imaginal techniques. That is, fear responses are not consistently tied to specific

situations or stimuli and therefore are stored in a more diffuse network. Consequently, Lang proposes, agoraphobics are unable to consistently produce a fear response when attempting to access the memory network through imagery. While the current study does not refute that the fear related memory networks of agoraphobics are diffuse with regard to situations and stimuli which trigger fear responses, it does offer evidence that the networks may be less diffuse with regard to cognitive or meaning interpretations which are tied to fear responses across a variety of situations. Likewise, the data indicate that the network can most certainly be accessed if these cognitive cues are presented and the individual is engaged interactively and required to report response cues during the imaginal procedure. At this time, it is not clear why interactive presentation produces better access to the fear response network. While this is only speculation, it seems logical that interactive presentation as utilized in the current study would prevent avoidance of the more salient and arousing propositional elements which are likely to be most important in producing access to the fear memory network. Furthermore, although the investigator is unaware of any empirical studies within the memory literature which utilize methodologies directly analogous to the current investigation, the memory search produced as a function of interactive presentation would seem to be more active (and therefore potentially more successful) than that produced as a function of having the subject merely listen to imaginal scripts.

This data which is indicative of having gained access to the memory network of agoraphobics has important implications for the use of imaginal therapy

techniques with this population. In theory, it is crucial that the memory network be fully accessed in order to effect a therapeutic change in behavior. That is, by accessing the propositional network, the dysfunctional response propositions can be altered via therapeutic interventions. The goal of imaginal therapy is essentially to modify the physiological, affective and behavioral response elements of the propositional network, thereby reducing the patient's dysfunctional response to fear stimuli, and consequently mediating behavior change. Using the theoretical framework proposed by Lang, without first accessing the memory network completely, little or no therapeutic benefit can be gained via imaginal techniques. The results of Cook et al. (1988) and Zander and McNally (1988) had indicated that agoraphobics cannot consistently produce physiological arousal in response to personally relevant fear scripts. These results are taken as evidence that the memory network of agoraphobics cannot be accessed via imaginal techniques and consequently cast serious doubt on the efficacy of imaginal techniques with this patient population. Indeed, the success rate of imaginal techniques with this patient group has been less than adequate. However, the results of the current investigation shed a different light on the previous lack of success when using imaginal techniques with an agoraphobic population. Contrary to previous studies, the current investigation, suggests the potential for imaginal techniques to be efficacious with an agoraphobic population when the method of cue presentation and cue content enhances script potency and consequently produces access to the fear memory network. The data suggest that failure of imaginal techniques may have been due to imagery script content and

method of script presentation rather than an inherent inability of agoraphobics to respond to imaginal scripts as a function of the structure of the propositional network. Indeed, it seems plausible that previous investigations did not fully gain access to the fear memory networks of agoraphobics; however, current data suggest that the structure of the propositional network does not prohibit access to the network. As such, agoraphobics should respond equally well as other patient populations to imaginal techniques which produce full access to the memory network.

Interestingly, SP subjects in this investigation did not display increased physiological responsivity to Phobic scripts which were not presented interactively and contained no cognitive cues. Apparently, in previous investigations, SP subjects responded physiologically to scripts which were not presented interactively and did not systematically contain cognitive or meaning response cues. This finding was not predicted in the current investigation and, at first glance, seems to be in direct contrast to results of previous studies. However, a re-examination of the subject populations and procedures used in this study and others sheds some light on these findings. The simple phobics in the Cook et al. study were recruited from a help-seeking patient population at a University affiliated anxiety disorders clinic. Subjects in the current investigation, while presenting with clinically significant symptoms, were not a "help-seeking patient population" in that they were recruited from the community. Previous studies which have used simple phobic subjects recruited from college populations have demonstrated that only those subjects which received "response-training" prior to

imagery sessions produced increased physiological arousal in response to personally-relevant fear scripts (Cuthbert, Vrana & Bradley, 1988; Lang et al., 1980; Lang et al., 1983). The response-training procedure used in these studies had subjects "first practice imagining scenes; after each trial they [were] interrogated about its content and systematically praised for reports of imagined overt or covert responding in their experience of the scenes" (Lang et al., 1980, p. 181). Other research has indicated that "highly fearful" simple phobic subjects do not require response-training to produce increased physiological arousal (Cuthbert et al., 1988). Indeed, subjects in the Cook et al. (1988) study did not receive response-training.

Now, let us re-examine results of the current study taking into consideration the role of "response-training in other studies. The studies cited indicate that while simple phobic subjects from a patient population can readily produce physiological arousal to phobic imagery scripts without response-training, response-training may be necessary for non-patient non-help seeking simple phobic populations to produce increased arousal to phobic scripts. As such, it seems that response-training would likely be required for the simple phobic subjects in the current investigation to produce physiological arousal. On close examination, the interactive presentation used in the current study is similar to the "response-training" procedure used by Lang and his colleagues. Subjects were interrogated and asked to provide descriptions of their responses during the imagery scene. Interestingly, SP subjects responded with increased arousal to phobic scripts which were presented interactively. While both diagnostic groups

showed the greatest and most consistent arousal to scripts presented interactively which contained cognitive cues, only the SP group responded with increased arousal (as measured by SCL) to interactive presentation alone (phobic scripts presented interactively without cognitive cues). Essentially, when a procedure similar to the "response-training" procedure was incorporated as part of phobic imagery script presentation, SP subjects produced increased arousal to those scripts. Therefore, these results, rather than running contrary to the results of previous studies, could be viewed as consistent with those conducted with non-patient populations.

The importance of measuring multiple channels of response is highlighted by results of this study. Previous research has indicated that different channels of physiological response are not entirely synchronous (Lande, 1982). In the current investigation, HR and SCL proved to be sensitive measures of the script manipulation while EMG did not. It is difficult to determine why EMG did not prove to be a good overall measure of arousal to imagery scripts. However, electrode placement may have played a role in the specific results obtained. While muscular tension is generally considered to be a symptom of anxiety disorders and PDA diagnostic criteria include some specific muscular tension responses (trembling or shaking, chest pain), it is not clear exactly how these symptoms would be manifested. For example, while heart rate can be measured a number of different ways, the underlying response is the essentially the same whether it is measured using a finger plethysmograph or electrodes attached to the chest. Muscle tension, on the other hand, is a more diffuse response. Increased muscle

tension in the chest or arms does not necessarily correspond with increased tension in frontalis muscles. Results of previous research have indicated that there is not one muscle group which consistently serves as a general barometer for overall increased muscular tension (Hassett, 1978). The palmar surface of the hand has been identified as providing such a site for electrode placement when measuring skin conductance. Clearly when measuring muscle tension related to tension headaches, frontalis placement of electrodes provides measurement of relevant muscle activity. However, no such site has been identified for EMG measurement when studying anxiety disorders. Given the current state-of-the-art, EMG may not be a promising measure for studying anxiety disorders. However, further research which examines EMG response in anxiety disorder patients as a function of different electrode placement sites may reveal better measurement techniques.

Analyses to evaluate the effects of order of presentation of scripts indicated no effects on heart rate, but skin conductance and EMG data were susceptible to order. Skin conductance response was greatest to the Phobic imagery script presented first. Once again EMG data was not synchronous with other physiological data in that the smallest EMG response was elicited by the script presented first (collapsed across both Phobic and Neutral scripts). These results suggest that at least for skin conductance, some extinction to stimuli occurred across imagery script presentations. Although effects of script type and version were not completely obscured by order effects, it is quite possible that differences as measured by skin conductance would have been even greater if the same basic

script had not been presented repeatedly and measurement could have been taken of the first presentation of a script.

SUDS data indicates that both SP and PDA subjects rated Phobic scripts as being more anxiety provoking than Neutral scripts. Additionally, scripts that were presented interactively were rated as being subjectively more distressing. Consistent with previous research, ratings of increased subjective anxiety were not completely synchronous with actual physiological arousal. Heart rate and EMG data were not correlated with SUDS ratings. However, SUDS ratings for PNC and PINC were both positively correlated with SCL during those imagery scripts when data were collapsed across both diagnostic groups. Additionally, SUDS ratings for PINC and PIC were consistent with actual arousal for PDA subjects and PINC SUDS ratings were positively related to corresponding SCL data in SP subjects. Therefore the hypothesis that PDA subjects ratings of anxiety would be most consistent with arousal for scripts presented interactively and containing cognitive cues was confirmed only for skin conductance data. Additionally, data did not support the hypothesis that SP subjects ratings of anxiety would be consistent with actual arousal across all scripts.

ANOVAs of Vividness ratings shed little light on results of physiological data. Although there were significant Type by Version and Type by Version By Group effects, post hoc simple comparisons failed to reveal any patterns of differences in Vividness ratings that would further clarify HR, SCL or EMG data. Correlational data revealed that vividness of imagery was unrelated to concomitant arousal as measured by HR and EMG. However, perceived vividness of imagery produced in

response to phobic imagery scripts was by in large directly related to physiological arousal as measured by SCL when examining both diagnositc groups combined and in the PDA group alone. When looking at the relationships in the SP group alone, Vividness ratings were not related to SCL during corresponding script presentation.

These data suggest that imagery vividness may be of particular importance when attempting to produce arousal in PDA subjects. In the current investigation, subjects had average or better imagery ability as measured by the QMI. SP subjects as a group were slightly poorer imagers and PDA subjects as a group were slightly better imagers than a normal sample of undergraduates measured on imagery ability (M=87.3; Miller, Levin, Kozak, Cook, McLean & Levin, 1987). Furthermore, none of the subjects would have been classified as poor imagers (scoring 156 or above on the QMI). Overall imagery ability was not related to physiological arousal. Therefore, it seems reasonable to conclude that when PDA subjects have good imagery ability, presenting phobic imagery stimuli in a way that enhances the vividness will increase some aspects of the anxiety response to those stimuli. For SP subjects vividness of imagery stimuli does not seem to be crucial for elicitation of anxiety responses. These conclusions are tempered by the fact that the relationship was present only in skin conductance data.

Methodological Issues.

The methodology of the present study differed from previous investigations in that a concerted effort was made to ensure that imagery cue presentation closely

paralleled that of an actual imaginal therapy session. Varying script content and method of presentation (interactive vs. non-interactive), addressed via the independent variable manipulation, were an important part of this effort. However, subjects were also instructed to image during script presentation in order to approximate the way imagery cues would be presented during a therapy session. Most of the previous studies examining physiological arousal first presented scripts and instructed subjects to image after the script was presented. When conducting imaginal flooding sessions, implosion sessions or Guided Imaginal Coping sessions, the patient images as the therapist presents cues (as was done in the current study). Results of previous studies have been interpreted as having implications for the use of imaginal techniques in therapy sessions. However, given that the methodology used in these studies is not analogous to techniques used in therapy sessions, their generalizability is questionable. Indeed, the methodology used in the current study should render results obtained more generalizable to those that would be obtained in actual therapy sessions.

Additionally, when conducting imaginal therapy sessions, it is not always clear which cues will produce the highest arousal. Consequently, arousal may peak almost immediately after the imagery script is presented for some subjects while arousal peaks for other subjects well into the script. Furthermore, since different channels of physiological data are not fully synchronous, subjects may show arousal on one channel of response earlier than another (i.e., for a given subject, SCL may peak during the first 30 seconds of script presentation while HR peaks at 90 seconds into script presentation). Consequently, data from the

current investigation was summarized two different ways in an attempt to capture these idiosyncratic responses. That is, data was summarized using a more standard technique of dividing the imagery period into four 30 second intervals and using the average from each of the four intervals to calculate difference scores for analysis, and additionally identifying the 30 second interval during which arousal was highest during the imagery period and analyzing difference scores calculated from that peak period alone for each imagery period. Overall, the results yielded from each method of data reduction were equivalent. Both methods of data reduction provided more fine-grained examination of the periods of interest than simply summarizing the entire data period or the middle section of the data period. These data reduction techniques may be particularly useful for analyzing physiological data when testing manipulations that do not produce large changes in arousal and when attempting to look at data from a more naturalistic perspective.

Questionnaire Data.

Correlational analyses of relationships among State, Trait, PASQ and PACQ generally support that there is considerable concurrence with regard to the underlying construct these questionnaires are measuring. However, the total PACQ score was not related to State scores. This data, and the moderate level of those correlations that were significant, indicate that PASQ and PACQ are likely measuring some factors unique to those measured by the State and Trait questionnaires. Generally, current analyses indicate moderate concurrent validity for the PASQ and PACQ extending previous data which has examined the

discriminant validity of these instruments. To further examine the validity of the PASQ and PACQ, scores on the PASQ and PACQ and factors of each questionnaire were correlated with physiological arousal during presentation of phobic scripts. The PASQ showed more concordance with physiological measures taken during the presentation of phobic imagery scripts. Additionally, heart rate data proved to be the specific channel of arousal which was most often related to total PASQ scores and factor scores. SCL and EMG data were inversely related to only 2 PASQ factors. Validation data collected from the PDA group alone is perhaps the most interesting. Within the PDA group, total PASQ score and 4 of 8 PASQ factor scores showed correspondence with physiological arousal as measured by heart rate. Particularly noteworthy is that the Chest Discomfort factor was highly consistent with heart rate during presentation of imagery scripts of panic attacks. The Parasthesias factor, Stomach Distress factor and an Unnamed factor from the PASQ were also highly related to heart rate during Phobic scripts. Only the Nausea factor and an Unnamed factor were significantly related to Heart rate in the SP group. Results of correlations on PACQ proved to be less fruitful when conducted across or within Diagnostic groups.

Clearly, these data should be treated as preliminary results. Sample size is inadequate for making any definitive determinations regarding the concurrence of PASQ and PACQ scores with actual physiological arousal. However, the results of this study do suggest that the PASQ could be a particularly useful instrument for evaluating panic symptoms. In addition to a small sample size, the current investigation of concurrent validity is further limited in that the criterion variable

was arousal during imagery rather than during actual panic attacks. Furthermore, the range of scores on questionnaires, factors and range of physiological arousal during imagery periods was limited. Given that this study utilized a sample presenting with clinically significant symptomatology, it is likely that questionnaire scores and arousal were higher than would have been obtained in a normal population. Truncated range of questionnaire scores and physiological responses may have reduced correlation coefficients and served to obscure the relationships between arousal and questionnaire scores. Future examinations of the psychometric properties of these instruments should endeavor to use samples which would provide more variability in responding.

Future Directions

To summarize, clearly when phobic imagery scripts contain cognitive cues and are presented interactively, subjects with Panic Disorder with Agoraphobia are capable of responding with increased physiological arousal. Results are less definitive regarding the impact of cognitive cues on physiological arousal in this population, but offer some support that individuals with Panic Disorder with Agoraphobia respond with increased physiological arousal to phobic imagery scripts containing cognitive cues. These results must be interpreted within the framework of the methodology used in the current investigation. That is, it must be taken into account that imagery scripts were presented simultaneously with the imagery period and scripts were somewhat longer than those typically used in such studies.

In conclusion, it seems premature to discount the potential utility of imaginal therapy techniques with a Panic Disorder population. Results of the current investigation indicate definitively that when procedures used in imagery assessment sessions more closely parallel those of imaginal therapy sessions, and when phobic scripts contain cognitive cues presented interactively, PDA subjects respond with increased physiological arousal. Future research should be conducted to confirm or disconfirm these results with a help-seeking patient population. Additionally, studies should be designed to further clarify the role of cognitive cues in producing physiological arousal. Designs which avoid extinction effects may shed more light on this issue. Furthermore, use of additional physiological measures (e.g. respiration, skin temperature, or multiple EMG placement) could expand our understanding of the arousal response in this population. Likewise, it would be worthwhile to address the specification of causal mechanisms which produce increased physiological arousal when phobic scripts are presented interactively.

While the fear network of agoraphobic subjects may be more diffuse and consequently more difficult to activate, access to this network and subsequent efferent physiological response can be gained via the interactive presentation of phobic imagery scripts containing cognitive cues.

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APPENDIX A

Subject Recruitment Fliers

DO  YOU SUFFER FROM ANXIETY?

THE PSYCHOLOGICAL SERVICES CENTER AT VIRGINIA TECH IS OFFERING FREE ASSESSMENT AND TREATMENT FOR INDIVIDUALS WITH CERTAIN TYPES OF ANXIETY DISORDERS

THE WORD "ANXIETY" REFERS TO AN EMOTIONAL STATE OF FEAR AND APPREHENSION NORMALLY EXPERIENCED IN SITUATIONS OF IMPENDING DANGER. SOME PEOPLE EXPERIENCE SUCH FREQUENT OR INTENSE LEVELS OF ANXIETY IN SITUATIONS WHICH DO NOT WARRANT SUCH A REACTION THAT IT INTERFERES WITH THEIR EVERYDAY FUNCTIONING. THESE INDIVIDUALS MAY BE SUFFERING FROM AN ANXIETY DISORDER. AN ASSESSMENT AND TREATMENT IS NOW BEING OFFERED FOR INDIVIDUALS WHO HAVE PANIC DISORDERS OR SIMPLE PHOBIAS. INDIVIDUALS WITH PANIC DISORDER EXPERIENCE A VARIETY OF SYMPTOMS WHICH COME ON SUDDENLY AND UNPREDICTABLY: SHORTNESS OF BREATH, RAPID BREATHING, FAST HEART RATE, CHEST PAIN, FAINTNESS, TREMBLING OR TINGLING SENSATIONS, AND FEAR OF DOING SOMETHING UNCONTROLLED. A PERSON WITH A SIMPLE PHOBIA HAS AN ABNORMALLY INTENSE FEAR OF A SPECIFIC SITUATION OR OBJECT, SUCH AS ELEVATORS, HEIGHTS, SNAKES, DOGS, MICE OR RATS, OR GOING TO THE DENTIST.

IF YOU ARE EXPERIENCING PROBLEMS LIKE THOSE DESCRIBED ABOVE AND ARE INTERESTED IN A FREE EVALUATION AND TREATMENT, COMPLETE THE BOTTOM PORTION OF THIS FORM.

Cut here and return to: Dr. George A. Clum
Department of Psychology
Virginia Tech
Blacksburg, VA 24061
961-6914

Yes, I am interested in a free evaluation at the Psychological Services Center's Anxiety Disorders Clinic

Name	Home Phone	Work Phone

APPENDIX B

Anxiety Disorders Interview Schedule - Revised (ADIS-R)

Name: _____

Address: _____

_____

Phone: (home) _____

(work) _____

Marital Status:

_____ Married

_____ Single

_____ Separated

_____ Divorced

_____ Widowed

_____ Other

Date of Birth: _____

Sex: _____

Date of Interview: _____

Interviewer: _____

Family Income: _____

Number of Dependents: _____

Fee for Interview: _____

Date of Marriage: _____

Previous marriages:

YES NO

Dates: _____

Children

Age	Sex	At home	When left

Occupation History:

Patient: _____ (present/date)

_____ (previous/date)

_____

_____

Spouse: _____ (present/date)

_____ (previous/date)

_____

_____

Education

Patient: _____

_____

Spouse: _____

_____

Religion: _____

The interviewer should begin with a brief introduction and explanation of the purpose of the interview and obtain a brief description of the presenting complaint.

In this section, a preliminary determination of the presence of phobic anxiety, panic attacks, and chronic tension and anxiety should be made.

I will be asking you a number of questions about different areas of your life. First, I would like to get a general idea of what sorts of problems you have had recently. What have they been?

AFTER BRIEF INQUIRY:

Now, I want to ask you more questions about some specific kinds of problems which may or may not apply to you. We have already talked about some of them generally, but now I would like to get more details.

Symptom Ratings

In this section rate symptoms only for anxiety attacks that occur unpredictably, in a variety of situations. Anxiety symptoms that are limited to a single stimulus (enclosed places or heights, social situations, obsessional content, etc.) should be rated in the appropriate section.

In some mixed cases, ratings might be completed in both this section and a later section.

A. Rate the severity of each symptom which is typical of the most recent attacks. It is extremely important that the interviewer help the patient decide if a specific symptom occurs every time or almost everytime the patient has an anxiety attack since diagnostic criteria are based on symptomatology for each typical attack — not a composite symptomatology across attacks.

B. If a symptom is experienced during only some attacks, i.e., it does not always occur during an attack, enclose the rating in parentheses, but do not include it in the symptom count for diagnostic criterion.

C. If the patient does not meet the symptom frequency criterion (4 out of 12) for the most recent period of attacks, go back and rate the symptom severity for the period in which the attacks were the most severe.

D. If the most recent attacks are also the worst attacks, indicate such and enter severity ratings under the "most recent" column only.

E. The following questions may be helpful when inquiring about symptoms:

1) *During the most recent period of attacks, did you experience _____? How severe was it?* If there is any doubt about whether the symptom is typical, ask: *Did you experience this nearly every time you have an attack?*

2) *When the attacks were the most severe, did you experience _____?*

F. If the patient reports 4 or more symptoms per typical panic attack, the interviewer should ask if the patient had attacks in which only one or two symptoms have been present (Question 6). If the patient answers "YES", the interviewer should go back and rate the severity of those symptoms under the column labeled "Limited Symptom Attacks".

PANIC DISORDER

1. a. *Have you had times when you have felt a sudden rush of intense fear or anxiety or feeling of impending doom?*

Yes _____ No _____

If YES, or if there is any uncertainty about the existence of panic symptoms, or if patient reports panic symptoms in specific situations, continue inquiry. Otherwise, Skip to GENERALIZED ANXIETY DISORDER. (p. 8)

b. *How long does it usually take for the rush of anxiety to peak?* _____ minutes.

c. *How long does the anxiety usually last?* _____ minutes.

2. a. *In what situation(s) have you had these feelings?*

_____

_____

If patient indicates that panic symptoms occur only in a specific situation: public speaking, heights, driving, etc., further inquiry is necessary to assess the presence of panics which occur while at home alone, unpredictably in a variety of situations, or at unexpected times (e.g., not immediately upon exposure to a phobic situation).

b. ***When you are faced with*** [phobic situation], ***does the anxiety come on as soon as you enter it, or is it sometimes delayed, or unexpected? Have you had these feelings come "from out of the blue", while you are at home alone, or in situations where you did not expect them to occur?***

Unexpected times (not immediately on exposure to phobic stimulus) YES _____ NO _____

Unexpected Situations YES _____ NO _____

If inquiry reveals a history of panic attacks, (sudden rushes of intense fear or anxiety, at least some of which have been unexpected), or if there is any uncertainty, continue inquiry. Otherwise, Skip to GENERALIZED ANXIETY DISORDER. (p. 8)

3. *When were the attacks the worst?* FROM _____ TO _____

   a. *How frequent were the attacks during this period?* _____

   b. *What made the attacks the "worst" you have had?*

   _____

4. *When was your most recent attack?* _____

5. Rate the severity of typical symptoms for each period on the following scale:

0	1	2	3	4
None	Mild	Moderate	Severe	Very Severe

Did you usually experience _____ during the attacks?

	Most Recent	Worst	Limited Symptom Attack
1. Dyspnea, difficulty breathing			
2. Palpitations			
3. Chest pain or discomfort			
4. Choking or smothering sensations			
5. Dizziness, vertigo or unsteady feelings			
6. Feelings of unreality			
7. Paresthesias-tingling or prickling sensations			
8. Hot or cold flashes			
9. Sweating			
10. Faintness			
11. Trembling or shaking			
• 12. a. Fear of dying			
OR			
b. Fear of going crazy or doing something uncontrolled			
(IIIR) 13. Nausea or abdominal distress			

If patient reports 4 or more symptoms per typical attack, ask:

6. *Do you have periods* [attacks, spells] *when you have only one or two of these symptoms?*

   If YES, go back and rate severity of symptoms under Limited Symptom column.

• Diagnosis of Panic Disorder requires presence of 4 of first 12 symptoms. Only those symptoms which are present during typical attacks are included in count. For symptom 12, presence of either a. or b. counts as positive symptom. For DSM-III diagnoses, symptom 13 is not included.

7. a. *During the time that the attacks were most frequent, how often did they occur?*

_____ per week for _____ weeks.

b. *When was this period?*

FROM _____ TO _____

If the most frequent period of attacks is <u>not</u> in the past year:

c. *During the past year has there been a time when you had at least 3 attacks in a 3 week period?*

NO _____

YES _____ FROM _____ TO _____

d. *During the past month, how many panics have you had?*

_____ per week for _____ weeks.

(IIIR) If questioning has not established a period in which 3 attacks occurred within a three week period, check for a one month period characterized by <u>fear</u> of an attack.

e. ***Since your first attack, have you been afraid that you might have more attacks?***

YES _____ NO _____

How long? FROM _____ TO _____

8. *Are there times when you awake from sleep in a panic?*

YES _____ NO _____

If YES, *How often?* _____

Do you have any specific thoughts before an attack?

_____

Do you have any specific thoughts during an attack?

_____

5. History

Tell me about your first panic:

a. *When did it happen?* Month _____ Year _____

b. *Where were you?* _____

c. *Who were you with?* _____

d. *How did it start?* _____

e. *What did you do?* _____

f. *Were you under any type of stress?* YES _____ NO _____

What was happening in your life at the time?

Specify _____

_____

Were you taking any type of drug? YES _____ NO _____

TYPE _____ DOSE/AMOUNT _____

Did you have any physical condition such as inner ear problems, hyperthyroidism, mitral valve prolapse, pregnancy, hypoglycemia, temporomandibular joint dysfunction?

YES _____ NO _____

Specify _____

g. *Do you remember having similar feelings (maybe milder) any time before this?*

YES _____ NO_____

If YES, *When?* Month _____ Year _____

1) *What was the feeling?* _____

6. *Have you had periods when you didn't have them, either because you could control them or you didn't worry about them?*

If YES, continue. If NO, go to Question 7.

When From - To Month and Year	*What was going on in your life? How did you get over it?* i.e., Did stressor let up or did person develop coping strategy?	*How did they come back?* Changes in life circumstances? Stressor related?

7. ***How do you handle the panics now?***

_____

_____

_____

_____

_____

8. Distress/Interference

How much have the panics interfered with your life, job, traveling, activities, etc.?

_____

_____

_____

_____

Rate interference on 0-4 scale _____

0	1	2	3	4
None	Mild	Moderate	Severe	Very severe/ grossly disabling

GENERALIZED ANXIETY DISORDER

Questions in this section should be used to establish the presence of tension or anxiety with no apparent cause, or anxiety which is related to excessive worrying about family, job performance, finances, etc., and minor matters. This tension or anxiety is NOT part of, or anticipatory to panics or phobic anxiety.

Ask questions 1, 2, and 3.

1. a. *What kinds of things do you worry about?*

_____

_____

_____

If patient identifies anxiety or tension which is anticipatory to panics or exposures to phobic situations, e.g., "I worry about having an attack; I worry whenever I know I will have to cross a bridge", as a major source of anxiety:

1) *Are there things other than _____ which make you feel tense, anxious, or worried?*

YES _____ NO_____

If YES, *What are they?*

_____

_____

2. *Do you worry excessively about minor things?*

YES _____ NO _____

3. *Do you feel tense or nervous or jittery for no apparent reason?*

YES _____ NO _____

If YES to Question 1 or 2 or 3, continue:
If NO, go to HAMILTON SCALES (optional) (p. 10) or PTSD (p. 22)

4. *On an average day over the last month, what percent [how much] of the day do you feel tense, anxious, worried?*

_____%

5. *Last time you experienced an increase in tension, anxiety, or worry, [aside from panics or phobic exposures] what was happening/what were you thinking?*

When _____

Situation _____

Thoughts _____

6. *How long has the tension, anxiety, worry been a problem?*

From _____ To _____

Duration in months _____

7. *How much does this interfere with your life, work, social activities, family, etc.*

Rate interference:

0	1	2	3	4
None	Mild	Moderate	Severe	Very severe/ grossly disabling

If Hamilton Scales are to be administered,
Go to next page.
If Hamilton Scales are not to be administered,
Skip to p. 20 to make CAD symptom ratings.

Generalized Anxiety Disorder Symptom Ratings

If Hamilton Scales have been administered, Skip to PTSD (p. 22)

If Hamilton Scales have not been administered, inquire briefly about each symptom and check those which apply. If Hamilton Scales have been administered, severity ratings can be based on Hamilton Anxiety items which are listed next to each category. (Use General rating)

Persistent symptoms (continuous for at least 1 month) [6 mo. for III-R] in 3 of the 4 categories.

Inquire about each symptom listed in each category.

1. *During the past month* [6 mo. for III-R] *have you been bothered by* _____?

If YES, *How often are you bothered by it; how severe is it?*

_____

				Hamilton Anxiety Item
a. Muscular Tension				
"Jittery" or "jumpy" ___		Twitching		
Trembling or shakiness ___		(e.g., eyelid)	___	2, 7
Muscle tension, aches, or soreness ___		Restlessness	___	
		Fatigability	___	
0 None	1 Mild	2 Moderate	3 Severe	4 Very severe/ grossly disabling	
b. Autonomic Hyperactivity				
Sweating ___				
Palpitation or tachycardia ___		Upset stomach or diarrhea	___	7, 8, 9, 10, 12
Cold or clammy hands ___		Frequent urination	___	
Dry mouth ___		Trouble getting breath; lump in throat	___	
Flushing or pallor ___				
Dizziness or lightheadedness ___				
0 None	1 Mild	2 Moderate	3 Severe	4 Very severe/ grossly disabling	

c. Vigilance, Scanning

Hamilton Anxiety Item

4, 5

Difficulty concentrating or mind going blank because of anxiety ____
Irritability or impatience ____

Trouble falling or staying asleep ____

0 — None
1 — Mild
2 — Moderate
3 — Severe
4 — Very severe/ grossly disabling

d. Apprehensive Expectation

Worrying or fearful much of the time about things that might happen ____

0 — None
1 — Mild
2 — Moderate
3 — Severe
4 — Very severe/ grossly disabling

GO TO PTSD (p. 22)

POST TRAUMATIC STRESS DISORDER

1. *Do you remember any extremely stressful, life threatening, or traumatic event such as serious physical injury, rape, assault, or combat which happened to you prior to your experiencing anxiety or the other problems you're having?*

YES _____ NO _____

If NO, Skip to AGORAPHOBIA (p. 25); if YES, continue.

What was the event? _____

When? _____

After it happened, did you experience such things as...Secondly, when did you experience that? Note under past or current.

a. Reexperiencing event: *Having recurrent memories or dreams about it?*

CURRENT	PAST	ONE SYMPTOM REQUIRED FOR DIAGNOSIS
____	____	1) Recurrent and intrusive recollections
____	____	2) Recurrent dreams
____	____	3) Sudden acting or feeling as if event is recurring

b. Numbing of responsiveness or reduced involvement: *Feeling numb, detached from people?*

CURRENT	PAST	ONE SYMPTOM REQUIRED FOR DIAGNOSIS
____	____	1) Markedly diminished interest in one or more significant activities
____	____	2) Feeling of detachment or estrangement from others
____	____	3) Constricted affect

c. Experiencing such things as: (that were <u>not</u> present before trauma:) *Notice changes like:*

CURRENT	PAST	TWO SYMPTOMS REQUIRED FOR DIAGNOSIS
____	____	1) Hyperalert, exaggerated startle
____	____	2) Sleep disturbance

c. continued

CURRENT	PAST	TWO SYMPTOMS REQUIRED FOR DIAGNOSIS
___	___	3) Guilt about survival, or behavior for survival
___	___	4) Memory impairment, trouble concentrating
___	___	5) Avoiding acitivities which remind you of the event
___	___	6) Intensification of symptoms by events which symbolize or resemble event

2. *Are you still experiencing some of these problems?*

If NO, *When did they end?*

_____

If YES, *Which ones?* Check off symptoms above under CURRENT. Note time period symptoms occurred.

_____

_____

_____

DIAGNOSIS requires "YES" to Question 1 above plus one symptom from Group 1 and Group 2, and 2 symptoms from Group 3.

ACUTE = onset within 6 months of stressor and duration less than 6 months

CHRONIC OR DELAYED = duration of 6 months or more and/or onset of symptoms at least 6 months after trauma

_____

If patient meets criteria for PTSD, rate anxiety symptoms during recollection of event:

_____

Symptoms

1. *Do you experience the fear nearly every time you encounter _____?*

YES ___ NO ___

2. *When you do experience the fear, does it build up gradually, or does it come on suddenly?*

GRADUALLY _____ SUDDENLY _____

Do you feel the fear as soon as you encounter _____ or is the fear sometimes delayed?

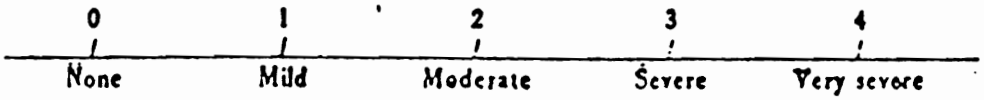
IMMEDIATELY ___ DELAYED ___

If DELAYED:

a. *Does the fear sometimes come on when you don't expect it?*

YES ___ NO ___

1. Rate severity of symptoms during exposures to phobic situations.



Do you experience ____ when you encounter [phobic situation]?

Dyspnea, difficulty breathing _____
Palpitations _____
Chest pain or discomfort _____
Choking or smothering sensations _____
Dizziness, vertigo, or unsteady feelings _____
Feelings of unreality _____
Paresthesias — tingling or prickling sensations _____
Hot or cold flashes _____
Sweating _____
Faintness _____
Trembling or shaking _____
Fear of dying _____
OR
Fear of going crazy or doing something uncontrolled _____
Nausea or abdominal distress _____
Others (e.g., blushing, facial tics, unsteady voice) _____

AGORAPHOBIA

1. a. *Do you feel panicky in any situations, or avoid them because you might be unable to leave in case you feel faint or panicky or ill?*

YES ____ NO ____

If NO, Skip to SIMPLE PHOBIA (p. 29)

Specify range of activity, e.g., time spent in situations, how often, distance from home and factors affecting ability to enter or stay. Specify range of activity when alone and when accompanied and write in spaces provided. Use scale below to rate fear and avoidance.

0	1	2	3	4
No avoidance or escape/no fear or anxiety	Occasional avoidance or escape/ mild fear	Moderate: may enter alone/ moderate fear	Severe: rarely alone; must be accompanied/ severe fear	Very severe: never enters even with safe person/very severe fear and panic

b. *How much fear do you experience in these situations? How often do you avoid such situations? Does having someone with you make a difference?*

	RANGE OF ACTIVITY ALONE	RANGE OF ACTIVITY ACCOMPANIED	RATING FEAR | AVOID
Driving			|
Riding in car			|
Grocery stores			|
Mall			|
Crowds			|
Public trans.: Bus			|
Plane			|
Taxi			|

	RANGE OF ACTIVITY ALONE	RANGE OF ACTIVITY ACCOMPANIED	RATING FEAR / AVOID
Waiting in line			|
Walking (how far)			|
Elevators			|
Being at home			|
Public places: Movies			|
Restaurants			|
Theaters			|
Auditoriums			|
Church			|
Enclosed places: Tunnels			|
Small rooms			|
Open spaces: Parks			|
Squares			|
Work			|
Other			|

If no evidence of fear and avoidance of any of these situations is obtained,
Skip to SIMPLE PHOBIA (p. 29)

Symptoms

1. *Do you experience the fear nearly every time you think about, remember, dream about _____?*

   YES ___ NO ___

2. *When you do experience the fear, does it build up gradually, or does it come on suddenly?*

   GRADUALLY ___ SUDDENLY ___

   Do you feel the fear as soon as you encounter ___ or is the fear sometimes delayed? IMMEDIATE ___ DELAYED ___

   If DELAYED:

   a. *Does the fear sometimes come on when you don't expect it?*

   YES ___ NO ___

1. Rate severity of symptoms.

0	1	2	3	4
None	Mild	Moderate	Severe	Very Severe

Do you experience ___ when you think about, remember, dream of ___?

Dyspnea, difficulty breathing	___
Palpitations	___
Chest Pain or discomfort	___
Choking or smothering sensations	___
Dizziness, vertigo, or unsteady feelings	___
Feelings of unreality	___
Paresthesias — tingling or prickling sensations	___
Hot or cold flashes	___
Sweating	___
Faintness	___
Trembling or shaking	___
Fear of dying	___
OR	
Fear of going crazy or doing something uncontrolled	___
Nausea or abdominal distress	___
Others _____	___

e. *How did you feel?* check for panic _____

_____

f. If PANIC: *Had you had any panicky feelings prior to this?*

YES _____ NO _____ WHEN _____

g. *Were you experiencing any life stresses at the time?*

_____

h. *Have there been periods in your life since this first time when you could enter these situations without panic or in spite of it?*
CHECK for remission, exacerbations, and precipitants.

Period	*What was going on in life, how did you get over it?*	*What happened when it came back?*

If there have been remissions, precipitant of current episode:

i. ***How did the problem get started again?***

_____

_____

_____

j. Distress/Interference

How has the problem interfered with your life, job, family, activities, etc.?

Rate interference _____

0	1	2	3	4
None	Mild	Moderate	Severe	Very severe/ grossly disabling

SIMPLE PHOBIA

For each situation, make separate ratings for level of fear, and degree of avoidance using the following scale:

0	1	2	3	4
No fear/ never avoids	Mild fear/ rarely avoids	Moderate fear/ sometimes avoids	Severe fear/ often avoids	Very severe fear/always avoids

1. *Do you fear and feel a need to avoid things such as:* Record extent of avoidance on line next to each.

	FEAR	AVOID
Heights	___	___
Air travel	___	___
Certain animals	___	___
Small enclosed places	___	___
Blood and injury: self	___	___
others	___	___
Driving	___	___
Other	___	___

If no evidence is found for fear/avoidance, Skip to SOCIAL PHOBIA (p. 31)

For each significant phobia (of at least moderate severity) inquire:

a. *What do you think of just before encountering/while you're in the situation? What do you think might happen?* _____

b. *How often do you encounter _____?* _____

c. *How often do you avoid _____?* _____

d *When did you first experience this fear?* _____ mo. _____ year.

How do you think the fear started? _____

e. *Since the fear started, has there been a time when you were not bothered by it?*

YES ___ NO ___ FROM _____ TO _____

f. *How does the fear interfere with your life?*

Rate interference on 0-4 scale _____

Symptoms

1. *Do you experience the fear nearly every time you encounter _____?*

   YES ___ NO ___

2. *When you do experience the fear, does it build up gradually, or does it come on suddenly?* GRADUALLY _____ SUDDENLY _____

   Do you feel the fear as soon as you encounter _____ or is the fear sometimes delayed? IMMEDIATE _____ DELAYED _____

   If DELAYED:

   a. *Does the fear sometimes come on when you don't expect it?*

      YES _____ NO _____

1. Rate severity of symptoms during exposures to phobic situations.

0	1	2	3	4
None	Mild	Moderate	Severe	Very Severe

Do you experience _____ when you encounter (phobic situation)?

Dyspnea, difficulty breathing	_____
Palpitations	_____
Chest Pain or discomfort	_____
Choking or smothering sensations	_____
Dizziness, vertigo, or unsteady feelings	_____
Feelings of unreality	_____
Paresthesias — tingling or prickling sensations	_____
Hot or cold flashes	_____
Sweating	_____
Faintness	_____
Trembling or shaking	_____
Fear of dying OR Fear of going crazy or doing something uncontrolled	_____
Nausea or abdominal distress	_____
Others _____	_____

SOCIAL PHOBIA

1. a. *In social situations where you might be observed or evaluated by others do you feel fearful?* YES NO

   b. *Are you overly concerned that you may do and/or say something that might embarrass or humiliate yourself in front of others, or that others may think badly of you?* YES NO

   c. *Do you try to avoid these situations all together?* YES NO

   d. *or do you simply suffer through them?* YES NO

2. *I'm going to describe some situations of this type and ask you how you feel in each situation.*

FIND OUT HOW MUCH FEAR, DISCOMFORT, AND AVOIDANCE EXISTS FOR EACH SITUATION AND RATE ON THE 0-4 scale for fear and avoidance.

0	1	2	3	4
No fear/ never avoids	Mild fear/ rarely avoids	Moderate fear/ sometimes avoids	Severe fear/often avoids	Very severe/ always avoids

	FEAR	AVOID	COMMENTS
a. Parties			
b. Meetings			
c. Eating in public			
d. Using public restrooms			
e. Talking in front of a group/formal speaking			
f. Writing in public (signing checks, filling out forms)			
g. Dating situations			
h. Talking to persons in authority			
i. Being assertive, e.g.:			
1) Refusing unreasonable requests			
2) Asking others to change their behavior			
j. Other situations or activities made difficult by your fear/phobia			
1) _____			
2) _____			
3) _____			

If no evidence is found for fear/avoidance
Skip to OBSESSIVE-COMPULSIVE DISORDER (p.35)

3. *How difficult is it for you to initiate a conversation in a social setting?* Rate impairment on 0-4 scale. ____

   a. *Does the sex of the person make a difference?* YES NO
   Which is easier? MALE ___ FEMALE ___

   b. *Does the age of the person make a difference?* YES NO
   Which is easier? OLDER ___ YOUNGER ___

   c. *Does the attractiveness of the person make a difference?* YES NO
   Which is easier? ATTRACTIVE___ LESS ATTRACTIVE___

   d. *Does the marital status of the person make a difference?* YES NO
   Which is easier? MARRIED ___ UNMARRIED ___

4. *Is it easier or harder for you to maintain a conversation than it is to start one?*
   EASIER ___ HARDER ___ NO DIFFERENCE ___

If no difference, Skip to Question 5.

   a. *Does the sex of the person make a difference?* YES NO
   Which is easier? MALE ___ FEMALE ___

   b. *Does the age of the person make a difference?* YES NO
   Which is easier? OLDER ___ YOUNGER ___

   c. *Does the attractiveness of the person make a difference?* YES NO
   Which is easier? ATTRACTIVE___ LESS ATTRACTIVE___

   d. *Does the marital status of the person make a difference* YES NO
   Which is easier? MARRIED ___ UNMARRIED ___

5. *What do you anticipate before going into social situations? What do you think about before/during?*

_____

_____

6. *In social situations does it make a difference if people are:* Note which is easier:

FRIENDS ___ STRANGERS ___ NO DIFFERENCE ___

LARGE GROUP ___ SMALL GROUP ___ NO DIFFERENCE ___

INFORMAL (e.g., parties) ___ FORMAL. (e.g., meetings) ___ NO DIFFERENCE ___

7. a. *When did you first experience this fear?*

_____ month _____ year

b. *What was the situation?* _____

c. *Has there been a time since then when you were not bothered by these fears?*

YES ___ NO ___

If YES, *When?* From _____ TO _____

8. a. *Has your current job or educational attainment been influenced by these fears?*

YES ___ NO ___

If YES, *How?* _____

Rate impairment on 0-4 scale. _____

b. *If your social fears were gone, what jobs would you consider?*

_____

_____

OBSESSIVE-COMPULSIVE DISORDER

1. a. *Are you bothered by thoughts or images that keep recurring to you that are unreasonable or nonsensical that you can't stop from coming into your mind? This is not the same as worrying about things that might happen. I mean things like repetitive thoughts about hurting or poisoning someone, or shouting obscenities in public, or horrible images such as your family involved in a car accident.*

YES ___ NO ___

If NO, Skip to 2a.

Content: Thought _____ Image _____ Urge _____

Resistance *Do you fight these thoughts/how do you get rid of them? What happens when you try to resist?*

_____

Distress/Social Problems, Work Problems *How much are you bothered by these thoughts/how do they affect your life?*

_____

_____

2. a. *Have you had to repeat some act over and over again that doesn't seem to make sense and that you don't want to do?* e.g., *washing something over and over again, or counting things, or checking something repeatedly?*

YES ___ NO ___

Content: _____

If NO to 1a. and 2a.,
Skip to MAJOR DEPRESSIVE EPISODE (p. 38)

Resistance *Do you try to resist doing them or did you resist intitially?*

_____

How anxious do you feel/what do you think of if you can't or don't carry out these acts?

_____

Distress/Social Problems, Work Problems *How much are you bothered/what problems does this create at work, home, socially?*

_____

Diagnosis of Obsessive-Compulsive Disorder requires obsessions be recurrent, persistent ideas, thoughts or images that are egodystonic, that the person tries to suppress. Compulsions are repetitive behaviors designed to produce or prevent a future event or situation. The person feels compelled to perform the act but also must desire to resist it at least initially. The obsessions or compulsions must cause significant distress or interfere with social or role functioning.

If patient does not meet criteria,
Skip to MAJOR DEPRESSIVE EPISODE (p. 38)

3. *When did you first notice these problems?*

a. *What was going on in your life at that time?*

b. *Has there been a period of time, since this first started that you were not troubled by these problems?*

c. *Do you have fluctuations in how much you are troubled by these?*

d. *How much do these problems interfere with your life?*

Rate interference _____

0	1	2	3	4
None	Mild	Moderate	Severe	Very severe/ grossly disabling

Symptoms

1. *When do these [thought/acts] make you feel most anxious?*

When having thought, image, urge ____
When resisting thought, image, or urge ____
While carrying out compulsive act ____
While resisting compulsive act ____

2. *Do you experience the fear nearly every time you [have/resist] the [thought/act]?)* YES ____ NO ____

Do you feel the fear as soon as you [have/resist] the [thought/act], or is the fear sometimes delayed? IMMEDIATE ____ DELAYED ____

If DELAYED:

a. *Does the fear sometimes come on unexpectedly?* YES ____ NO ____

3. Rate severity of symptoms at point of greatest anxiety

0	1	2	3	4
None	Mild	Moderate	Severe	Very severe

When you are [having/resisting] these [thoughts/acts] do you experience _____?

Dyspnea, difficulty breathing ____
Chest pain or discomfort ____
Dizziness, vertigo, or unsteady feelings ____
Paresthesias — tingling or prickling sensations ____
Sweating ____
Trembling or shaking ____
Fear of dying OR Fear of going crazy or doing something uncontrolled ____

Palpitations ____
Choking or smothering sensations ____
Feelings of unreality ____
Hot and cold flashes ____
Faintness ____
Nausea or abdominal distress ____
Others ____

SUMMARY

What is the primary problem you want help with? What is the major change you would like to make?

Is there anything else that I haven't covered?

MENTAL STATUS

INTERVIEW BEHAVIOR

NOTES

APPENDIX C

Betts Questionnaire upon Mental Imagery (QMI)

Vividness of Imagery

Instructions: The aim of this inquiry is to determine the vividness of your imagery. The items of the test will bring certain images to your mind. You are to rate the vividness of each image by reference to the accompaning rating scale. For example, if your image is "vague and dim" you give it a rating of 5. Record your answer in the appropriate space next to the question. Before you begin, familiarize yourself with the different categories of the rating scale. Throughout the test, refer to the rating scale when judging the vividness of each image. Try to make each rating on its own merits without reference to what has gone before.

Rating Scale: The image aroused by any one item of this test may be:

Rating to be given	Nature of the image
1	Perfectly clear and as vivid as the actual experience
2	Very clear and comparable in vividness to the actual experience
3	Moderately clear and vivid
4	Not clear or vivid but recognizable
5	Vague and dim
6	So vague and dim as to be hardly discernible
7	No image present at all; just knowing that you are thinking of the object

---

Your rating of pictorial (visual) images

1. The sun as it is sinking below the horizon _____

Think of some relative or friend. Rate the vividness of the following images:

2. The exact contour of the face, head, shoulders, and body _____
3. The characteristic poses of the head, attitudes of the body, etc. _____
4. The precise carriage, length of step, etc. in walking _____
5. The different colors worn in some familiar costume _____

Your rating of sound (auditory) images

6. The sound of the whistle of a locomotive _____
7. The sound of the honk of an automobile _____
8. The mewing of a cat _____
9. The sound of escaping steam _____
10. The clapping of hands in applause _____

Your rating of touch (tactual) images

11. The feel of sand _____
12. Of linen _____
13. Of fur _____
14. The prick of a pin _____
15. The warmth of a tepid bath

Your rating of muscular (kinesthetic) images

16. Running upstairs _____
17. Springing across a gutter _____
18. Drawing a circle on paper _____
19. Reaching up to a high shelf _____
20. Kicking something out of your way _____

Your rating of taste (gustatory) images

21. The taste of salt _____
22. Of white sugar _____
23. Of oranges _____
24. Of jelly _____
25. Of your favorite soup _____

Your rating of smell (olfactory) images

26. The smell of an ill-ventilated room _____
27. Of cooking cabbage _____
28. Of roast beef _____
29. Of fresh paint _____
30. Of new leather _____

Your rating of bodily (somesthetic-organic) images

31. Sensations of fatigue _____
32. Of hunger _____
33. Of a sore throat _____
34. Of drowsiness _____
35. Of repletion (as from a very full meal) _____

APPENDIX D

Panic Attack Cognitions Questionnaire (PACQ)

Panic Attack Thoughts Questionnaire

Instructions: Frightening thoughts often accompany, precede, or follow panic attacks or other episodes of extreme anxiety. Think of the past month. Using the scale below, rate how much each of the following thoughts is currently likely to preoccupy you before, during, and after a panic attack or other episode of extreme anxiety. Remember to rate each thought in terms of its occurrence before, during, and after episodes of anxiety this week. If you have not had an anxiety episode this month, you would rate each of the thoughts "1."

1 = not at all
2 = some, but not much
3 = quite a lot
4 = totally dominates your thoughts

		before	during	after
1. I am going to die	1 2 3 4	____	____	____
2. I am going insane	1 2 3 4	____	____	____
3. I am losing control	1 2 3 4	____	____	____
4. This will never end	1 2 3 4	____	____	____
5. I am really scared	1 2 3 4	____	____	____
6. I am having a heart attack	1 2 3 4	____	____	____
7. I am going to pass out	1 2 3 4	____	____	____
8. I don't know what people will think	1 2 3 4	____	____	____
9. I won't be able to get out of here	1 2 3 4	____	____	____
10. I don't understand what is happening to me	1 2 3 4	____	____	____
11. People will think I am crazy	1 2 3 4	____	____	____
12. I will always be this way	1 2 3 4	____	____	____
13. I am going to throw up	1 2 3 4	____	____	____

(Continue to rate each thought with the same scale)

		before	during	after
14. I must have a brain tumor	1 2 3 4	____	____	____
15. I will choke to death	1 2 3 4	____	____	____
16. I am going to act foolish	1 2 3 4	____	____	____
17. I am going blind	1 2 3 4	____	____	____
18. I will hurt someone	1 2 3 4	____	____	____
19. I am going to have a stroke	1 2 3 4	____	____	____
20. I am going to scream	1 2 3 4	____	____	____
21. I am going to babble or talk funny	1 2 3 4	____	____	____
22. I will be paralyzed by fear	1 2 3 4	____	____	____
23. Something is really physically wrong with me	1 2 3 4	____	____	____
24. I will not be able to breathe	1 2 3 4	____	____	____
25. Something terrible will happen	1 2 3 4	____	____	____

APPENDIX E

Panic Attack Symptoms Questionnaire (PASQ)

Panic Attack Symptom Questionnaire

Instructions: The symptoms listed below are frequently experienced during anxiety and panic attacks. Base your responses only on the past month. If you have had panic attacks, rate your worst one. If you have not had an attack, rate the period when you were most anxious during the month. Please use the following scale and rate each item where:

1 = Did Not Experience This
2 = Fleeting (lasted 1 second to 1 minute)
3 = Briefly (lasted 1 minute to 10 minutes)
4 = Moderately (lasted 10 minutes to 1 hour)
5 = Quite Long (lasted 1 hour to 1 day)
6 = Protracted Period (lasted 1 day or longer)

(remember to rate each item by circling only one number per item)

---

1. Heart beats rapidly or pounds	1	2	3	4	5	6
2. Pain in chest	1	2	3	4	5	6
3. Heart pounding in chest	1	2	3	4	5	6
4. Difficulty swallowing (lump in throat)	1	2	3	4	5	6
5. Feeling of suffocation	1	2	3	4	5	6
6. Choking sensation	1	2	3	4	5	6
7. Hands or feet tingle	1	2	3	4	5	6
8. Face feels hot	1	2	3	4	5	6
9. Sweating	1	2	3	4	5	6
10. Trembling or shaking	1	2	3	4	5	6
11. Hands or body trembling or shaking (outside)	1	2	3	4	5	6
12. Hands or feet feel numb	1	2	3	4	5	6
13. Feeling that you are not really you or that you are disconnected from your body	1	2	3	4	5	6

Continue to rate each symptom with the same scale where:
1 = Did not experience this
2 = Fleeting (1 second to 1 minute)
3 = Briefly (1 minute to 10 minutes)
4 = Moderately (10 minutes to 1 hour)
5 = Quite Long (1 hour to 1 Day)
6 = Protracted Period (1 day to 2 days)

---

14. Feeling that things around you are unreal - as if in a dream	1	2	3	4	5	6
15. Vomiting (not induced)	1	2	3	4	5	6
16. Nausea	1	2	3	4	5	6
17. Breathing rapidly (as if unable to catch breath)	1	2	3	4	5	6
18. Hands or feet feel cold	1	2	3	4	5	6
19. Mouth feels dry	1	2	3	4	5	6
20. Sinking feeling in stomach	1	2	3	4	5	6
21. Nerves feel "wired"	1	2	3	4	5	6
22. Physically immobilized	1	2	3	4	5	6
23. Vision becomes blurred or distorted	1	2	3	4	5	6
24. Pressure in chest	1	2	3	4	5	6
25. Numbness in body other than hands or feet	1	2	3	4	5	6
26. Shortness of breath	1	2	3	4	5	6
27. Dizziness	1	2	3	4	5	6
28. Feeling faint	1	2	3	4	5	6
29. Butterflies in stomach	1	2	3	4	5	6
30. Knot in stomach	1	2	3	4	5	6
31. Tightness in chest	1	2	3	4	5	6

(Continue to rate your symptoms with the same scale)

32. Wobbly or rubber legs	1	2	3	4	5	6
33. Disorientation or confusion	1	2	3	4	5	6
34. Cold clamminess	1	2	3	4	5	6
35. Sensitivity to loud noises or ears ringing	1	2	3	4	5	6
36. Ears ringing	1	2	3	4	5	6

Panic attacks are defined by having 4 or more of the above symptoms and also by having the attacks come on suddenly. Based on this criteria,

Did you have a panic attack this week? 1 yes 2 no

If yes, how many attacks did you have? (circle only one number)

1 2 3 4 5 6 7 8 9 10 or more

APPENDIX F

STAI

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④

SELF-EVALUATION QUESTIONNAIRE

STAI FORM X-2

NAME _____ DATE _____

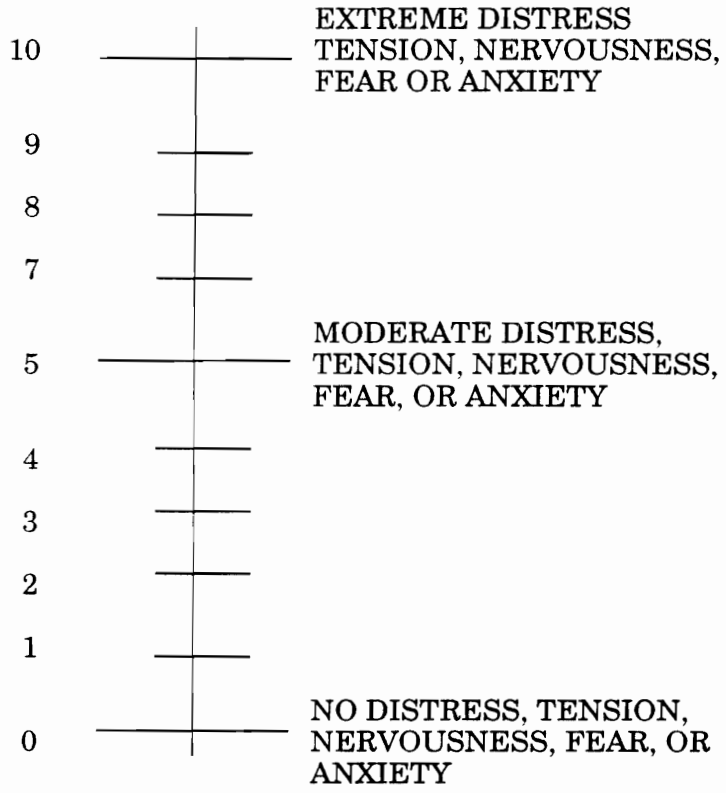
DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

APPENDIX G

Fear Thermometer

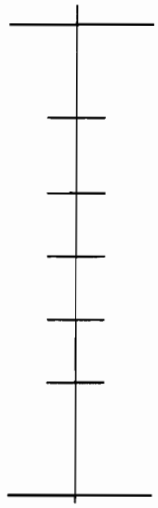
FEAR THERMOMETER



APPENDIX H

Vividness Scale

Vividness Scale



1 PERFECTLY CLEAR AND AS VIVID AS THE ACTUAL EXPERIENCE

2 VERY CLEAR AND COMPARABLE IN VIVIDNESS TO THE ACTUAL EXPERIENCE

3 MODERATELY CLEAR AND VIVID

4 NOT CLEAR OR VIVID, BUT RECOGNIZABLE

5 VAGUE AND DIM

6 SO VAGUE AND DIM AS TO BE HARDLY DISCERNIBLE

7 NO IMAGE PRESENT AT ALL. YOU ONLY "KNOW" THAT YOU ARE THINKING OF THE OBJECT.

APPENDIX I

Consent Form

APPENDIX I

Consent Form

Assessment of Responses to Imagery

I, _____, freely and voluntarily consent to participate in a research program entitled "Assessment of Responses to Imagery" to be conducted by Juesta M. Caddell, M. S., and George A. Clum, Ph. D. The procedures to be followed have been explained to me and I understand them. They are as follows:

1. I understand that I will be interviewed by a graduate student in clinical psychology to determine if I have Panic Disorder with Agoraphobia or a Simple Phobia and if I am an appropriate candidate for this study. The initial interview will take approximately one hour. I understand that this interview will be videotaped so that another experimental staff member may confirm the diagnostic impression of the interviewer. This tape will be erased after the diagnostic impression has been confirmed. If I am not an appropriate candidate for this study, but desire treatment, treatment referral options will be discussed with me and a referral will be made if I so desire.

2. If I am appropriate for this study, and I am willing to participate, I will be asked to complete several questionnaires including measures of imagery ability, measures of symptoms and thoughts. If I do not desire to participate and I desire treatment, I will be offered a treatment referral. The interviewer will also collaborate with me to construct a script of a situation in which I am fearful. Completion of questionnaires and imagery construction is anticipated to take approximately 30 minutes.

3. When I return for the imagery testing sessions, I will be shown the testing room and testing equipment. The testing equipment used will measure my body's response to different types of imagery. I understand that normal and correct usage of this equipment presents no danger to me. My body's responses will be monitored while I am seated comfortably in a chair with my eyes closed and participate in imaging in response to the experimenters instructions. I understand that I may experience some discomfort and anxiety during the testing. I will also be asked to rate my level of comfort periodically during the testing. Each imagery testing session is expected to last approximately one hour and 15 minutes.

4. Following testing, this study will be discussed with me and any questions I have will be answered. Additionally, treatment options will be discussed, and if I desire a treatment referral, one will be made for me.

5. I understand that all information obtained from me will be held strictly confidential by the experimental staff. Furthermore, in any scientific report of this project, there will be no way to identify me.

6. If I am an undergraduate psychology student, I understand that by participating in and completing the initial interview, I will receive 2 grade points toward my final grade. By participating in and completing the imagery testing session, I will receive an additional 6 grade points toward my final grade.

7. I understand that I may withdraw my consent to participate at any time without penalty. Further, I acknowledge that I have a duplicate signed copy of this form.

_____ _____

Signature Student I.D. #

_____

Phone number

_____ _____

Witness Date

If you have any questions about this study, contact any of the following people:

Juesta M. Caddell, M.S., Grad. Research Assist. (off. 961-6914, home 953-1295)

George A. Clum, Ph.D., Project Director (off. 961-5701, home 951-1697)

Stephen J. Zaccaro, Ph.D., Chairperson, Human Subjects Committee, Dept. of Psychology (961-7916)

Charles D. Waring, Chairperson, Institutional Review Board (961- 5283)

APPENDIX J

Samples of PDA Phobic Script and SP Phobic Script

Sample PDA Phobic Script

It is the early afternoon on the day before your wife's birthday. You are sitting at the computer in your parlor at home. **[What does your parlor look like?]** You are trying to think of a reason to go out of the house so that you can buy your wife another gift. Your wife is downstairs in her studio. The phone rings and you have a call from work where they are having a problem. You log on, fix the problem and log off. Suddenly the panic hits you. Your heart starts beating rapidly and you begin trembling and shaking. **{You think, "I,m losing control, something terrible is going to happen.} [What are you feeling now?]** Your heart is pounding in your chest now and you have difficulty swallowing. You are breathing rapidly, trying to catch your breath. **{You think to yourself, "I'm really scared, I'm not going to be able to breathe.}** You manage to get out of the chair, but your legs are wobbly and rubbery and you lie down on the floor. Your nerves are wired, your mouth is dry as you try to swallow. Your hands and feet feel cold, but your face feels hot. **{You wonder what people will think because you can be seen through the window, and you think maybe you're having a stroke.} [What are you thinking now?]** As you continue to lie on the floor you begin to feel disoriented and confused. You feel like you are disconnected from your body. Your ears are ringing and you can't move. **{You think, "I'm paralyzed with fear, I won't be able to get out of here."} [What are you thinking and feeling now?]** You lie on the floor alone, your wife is downstairs unaware of what is happening to you. You are breathing hard and your heart is pounding as your body shakes.

Note: Interactive questions are boldfaced inside **[]**.
Cognitive cues are boldfaced inside **{}**.

Sample SP Phobic Script

You are walking in the grassy clearing toward the fire tower with the woods surrounding you. Birds are singing and the wind is blowing through the trees. The fire tower sits near the edge of a sheer cliff. **[What does the cliff look like?]** Now you are at the foot of the steps of the tower. You look up the steps and see the trap door on the underside of the tower and the white clouds and sky beyond the top of the tower. The clouds passing by the tower make it seem as though the tower were moving. **{As you look up, you think that something terrible will happen if you climb up.}** You feel dizzy as you watch the clouds sweeping by. You grab the single bar railing on either side of the stairs and begin to climb. You climb higher and higher, with each step you take shaking the stairway. **{You can't help thinking how scared you are} [What are you feeling now?]** The dizziness becomes worse as you notice that the top of the tower seems to be swaying. For a moment you look away from the sky, and when you do can see through the slatted stairs that you are as high as the tree tops. Your heart is pounding so you quickly look back up, but the dizziness returns worse than ever. **{You think that you are going to fall.} [What are you thinking now?]** You are having trouble breathing and you hold tightly to the railway because you feel faint. You are shaking as the sweat pours out of your body making the palms of your hand feel slippery against the railing. **{You are afraid that you won't be able to get off the tower, and that you will be paralyzed with fear.} [What are you thinking and feeling now?]** Your stomach hurts as you strain to hold on to the slippery railing.

Note: Interactive questions are boldfaced inside [].
Cognitive cues are boldfaced inside {}.

APPENDIX K

Standard Neutral Script

Standard Neutral Script

You are sitting in your home looking out an open window. It is the peak of the color change in autumn and the leaves are brilliant yellow, orange and red. You stand up and walk over to the window in order to get a better view. **[What do you see out the window?]** **{You think how peaceful the view is.}** A soft breeze blows through the branches of the trees. Because the window is open, you can feel the cool breeze against your skin and you can hear the leaves rustling in the wind. **{You think that the breeze feels refreshing.}** **[What are you feeling now?]** The breeze carries the aroma of the crisp autumn air. You can also smell the smoke from someone burning leaves somewhere nearby. You see that as the leaves fall, they twirl and float on their way to the ground. **{You think to yourself that the leaves look like a waterfall of colors as they tumble down.}** **[What are you thinking now?]** You hear the rustle and see the branches sway in the breeze. As the wind gusts, some of the falling leaves are swept up into the air for a moment and then tumble again toward the ground. As you stand by the window, you sip on a hot drink. You put the cup to your lips and taste the warm liquid as it passes over your tongue. Warmth spreads throughout your body as you swallow your drink. **{You say to yourself, "I feel great today."}** **[What are you thinking and feeling now?]** You turn away from the window, and walk back to your chair and sit down.

Note: Interactive questions are boldfaced inside **[]**.
Cognitive cues are boldfaced inside **{}**.

APPENDIX L

Counterbalanced Order of Scripts for all Subjects

Subject Number	Order			
Panic Group				
1	INC	NC	IC	C
2	IC	INC	IC	NC
3	C	IC	NC	INC
4	C	IC	NC	INC
5	NC	C	INC	IC
6	IC	INC	C	NC
7	NC	C	INC	IC
8	INC	NC	IC	C
9	C	IC	NC	INC
10	INC	NC	IC	C
11	NC	C	INC	IC
12	IC	INC	C	NC

Subject Number	Order			
Simple Phobic Group				
13	NC	C	INC	IC
14	NC	C	INC	IC
15	NC	C	INC	IC
16	IC	INC	C	NC
17	C	IC	NC	INC
18	INC	NC	IC	C
19	C	IC	NC	INC
20	IC	INC	C	NC
21	INC	NC	IC	C
22	C	IC	NC	INC
23	INC	NC	IC	C
24	IC	INC	C	NC

APPENDIX M

Experimental Instructions

Experimental Instructions

During this testing your body's responses and your subjective response to imaginal scripts will be assessed. The experimenter will attach monitors to the testing equipment which will allow us to get readings of your body's responses. You will then be asked to close your eyes, relax and listen to music for several minutes while you become accustomed to the testing situation. We will then inform you that a five minute baseline period is beginning during which we will be taking measurements of your body's responses at rest. Please remain still with your eyes closed and relax as much as possible during this five minute period. At the end of five minutes, the experimenter will tell you that the imagery periods will begin in one minute. Following one minute, the experimenter will present eight imagery scenes to you verbally. Each scene presentation will last two minutes. Some of the scenes will be of neutral situations and some of the scenes will be of situations that you have indicated are uncomfortable or unpleasant for you. Try to put yourself into each scene as much as possible and to experience the scene as if you are actually there. Sometimes you will be asked to respond verbally to the experimenter during the imagery period and tell the experimenter what you perceive and feel. Other times you will not talk to the experimenter, but rather only listen during the imagery period. Please do not respond to the experimenter unless you are asked to do so. (Explain the responding to them more. Tell them that they will be asked questions such as "What are you feeling now?" They are to answer as if they are in the imagery scene being presented. Tell them to give brief answers. One sentence is adequate, two sentences at the most.) Remember, you should experience all the imagery scenes as much as possible. There will be a rest period between the imagery scenes. At the end of the five minute baseline period and at the beginning of the rest periods between imagery scenes, you will be asked (while still keeping your eyes closed) to verbally report your level of anxiety during the previous imagery scene to the experimenter using this fear thermometer scale. (Fear thermometer is shown and explained to subject). You will also be asked to rate the vividness of the previous scene using this scale from the vividness questionnaire which you filled out previously (show Vividness Scale and be sure to tell subject that the scale is reversed: i.e. 1=most vivid and 7=not at all vivid). After you have made your rating you should relax and wait for the next imagery scene to begin. You will be listening to music between the imagery scenes. You may terminate the testing session at any time by saying that you wish to end the session. Do you have any questions?

APPENDIX N

Baseline Instructions

APPENDIX N

Baseline Instructions

The five minute baseline period is now beginning. Please keep your eyes closed and relax as much as possible. You will be informed when the imagery period is about to begin.

The baseline period is now over. Please look at the fear thermometer and rate your current level of anxiety by saying aloud a number from 0 - 10. [Pause]. The imagery period will begin in one minute. Remember to keep your eyes closed and put yourself into each scene as much as possible. After each scene, you will be asked to verbally rate both your anxiety and imagery vividness. You will simply refer to the fear thermometer and vividness scale when asked to do so and say aloud a number which represents your level of anxiety and the vividness of the imagery from the previous scene. We will record your ratings. If you have no questions and are ready to proceed, please say you are ready to proceed. Are you ready?

Table 1
Summary of Demographic Variables by Diagnostic Group

	Diagnostic Group	
Demographic Variables	**PDA**	**SP**
Mean Age	32.16 (6.74)	28.63 (9.12)
Mean Education	17.33 (1.72)	15.54 (1.86)
Race		
White	11	12
Other	1	0
Sex		
Male	3	3
Female	9	9

PDA = Panic Disorder with Agoraphobia.
SP = Simple Phobia.

Standard deviations are in parenthesis.

Table 2
Mean Scores on Questionnaires by Diagnostic Group

	Diagnostic Group	
Questionnaire	**PDA**	**SP**
QMI	77.0 (25.6)	99.67 (32.61)
PASQ	91.25_a (23.19)	62.08_a (23.35)
PACQ	50.83_b (10.66)	33.17_b (9.0)
State	50.0_c (9.73)	42.41_c (4.87)
Trait	49.4_d (13.57)	37.75_d (7.38)

PDA = Panic Disorder with Agoraphobia.
SP = Simple Phobia.

Standard deviations are in parentheses.
Means with the same sub-letter are significantly different (P<.05).

Table 3
Mean Heat Rate Difference Scores During Presentation of Neutral and Phobic Versions of Imagery Scripts

Type of Difference Score	Script Type and Version							
	NNC	NC	NINC	NIC	PNC	PC	PINC	PIC
				Both Diagnostic Groups				
30 Second Interval Difference Score	2.42 (4.21)	$.84_a$ (4.18)	3.17 (4.21)	2.37_b (3.49)	$-.14_c$ (9.03)	3.85_a (2.7)	3.85 (3.9)	$4.79_{b,c}$ (3.26)
Peak Interval Difference Score	5.09 (4.87)	2.83_d (4.2)	6.29 (5.47)	4.96_e (3.7)	5.15_f (9.6)	6.12_d (3.18)	6.89 (4.75)	$8.28_{e,f}$ (4.95)
				Panic Disorder Group				
30 Second Interval Difference Score	2.04 (3.28)	$-.004_g$ (4.14)	4.88 (2.73)	2.96 (2.84)	1.11_h (2.94)	3.43_g (2.46)	3.21 (4.17)	4.26_h (3.11)
Peak Interval Difference Score	4.4 (3.63)	1.9_i (3.61)	8.38 (4.21)	5.80 (2.57)	3.35_j (3.17)	5.65_i (2.52)	6.60 (5.2)	8.42_j (5.66)
				Simple Phobia Group				
30 Second Interval Difference Score	2.81 (5.09)	1.68 (4.22)	1.46 (4.82)	1.78_k (4.08)	-1.38_l (12.59)	4.28 (2.96)	4.50 (3.69)	$5.32_{k,l}$ (3.45)
Peak Interval Difference Score	5.79 (5.95)	3.71 (4.71)	4.2 (5.94)	4.12_m (4.53)	2.80_n (13.51)	6.59 (3.78)	7.18 (4.46)	$8.15_{m,n}$ (4.37)

NNC = Neutral Non-Cognitive
NC = Neutral Cognitive
NINC = Neutral Interactive Non-Cognitive
NIC = Neutral Interactive Cognitive
PNC = Phobic Non-Cognitive
PC = Phobic Cognitive
PINC = Phobic Interactive Non-Cognitive
PIC = Phobic Interactive Cognitive

Standard deviations are in parentheses.
Cell means with the same sub-letter are significantly different ($P<.05$).

Table 4
Mean SCL Difference Scores During Presentation of Neutral and Phobic Versions of Imagery Scripts

Type of Difference Score	Script Type and Version							
	NNC	NC	NINC	NIC	PNC	PC	PINC	PIC
Both Diagnostic Groups								
30 Second Interval Difference Score	-.09 (.41)	-.20 (.45)	.66 (.82)	$.57_{a}$ (.64)	$.17_{b}$ (.75)	$.01_{c}$ (.46)	.94 (1.16)	$1.34_{a,b,c}$ (1.95)
Peak Interval Difference Score	.16 (.39)	-.01 (.35)	1.05 (1.09)	1.05_{d} (1.08)	$.25_{e}$ (.69)	.19 (.44)	1.46_{f} (1.76)	$1.92_{d,e,f}$ (2.82)
Panic Disorder Group								
30 Second Interval Difference Score	-.06 (.23)	-.18 (.24)	.70 (.79)	$.46_{g}$ (.69)	$.14_{h}$ (.66)	$.01_{i}$ (.31)	.69 (1.15)	$1.19_{g,h,i}$ (1.80)
Peak Interval Difference Score	.04 (.26)	-.02 (.19)	1.13 (1.05)	$.84_{j}$ (1.10)	$.14_{k}$ (.46)	$.15_{l}$ (.37)	1.00 (1.58)	$1.70_{j,k,l}$ (2.48)
Simple Phobia Group								
30 Second Interval Difference Score	-.12 (.53)	-.23 (.58)	$.63_{m}$ (.89)	$.69_{n}$ (.61)	$.21_{o}$ (.84)	$.01_{p}$ (.57)	1.2_{m} (1.15)	$1.50_{n,o,p}$ (2.14)
Peak Interval Difference Score	.29 (.45)	.01 (.46)	$.97_{q}$ (1.17)	1.28_{r} (1.06)	$.35_{s}$ (.86)	$.22_{t}$ (.52)	1.91_{q} (1.86)	$2.16_{r,s,t}$ (3.19)

NNC = Neutral Non-Cognitive
NC = Neutral Cognitive
NINC = Neutral Interactive Non-Cognitive
NIC = Neutral Interactive Cognitive
PNC = Phobic Non-Cognitive
PC = Phobic Cognitive
PINC = Phobic Interactive Non-Cognitive
PIC = Phobic Interactive Cognitive

Standard deviations are in parentheses.
Cell means with the same sub-letter are significantly different ($P<.05$)

Table 5
Mean EMG Difference Scores During Presentation of Neutral and Phobic Versions of Imagery Scripts

Type of Difference Score	Script Type and Version							
	NNC	NC	NINC	NIC	PNC	PC	PINC	PIC
Both Diagnostic Groups								
30 Second Interval Difference Score	-.07	.05	.09	-.44	.04	.18	-.38	-.27
	(.58)	(.54)	(1.8)	(1.03)	(1.01)	(.84)	(.95)	(1.59)
Peak Interval Difference Score	.06	.38	.74	.26	.44	.52	.39	.59
	(.88)	(.68)	(2.16)	(.52)	(1.16)	(1.03)	(1.06)	(1.12)
Panic Disorder Group								
30 Second Interval Difference Score	-.04	.06	-.21	-.12	.19	.01	-.38	1.9
	(.73)	(.56)	(.73)	(.45)	(.66)	(.74)	(.81)	(.84)
Peak Interval Difference Score	.31	.43	.32	.31	.57	.37	.22	.84
	(.78)	(.76)	(.63)	(.46)	(.74)	(.76)	(.69)	(.93)
Simple Phobia Group								
30 Second Interval Difference Score-	-.10	.05	.41	-.77	-.11	.36	-.39	-.72
	(.42)	(.55)	(2.45)	(1.34)	(1.29)	(.92)	(1.12)	(2.03)
Peak Interval Difference Score	-.19	.34	1.18	.22	.32	.68	.57	.34
	(.93)	(.62)	(2.99)	(.59)	(1.5)	(1.27)	(1.34)	(1.28)

NNC = Neutral Non-Cognitive
NC = Neutral Cognitive
NINC = Neutral Interactive Non-Cognitive
NIC = Neutral Interactive Cognitive
PNC = Phobic Non-Cognitive
PC = Phobic Cognitive
PINC = Phobic Interactive Non-Cognitive
PIC = Phobic Interactive Cognitive

Standard deviations are in parentheses.

Table 6
Mean Vividness and SUDS Ratings During Presentation of Neutral and Phobic Versions of Imagery Scripts

	Script Type and Version							
Rating Scale	**NNC**	**NC**	**NINC**	**NIC**	**PNC**	**PC**	**PINC**	**PIC**
				Both Diagnostic Groups				
Vividness	2.25	2.13	2.25	2.42	2.63	2.54	2.21	2.25
	(1.15)	(.90)	(1.29)	(.97)	(1.10)	(.98)	(1.14)	(1.11)
SUDS	1.25	.79	1.25	1.29	5.54	5.63	6.25	6.42
	(1.65)	(1.02)	(1.78)	(1.16)	(2.62)	(2.58)	(2.57)	(2.39)
				Panic Disorder Group				
Vividness	1.75_a	1.83	2.00	2.50	2.67	2.50	2.17	2.17
	(.87)	(.94)	(.95)	(1.16)	(1.37)	(1.17)	(1.47)	(1.47)
SUDS	1.50	1.33	1.75	1.58	5.00	5.17	6.00	6.17
	(2.07)	(1.15)'	(2.01)	(1.31)	(3.10)	(3.19)	(2.89)	(2.88)
				Simple Phobia Group				
Vividness	2.75_a	2.42	2.50	2.33	2.58	2.58	2.25	2.33
	(1.22)	(.79)	(1.57)	(.78)	(.79)	(.79)	(.75)	(.65)
SUDS	1.00	.25	.75	1.00	6.08	6.09	6.50	6.67
	(1.12)	(.45)	(1.42)	(.95)	(2.02)	(1.83)	(2.32)	(1.87)

NNC = Neutral Non-Cognitive
NC = Neutral Cognitive
NINC = Neutral Interactive Non-Cognitive
NIC = Neutral Interactive Cognitive
PNC = Phobic Non-Cognitive
PC = Phobic Cognitive
PINC = Phobic Interactive Non-Cognitive
PIC = Phobic Interactive Cognitive

Standard deviations are in parentheses.
Cell means with the same sub-letter are significantly different ($P<.05$).

Table 7
SCL Correlated with SUDS Ratings and Vividness Ratings During the Peak Interval of Phobic Imagery Script Presentation

Diagnostic Group	Script Type and Presentation Order			
	PNC	PC	PINC	PIC
		SUDS Ratings		
Both Groups	.43*	.21	.67*	.19
PDA	.39	.39	.77*	.61*
SP	.48	-.08	.58*	-.29
		Vividness Ratings		
Both Groups	-.61*	-.48*	-.47*	-.34
PDA	-.72*	-.64*	-.61*	-.57
SP	-.40	-.25	-.36	-.16

*Denotes significant correlations ($p<.05$).

Note: Lower vividness ratings indicate more vividness, therefore negative correlations indicate that increased vividness is related to higher arousal.

Table 8
Mean Difference Scores on Physiological Measures as Function of Order of Presentation

Physiological Variable	Script Type and Presentation Order							
	N_1	N_2	N_3	N_4	P_1	P_2	P_3	P_4
HR	2.99 (4.19)	1.97 (4.85)	2.27 (4.24)	1.57 (2.83)	1.73 (9.85)	3.57 (3.25)	3.65 (3.84)	3.40 (2.22)
SCL	$.44_g$ (.69)	$.32_f$ (.50)	$.20_e$ (.98)	$-.01_d$ (.51)	$1.84_{a,b,c,d,e,f,g}$ (1.94)	$.29_a$ (.70)	$.23_b$ (.74)	$.11_c$ (.55)
EMG	-.22 (.91)	.02 (1.80)	-.26 (.83)	.09 (.53)	-.84 (1.55)	.29 (.65)	.12 (1.02)	-.01 (.87)

Physiological Variable	Presentation Order Collapsed Across Script Type			
	O_1	O_2	O_3	O_4
HR	2.37 (4.40)	2.77 (3.12)	2.96 (2.65)	2.49 (1.95)
SCL	$1.14_{a,b,c}$ (1.20)	$.31_a$ (.42)	$.22_b$ (.81)	$.05_c$ (.49)
EMG	$-.53_{d,e,f}$ (1.12)	$.15_d$ (.90)	$.07_e$ (.82)	$.04_f$ (.56)

N_1 = Neutral Script Presented 1st
N_2 = Neutral Script Presented 2nd
N_3 = Neutral Script Presented 3rd
N_4 = Neutral Script Presented 4th
P_1 = Phobic Script Presented 1st
P_2 = Phobic Script Presented 2nd
P_3 = Phobic Script Presented 3rd
P_4 = Phobic Script Presented 4th

O_1 Scripts Presented 1st (both types)
O_2 Script Presented 2nd (both types)
O_3 Script Presented 3rd (both types)
O_4 Script Presented 4th (both types)

Standard deviations are in parentheses.
Cell means with the same sub-letter are significantly different ($P<.05$).

Table 9
Correlation Matrix of Relationships Among Total Scores on Anxiety Questionnaires

	State	Trait	PASQ	PACQ
State		.46*	.41*	.21
Trait			.73*	.72*
PASQ				.85*
PACQ				

*Denotes significant correlations ($P > .05$).

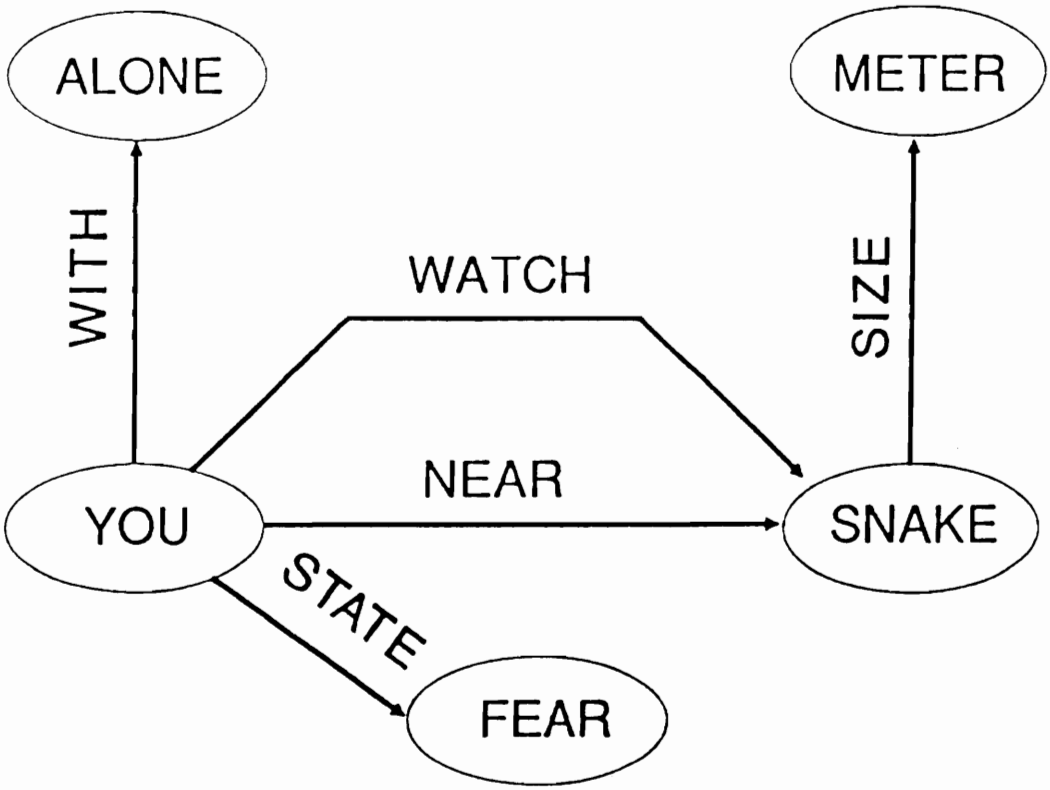


Figure 1. Schematic representation of the propositional network for the information "you are alone, watching a nearby snake, one meter in length, and you are afraid".

Note. From "A Bio-informational Theory of Emotional Imagery" by P.J. Lang, 1979, Psychophysiology, 16, p.501. Copyright 1982 by the Society for Psychophysiological Research, Inc.

Study Design

A x (B x C x S)

A = Dx group (Simple / Panic)

B = Type of script (Neutral / Phobic)

C = Version of script (NonC, C, INC, IC)

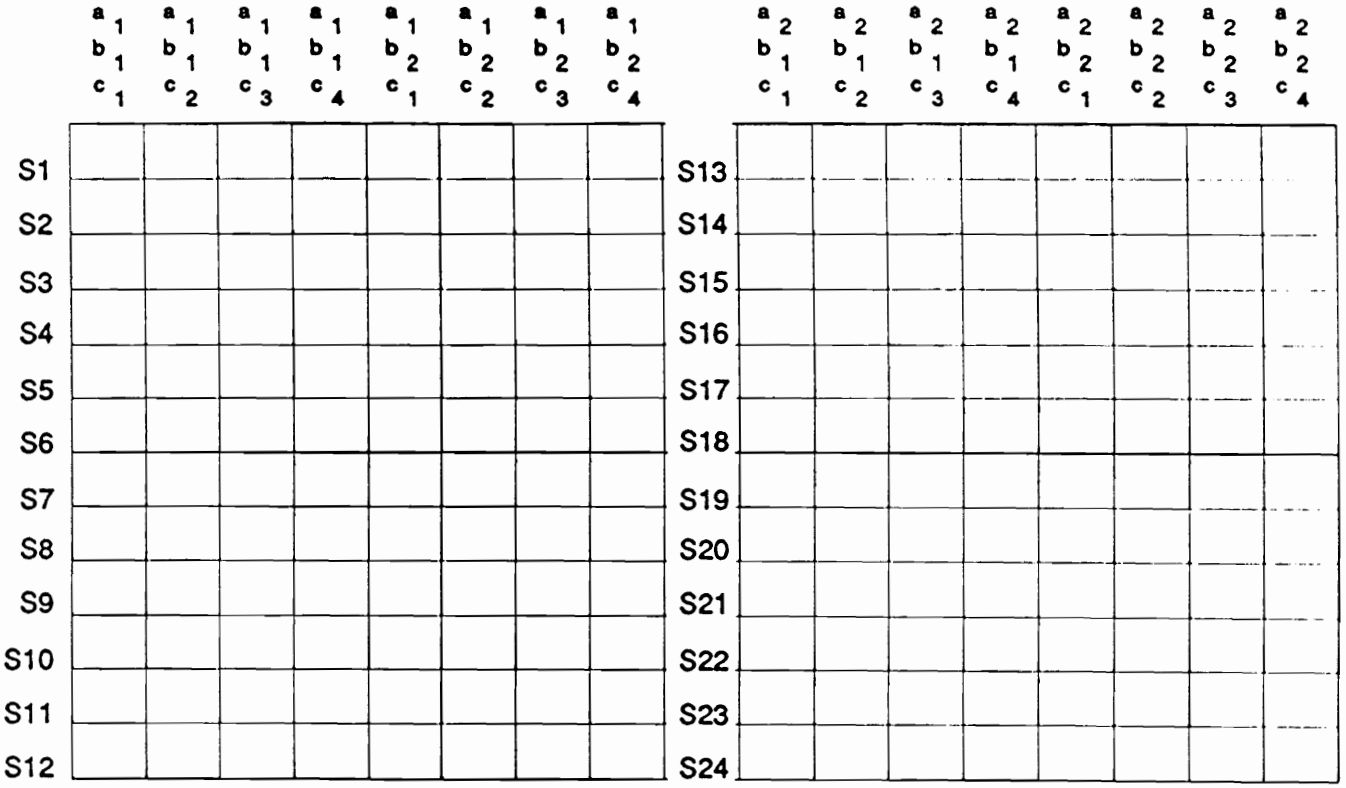


Figure 2. Graphic representation of the study design.

VITA

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SELECTED PUBLICATIONS (8 Total Professional Publications)

Caddell, J.M., & Drabman, R.S. (In press). Post-traumatic Stress Disorder in Children. Chapter to appear in R.T. Ammerman & M. Hersen (Eds.). Handbook of Behavior Therapy with Children and Adults: A Longitudinal Perspective.

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