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**THE RELATIONSHIP OF CONDITIONING EXPERIENCES
TO STRENGTH OF FEAR, ANXIETY RESPONSES
AND FEAR-ONSET MEMORIES:
AN EXAMINATION OF RACHMAN'S THREE-PATHWAYS THEORY**

A thesis presented in partial fulfilment of
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For Dad

ABSTRACT

The purpose of the present study was twofold: First, to test Rachman's (1977) theory which predicts that "direct" conditioned fears will differ from "indirect" conditioned fears in magnitude and anxiety response patterns. Secondly, to explore validity issues related to the questionnaire methodology typically used in fear acquisition research. The questionnaire comprised three anxiety scales and three fear-onset questions used in prior research, a specifically developed 36-item fear list and two validity-check items. One hundred and ninety-one subjects completed the questionnaire. After selecting and rank-ordering ten fears from the fear list, subjects answered questionnaire items for their first- and then their tenth-ranked fear. Results failed to confirm Rachman's predictions: A significantly greater proportion of subjects ascribed highly-feared and moderately-feared situations or things to direct conditioning. In addition, differential anxiety response patterns were not present for different levels of fear. However, results supported the prediction that direct-conditioning ascriptions would be endorsed with greater certainty. The findings suggest that direct-conditioning experiences may be more memorable than indirect-conditioning events. The theoretical and methodological implications of the findings are discussed. It is suggested that future research either employ methodologies more suited to investigating causal relationships or that Rachman's (1977) theory be blended with an attributional account of fear acquisition.

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*"Meet me on the highway,
Meet me on the road.
As long as you've got to travel,
Don't you want someone
To help you carry your load?"*

(Carole King, 1971)

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INTRODUCTION

AN HISTORICAL OVERVIEW OF THE CONCEPTS OF FEAR AND ANXIETY

For over seventy years, the concept of fear has occupied a conspicuous place in psychological research (Hoch & Zubin, 1950). Whether conceptualized as a complex intrapsychic phenomenon or a simple behavioural response, fear continues to hold the interest of researchers, theorists and clinicians from a diverse range of schools of thought. Arguably, no other emotion has been as prodigiously expounded upon and investigated in psychology as has fear (Gray, 1991; Spielberger & Krasner, 1988). Yet, despite the voluminous literature on this basic human emotion, there remains some disagreement and ambiguity among researchers concerning not just what constitutes fear, but how it relates to another regularly-studied concept, anxiety.

Psychoanalytically-based formulations, for example, assign fear the primary explanatory role in human personality (Compton, 1980). Natural (i.e. unconditioned) stimuli associated with pain are said to produce fear responses which, in turn, produce the secondary stimulus drive, anxiety (Eysenck, 1969). Thus, in psychoanalytic theories fear is the primary response to painful stimuli, whereas anxiety is a response to the memories of that pain.

Behaviourally-based definitions of fear and anxiety, by contrast, emphasize the observable behaviours underlying the two constructs (Catania, 1984; Miller, 1980). For example, May (1977) described fear as a response to specific, identifiable and relatively tangible objects or situations (e.g. spiders, dark places, strangers, etc.). Anxiety was described as a state of vague and diffuse apprehension, accompanied by feelings of uncertainty, helplessness and involving a perceived or real threat to the sufferer's sense of self.

Some behaviourists have viewed fear as a reality-based response and anxiety as an irrational one (Bootzin & Max, 1980). This view states that the stimuli eliciting anxiety may be vague (in comparison to the stimuli eliciting fear) because anxiety is held to be more often based on imagination than reality. On the other hand, the fear response is said to be more present-centred than anxiety (McNaughton, 1989; de Rivera, 1977).

As regards the usefulness and validity of maintaining distinctions between the two constructs, some researchers have argued that the construct of anxiety is too vague and value-laden to be of much use in behaviourally-oriented investigations (e.g. McReynolds, 1976). Fear is said to be the preferred construct because it is used to describe people's observable and (self-) reportable reactions to specific stimuli (e.g. rats, dentists, crowds of people). Some researchers have argued that behaviourally-based distinctions between fear and anxiety are theoretically warranted, even though they sometimes disagree on the essential difference between the two emotions (Locker, 1989; Bellack & Hersen, 1988; May, 1977). Still other researchers rarely, if ever, acknowledge conceptual distinctions between the two constructs, and use them more or less interchangeably (e.g. Rachman, 1968; Öst & Hugdahl, 1981). This latter usage is the one employed in the present study.

As regards measurable differences between fear and anxiety, there is scant empirical evidence that the behaviours or responses associated with the respective constructs differ subjectively, behaviourally, physiologically or cognitively from each other (Bootzin & Max, 1980; Nietzel, Bernstein & Russell, 1988).

The State-Trait Anxiety Distinction

In recent years researchers have sought to better understand not just the conceptual relationships between fear and anxiety but the various dimensions or facets within each of the two constructs (e.g. Koxsal & Power, 1990). In the psychological literature, for example, two different uses of the construct of anxiety account for some of the ambiguity over its conceptual status. Anxiety is commonly used to describe a person's response - a condition or *state* that varies over time. Anxiety is also used to denote individual differences in the way individuals habitually respond over time. By this latter usage, anxiety refers to an enduring condition or characteristic, commonly referred to in the psychological literature as a personality *trait*.

Cattell and Scheier (1958; 1961), the first researchers to investigate the state-trait distinction in anxiety, found evidence for independent state and trait anxiety factors. For example, whereas physiological variables such as systolic blood pressure and respiration rate had strong state-anxiety loadings but weak loadings on trait-anxiety, variables such as "ergic tension" (i.e. innate, purposive tension) and guilt proneness had strong trait-anxiety loadings.

Cattell and Scheier's (1958) typology initiated a major change in the way that investigators viewed human anxiety. State-anxiety is now a widely accepted term for an unstable condition that varies according to the situation; it is characterized by feelings of worry, apprehension and tension (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). The level of stress people face from day to day largely determines the intensity and duration of state-anxiety. Trait-anxiety, also now a widely accepted term, refers to a person's usual way of responding and to relatively stable individual differences in anxiety proneness. Trait-anxiety is inferred from elevations in state-anxiety which have been measured over an extended period of time (Spielberger & Krasner, 1988).

The Three Components Conception of Anxiety

An alternative conception of anxiety, one which emphasized the measurability of the various components of this construct, was advanced by Lang (1970) in his three-systems theory.

According to this theory, anxiety consists of independent cognitive, behavioural and physiological components. Using different methods, several researchers have measured these three components (e.g. Öst, 1991; Koksál & Power, 1990; McNaughton, 1989). For example, self-report questionnaires have been used to measure the subjective cognitive component. Behaviourally-based exercises or tests have been used to infer people's levels of anxiety and numerous physiological tests (e.g. measuring systolic heart rate or Galvanic skin conductance) have been used to assess the physiological component (Hugdahl, 1981).

On the basis of his research, Lang (1970) concluded that the three components of anxiety could co-vary, vary inversely or vary independently. One implication of this conception is that a particular fear experience was not necessarily characterised by uniformity of measurement levels across the three components. Whereas at one time it was believed that the accuracy of self-report could be verified with physiological data (Berg, 1959), the evidence now suggested that the magnitude and the direction of the measurements across the different components often varied. For example, it is conceivable that some people's responses to fear might not include avoidance behaviour (Rachman, 1972). Conversely, an individual may report being unafraid in a particular situation, but physiological measures (e.g. heart rate or galvanic skin response) may indicate that the individual is undergoing the arousal associated with fear.

Phobias

The present study has drawn widely on the published research on the origins of fears, including research into a particular subcategory of fears termed "phobias". A phobia is an irrational, disruptive and pathological dread and avoidance of some specific stimulus (Kaplan

& Sadock, 1991). The two primary classifications for phobias are (1) simple phobias whose central feature is intense dread of a discrete object (e.g. mice) and, (2) social phobias whose central features are intense dread of public humiliation and embarrassment (Marks, 1987). In addition, there are numerous phobias which pertain to rather more complex clusters of fears, such as agoraphobia, a fear of travelling or being in a crowded place (Gray, 1991).

BEHAVIOURAL THEORIES ON THE ETIOLOGY OF FEAR

For decades, classical conditioning theories of fear have dominated investigations into the etiology of fear. Watson (1924), a major proponent of the classical account of fear acquisition, proposed that there were two main sources of fear: Innate stimuli (i.e. natural) and conditioned (i.e. not naturally fear-producing) stimuli. Innate stimuli such as loud noises, sudden pain and sudden loss of a physical support instantly elicited fear responses in humans. However, all other stimuli which elicited fear resulted from "classical conditioning", a process which Watson differentiated from a second equally important learning process, "operant conditioning". Whereas classical conditioning depended upon the organism learning a relationship between two stimuli, operant conditioning depended upon the organism learning a relationship between a response and a consequence (Catania, 1984). Thus, conditioning theories explain fear as a learned response which is evoked in the presence of a conditioned stimulus. The conditioned response then leads to operant behaviour to avoid or escape the stimulus. As such, fear is viewed as an acquired rather than an innate response.

Mowrer's Two-Stage Theory of Fear

One of the more influential classical-conditioning theories of fear, Mowrer's (1939) "two-stage" theory, proposed that two events underlay the acquisition of a fear. In the first, a fear response is classically-conditioned (i.e. learned) to a previously neutral stimulus. and in the second, the now-feared stimulus is avoided. Organisms were not innately disposed to fear

particular stimuli; therefore, avoidance behaviour stemmed only from "direct" contact with a stimulus.

Following its initial formulation, Mowrer's (1939) two-stage theory remained for over thirty years one of the most well-regarded theories of fear acquisition (Rachman, 1976). However, two of the assumptions underlying the first stage - (1), that fears are acquired solely through direct-conditioning experiences and (2), that neutral stimuli are all equally likely to become aversive when paired with unconditioned stimuli - were unable to accommodate a range of emerging research findings and clinical reports (Rachman, 1976). Not all phobics, for example, attributed the origin of their fears to direct conditioning experiences; and many phobics could not remember the onset of their phobias (McNally & Steketee, 1985). Moreover, the assumption behind the second stage - that avoidance behaviour is a necessary part of the fear response - contradicted clinical findings. Despite their fear, some patients did not escape from or avoid the feared stimuli (Öst, 1991). Furthermore, in cases in which avoidance behaviour was apparent, laboratory evidence had demonstrated the persistence of avoidance behaviour even after the fear response subsided (Gray, 1991).

The Evidence for Direct Conditioning

Three different sources have provided support for the direct-conditioning explanation of fear. The primary evidence has been from laboratory-based experiments on animals. In these experiments, the fear-response (inferred from avoidance behaviour and physiological arousal,) is easily conditioned to neutral stimuli (Gray, 1991).

Clinical reports provide another source of support for conditioning explanations: Significant proportions of patients have attributed their phobias to direct-conditioning experiences (Rachman, 1990; Di Nardo, Guzy, Jenkins, Bak, Tomais & Copland, 1988).

Research findings on the effects of the traumatic stimulation experienced by combat soldiers provides the third source of evidence (e.g. Kluznik, Speed, Van Valkenberg & Magraw, 1986). Sizeable minorities of soldiers suffer intense post-combat fears. The nature of these fears and, in particular, their generalizing to other situations are consistent with direct-conditioning explanations of fear development (Rachman, 1990).

Non-Associative Theories of Fear Acquisition

In contrast to the classical-conditioning theories, *non-associative* ("Darwinian") accounts of fear state that certain kinds of fears can be acquired in the complete absence of any learning experience (Gray, 1991; Marks 1987). No relevant traumatic associative-learning is required for a fear response to develop toward particular stimuli. Presumed examples of non-associatively acquired human fears are fear of heights, infants' separation anxiety and their fear of strangers (Bowlby, 1975). Research has provided support for the non-associative origin of the fear of heights. Gibson & Walk (1960), for example, found that six-month-old infants balked at crawling over the edge of a visual cliff (i.e. an experimental apparatus that creates the illusion of height). Later research (Campos, Langer & Krowitz, 1970) found that two-month-old babies, upon first encountering the visual cliff, showed a fear reaction to the depth difference between its deep and shallow sides.

Rachman's Three Pathways Theory of Fear Acquisition

Increasingly in recent years, researchers have concluded that classical-conditioning theories of fear provide, at the most, an incomplete account of how humans can acquire fears (Rachman, 1976). By focusing only on the "direct-learning pathway" (i.e. direct contact experiences that cause fears), the classical-conditioning approach had ignored less direct pathways to fear. Stanley Rachman (1976; 1977), one of the foremost critics of the traditional classical-conditioning theories, proposed that there was not one, but *three* kinds of associative-learning pathways which could cause fear. Those three pathways were (1),

classical-conditioning (i.e. direct) experiences; (2), observational (i.e. 'vicarious') experiences (e.g. observing other people's fearful behaviour) and (3), instructional experiences (e.g. being told that particular stimuli are dangerous and frightening).

Rachman elaborated on his three-pathways model of fear by proposing that both the strength of a fear and its symptomatology were related to the particular conditioning pathway:

Fear-Conditioning And Strength of Fear

Two broad expectations regarding pathway and fear severity underlay Rachman's theory: (1), Rachman predicted that direct fear-conditioning would lead to severe fears. Hence, if a person developed a strong fear towards a stimulus, the conditioning experience would most likely have involved direct, personal contact with the now-feared stimulus. (2), For indirect learning (i.e. observational or instructional), Rachman predicted that the acquired fear would be of mild, and at the most, of moderate intensity. Therefore, if a person developed a moderate-strength fear, the fear conditioning would most likely have involved observational or instructional experiences.

Fear Conditioning And Its Symptomatology

According to Rachman (1977), the pathway (i.e. conditioning experience) through which a fear had been acquired also determined the relative intensities of the anxiety correlates of fear (Lang, 1970). The subjective, behavioural and physiological correlates of a fear were expected to co-vary according to the original fear-conditioning experience (Rachman, 1976). For example, directly-conditioned fears would be characterized by more elevated physiological and behavioural symptoms than cognitive symptoms, but indirectly-conditioned fears would be characterized by more elevated cognitive symptoms. This proposition is referred to throughout the present study as Rachman's "differential-anxiety-response hypothesis".

The Basis For The Two Indirect Pathways

The initial impetus for the three-pathways model came from clinical reports (e.g. Rachman, 1972; 1968) and etiological surveys (e.g. Fazio, 1972; Shoben & Borland, 1954) in which people had attributed the cause of their phobias to indirect-learning experiences. Providing additional support for the role of the indirect pathways has been the findings from several experimental studies (Bandura, 1969; Berger, 1962). In Berger's (1962) study, for example, subjects who observed a person in distress were subsequently found to have the elevated physiological arousal which characterises the fear response.

Clinical Support for Observational Acquisition.

Clinical reports suggest that children can vicariously acquire their parents' fears; however, the correlations between parents' and childrens' fears were reported by Rachman and Hodgson (1980) to be low. Rachman (1990) attributes the lack of stronger correlations to the multiple sources of information available to children. Typically, they have contact with other people who are not fearful, they are exposed to safety information which can allay fears, and parents often admit the irrationality of their fears to children. According to Rachman (1990), observational transmission is more likely to occur when the parent/child relationship is intense and solitary or when families have limited social contacts. At present, the strongest evidence for the observational pathway to fear is the reports of people who are fearful of situations or things they have not personally encountered (Öst, 1992).

Experimental Support For Observational Acquisition.

Evidence of observationally-conditioned fear responses has been found in a series of studies on rhesus monkeys by Mineka and her colleagues (e.g. Mineka & Cook, 1993; Mineka, Davidson, Cook and Keir, 1984). Mineka et al. (1984) found that young laboratory-reared rhesus monkeys acquired strong, long-lasting fears of snakes after seeing their parents reacting fearfully toward snakes. Of the 16 monkeys in the study, the four whose parents had

the lowest mean levels of fear also displayed the weakest fear reactions. In another study, Mineka and Cook (1988) reported that observer-monkeys exposed to videotapes of snake-fearful monkeys subsequently acquired similar fear reactions toward snakes. In contrast, a second group of observer-monkeys who were exposed exclusively to videotapes of monkeys reacting non-fearfully in the presence of snakes, did not acquire fear reactions to snakes.

Numerous studies have demonstrated that the observational conditioning of human fear, as measured by electrodermal activity and self-administered ratings of discomfort, is a reliable laboratory phenomenon (e.g. Hygge & Öhman, 1978; Hygge, 1976). In Hygge and Öhman's (1978) study, for example, subjects viewed a series of pictures in the presence of a confederate model. After the model expressed a fear reaction toward an object in one of the pictures, the subjects subsequently reacted toward the picture with fear, as indexed by increased electrodermal activity. Self-reported discomfort ratings also indicated they had vicariously acquired a fear reaction.

The Plausibility of Instructional Acquisition

The third pathway to fear (i.e. that fears can develop as a result of exposure to threatening information) lacks clear empirical demonstration but, for a number of reasons, it appears a plausible way for humans to acquire fears. For example, parental warnings about potentially dangerous situations are intended to evoke fear responses (i.e. avoidance or cautionary behaviour) in their children (Rachman, 1990). Clinical data also suggests that threatening information can evoke intense fear reactions. Some phobic patients, for example, identify instructional sources as the most influential factor in the acquisition of their phobias (Rachman, 1990; Öst & Hugdahl, 1985; 1981). Consistent with these clinical accounts are the findings of several etiological surveys on non-psychiatric populations in which most respondents attributed their fears to the instructional pathway (e.g. Fazio, 1972; Kleinknecht, 1982; Hekmat, 1987).

Limitations of Behavioural Theories of Fear

Although Rachman's modification of the associative-learning model has addressed several of the weaknesses of the classical-conditioning account of fear acquisition, his theory has failed to account for two widely reported findings:

(1), People do not automatically develop fears as a consequence of contact with frightening situations or things. Aside from a few stimuli for which humans are thought to have an innate fear, stimuli do not invariably elicit the fear reaction in humans (Rachman, 1976; 1990).

(2), The magnitude of a fear toward a specific stimulus differs from person to person; for example, people who acquire a fear under the same conditions such as surviving a natural disaster differ widely in the magnitude and the duration of the ensuing fear (Norris & Kaniasty, 1992; Kluznik et al., 1986; Rachman, 1978).

These two findings indicate that other factors besides the stimulus also influence whether, and to what extent, a fear reaction will develop. Rachman's associative model, however, is focused exclusively on the type of conditioning pathway (e.g. direct or indirect). By contrast, cognitively-based accounts of fear have assigned a major role to 'perceptual' processes in explaining individual differences in people's responses to fearful stimuli. For example, in their theory of emotion, Schachter and Singer (1962) proposed that when people are physiologically aroused by an environmental stimulus, they look for 'cues' on how they should react. By this account, the way people *perceive* (i.e. interpret) a stimulus, more so than its objective features, determines their response. Cognitive theories such as Schachter and Singer's more adequately account for the wide individual differences in people's responses to 'fearful' stimuli.

REVIEW OF THE FEAR ACQUISITION RESEARCH

Over the years, numerous studies have investigated the types of conditioning experiences which underlie people's fears. The more recent research has focused predominantly on testing Rachman's (1976; 1977) three-pathways model of fear acquisition. Table 1 presents a summary of the published findings. While some of the earlier studies have not set out to test Rachman's theory, their findings are relevant to the empirical status of that theory.

"Fear acquisition research" (as the published studies are collectively termed) has been based on two distinct groups of people: Clinical subjects and nonclinical subjects. Clinical subjects have been either undergoing or about to undergo psychological or pharmacotherapeutic treatment for severe fears and phobias (Moore, Brodsgaard & Birn, 1991). Nonclinical subjects, by contrast, have provided data on fears for which no psychological intervention has been sought. The nonclinically-based research refers to these respondents as "general" or "analog" subjects (Öst, 1991). An assumption underlying the use of nonclinical subjects is that their fears are less severe (i.e. subclinical) relative to those of clinical patients (Menzies & Clarke, 1993a; Öst, 1991). Self-administered questionnaires have been used in the majority of fear acquisition studies. Other measures such as physiological tests and behavioural tests have also been used in order to evaluate more objectively the symptomatology of fear (e.g. Di Nardo, Guzy & Bak, 1988; Öst, 1992; 1991).

Clinical Research

Table 1 shows that the direct pathway has been endorsed in each of the fifteen clinical studies, whereas the observational and "can't recall" categories have been endorsed in nine studies each and the instructional category in only six of the listed studies. As regards the percentages of subjects selecting the various onset categories, the direct pathway accounts for the highest percentage in all but four of the clinical studies. The series of studies by Öst and

Hugdahl has provided the most consistent support for Rachman's hypothesis that severe fears are more likely to have been acquired through direct-conditioning experiences.

Table 1: Overview of the fear acquisition research: Percentages of subjects assigned to the various categories.

Study	N	Type of Phobia	Type of			Onset	
			Direct	Observe	Instruct	No Recall	Other
<i>Clinical Research</i>							
Shoben & Borland [1954]	15	Dental phobia	100*	100			
Lautch [1971]	34	Dental phobia	100				
Goldstein & Chambless [1978]	32	Agoraphobia	13				87
Liddell & Lyons [1978]	10	Storm phobias	10	30			60
Wolpe [1981]	40	Various phobias	65				
Öst & Hugdahl [1981]	35	Claustrophobia	68.6	8.6	11.4	11.4	
	40	Animal phobia	47.5	27.5	15	10	
	31	Social phobia	58.1	12.9	3	26	
Öst & Hugdahl [1983]	80	Agoraphobia	81	9		10	
Munjack [1984]	30	Driving phobia	70				
Öst & Hugdahl [1985]	22	Blood phobia	46	32	9		
	51	Dental phobia	69	12	6		
McNally & Steketee [1985]	22	Animal phobia	22.8	9.1		68.1	
Öst & Hugdahl [1987]	60	Dental phobia	68				
Merklebach [1989]	91	Agoraphobia	78*	42	45		
Öst [1991]	81	Blood phobia	49.4	25.9	7.4	17.3	
	56	Injection	57.1	21.4	5.4	16.1	
Moore et al. [1991]	80	Dental phobia	84				16
Menzies & Clarke [1993]	50	Water phobia	2	26		16	56
<i>Nonclinical Research</i>							
Fazio [1972]	53	Insect	17		19		
Kleinknecht et al. [1973]	487	Dental	36.3	17			46.7
Rimm et al. [1977]	45	Various fears	36	6	9		51
Murray & Foote [1979]§	177	Snake					
Bernstein et al. [1979]	93	Dental	22	19			59
Kleinknecht et. al.[1982]	59	Tarantula		34	61		
Hekmat [1987]	56	Animal phobia	23	4	57		16
Di Nardo et. al. [1988]	16	Dog phobias	56				46
Ollendick & King [1991]	1092	Common fears	36*	56	89		
Menzies & Clarke [1993]	50	Heights	18	20	8	12	42

* Ss could endorse more than one onset category; hence cumulative percentages exceed 100.

§ Data not reported as totals or percentages. Authors' conclusion: "Observational and instructional learning, rather than direct conditioning, appear important in the acquisition of fear of snakes" (p.493).

Included in Table 1 are four clinical studies whose results do not support the direct-conditioning-leads-to-severe-fear thesis. Of the 32 subjects in Goldstein and Chambless' (1978) investigation, for example, only four (13%) attributed their agoraphobia to direct-conditioning experiences. In their recent study, Menzies & Clarke (1993b) found that the majority of parents in their sample selected neither a direct nor an indirect pathway, but a non-associative pathway (i.e. "the child has always been fearful") for their children's phobia.

Clinical studies have provided very little support for Rachman's differential-anxiety-response hypothesis (e.g. Öst & Hugdahl, 1983; Öst, 1991). For example, in just one of Öst and Hugdahl's (1981) studies investigating pathway-related anxiety components has the behavioural and the physiological correlates of fear differed according to conditioning pathway - and this finding was for only one of the three phobic groups. Moore, Brodsgaard and Birn (1991) also failed to find any significant relationships between pathway of acquisition and measures on the anxiety components.

Furthermore, the empirical research has failed to support Rachman's proposition that directly-conditioned fears would be more severe than indirectly-conditioned fears. In no published research has the fear intensity levels differed according to the pathway of acquisition (Öst, 1991; Moore et al. 1991).

Nonclinical Research

The nonclinical research provides meagre support for Rachman's proposition that people will attribute their strong fears to the direct-conditioning pathway. Aside from nonclinical subjects selecting the direct pathway far less frequently compared with clinical patients, Table 1 shows no clear pattern of pathway endorsements. In just one of the ten nonclinical studies (Di Nardo et al., 1988) was the direct-conditioning pathway endorsed by more than half of the subjects. In three of the studies the instructional pathway was the most frequently

endorsed pathway (Kleinknecht, 1982; Hekmat 1987; Ollendick & King, 1991). Ollendick and King's (1991) study of over one thousand school children, for example, found that nearly 90 percent of the child-subjects endorsed the instructional pathway. And in four nonclinical studies (e.g. Rimm et al. 1977; Menzies & Clarke, 1993a), roughly half of the subjects selected an onset category *other than* one of the three pathways proposed by Rachman (1976). For example, in their study of height-fearful college students, Menzies and Clarke (1993a) found that the non-associative learning pathway was endorsed by 42 percent, whereas the direct conditioning pathway was endorsed by 18 percent of the subjects, .

As with the findings for clinically-based studies, the nonclinical findings have failed to support the proposition that indirectly-acquired fears would be mild rather than severe. Similarly, no pathway-related differences in the anxiety correlates have been found in the nonclinical research (e.g. Ollendick & King, 1991; Menzies & Clarke, 1993a).

THEORETICAL, DEFINITIONAL AND METHODOLOGICAL ISSUES

The Assumptions Underlying Rachman's Theory

The principal impetus behind fear acquisition research in recent years has been the testing of the different relationships posited in Rachman's (1977) three-pathways theory. Given both the mixed empirical support for the theory (e.g. Öst, 1991) and the numerous questions regarding the adequacy of classical-conditioning theories of fear in general (e.g. Menzies & Clarke, 1993a), an examination of the assumptions underlying Rachman's theory is warranted.

(1) The human fear response is acquired (i.e. learned) through direct or indirect pairing of a stimulus with a (fear) response. According to Rachman's account of fear, stimuli do not 'automatically' elicit fear; rather, fear towards a specific stimulus has to be learned. The learning process involves the pairing of an affectively neutral stimulus (i.e. one that the

person has not yet learned to fear) with frightening or traumatic experiences; it is these experiences, according to Rachman's associative theory, which cause the person to respond with fear toward a particular stimulus. Thenceforth, the person 'associates' the formerly neutral stimulus with the frightening experiences and exhibits the escape or avoidance behaviour typical of a fear response. The fear-producing experiences may be direct (i.e. classically-conditioned) or indirect (observationally- or instructionally-conditioned). The addition of two indirect pathways aside, Rachman's (1977) model of fear adheres closely to the stimulus-response model of earlier classical-conditioning accounts of fear (e.g. Mowrer, 1939).

(2) Directly conditioned fears will be severe and indirectly-conditioned fears will be moderate. In Rachman's model, the type of conditioning experience (direct or indirect) determines the severity of a fear. Other factors, such as the properties of the stimulus itself, the frequency and the duration of exposure to the stimulus and 'personality', do not play a role in the development of fear. Rachman (1977) criticised earlier behavioural theories of fear (e.g. the equipotentiality theory) because of their emphasis on the fear-inducing properties of the stimuli and their rejection of alternate conditioning pathways (e.g. observational or instructional). However, Rachman appears to have replaced one unsupported generalization (i.e. that fears can only develop through classically-conditioned learning) with another (i.e. that the direct pathway is more likely to produce severe fears, while the indirect pathways are more likely to produce moderate fears).

(3) The anxiety response correlates of fear will differ as a function of the severity (i.e. strength) of the fear. The main assumption underlying this proposition is that the three components (i.e. physiological, behavioural and cognitive) of fear are expressed independently of one another. For example, the physiological symptoms - accelerated heart

beat, upset stomach, and so on - which accompany a directly-conditioned fear will not influence the expression of the fearful thoughts (e.g. of panic or of needing to escape).

Rachman based this differential-response hypothesis on Lang's (1970) three anxiety components theory of fear. On the basis of research showing that the physiological, behavioural and cognitive components were not always in the same direction or of the same magnitude, Lang conceptualised these components as being relatively independent of one another. Rachman modified Lang's (1970) theory so that a *systematic* anxiety response pattern accompanied the fear - a pattern that was supposedly determined by the original fear-conditioning experience. According to Rachman's conception, the predominant symptoms of directly-conditioned fears were physiological and behavioural, whereas for indirectly-conditioned fears, the predominant symptoms were cognitive (Rachman, 1977).

In advancing this differential anxiety response hypothesis, Rachman (1976; 1977) devoted little space to explaining the basis for these predictions. Presumably, the physiological and the behavioural components were expected to predominate in directly-conditioned fears because the experience involved direct and personal contact with the feared stimulus. On the other hand, for indirectly acquired fears, the cognitive component was expected to predominate because the person would have to *imagine* the personal consequences of personal contact. Yet, even if there appears to be a logical reason for these correlational patterns during the formative (i.e. initial, fear-inducing) contact with a stimulus, it does not explain why those correlates should retain their particular independent response patterns once the fear has been acquired.

Rachman's 'compartmentalized' conception of the symptomatology of fear is contrary to that suggested by clinical accounts (e.g. Clark, 1989; Nietzel et al., 1988). In these accounts, an interactive relationship appears to exist among the components of fear: Symptoms have the

potential to influence and be influenced by one another. For example, when people 'tune' into their physical reactions (heart beating faster, sweating, etc.), the physical reactions often escalate. Similarly, when people are confronted by a feared stimulus, a flood of negative thoughts associated with that stimulus often returns (Arieti, 1970).

As central as the differential-response proposition is to Rachman's model of fear acquisition, it is also the least theoretically explicated and the one for which the least empirical support has been found (Menzies & Clarke, 1993a).

Definitional Inconsistencies In Prior Research

As Menzies and Clarke (1993a) have noted, comparing the frequencies with which people endorse the three pathways categories across the different studies is difficult because researchers have used varying definitions of classical-conditioning experiences (e.g. Öst and Hugdahl, 1981; Murray & Foote, 1979). Some researchers, for example, make a distinction between a stimulus-stimulus (S-S) event as a classical (i.e. direct) conditioning event and a stimulus-response (S-R) event as an indirect conditioning event. In the S-S model, a person is said to develop a fear as a consequence of having encountered a painful unconditioned stimulus such as dental treatment (McNally & Steketee, 1985). In the stimulus-response (S-R) model a person is said to develop a fear as a consequence of having been extremely frightened (but not hurt) in the presence of the fear stimulus (Öst, 1991; Ollendick & King, 1991). There has also been a failure to acknowledge and investigate non-associative learning pathways to fear.

Moreover, although researchers may clearly state the components comprising their definition of classical-conditioning events, their methodology (e.g. questionnaires) may be insensitive to the specified components. McNally and Steketee (1985), for example, maintain that the two classical-conditioning items in the Phobic Origins Questionnaire (POQ; Öst & Hugdahl,

1981), fail to capture the critical elements of classical-conditioning events, such as the presence of an independent unconditioned stimulus and the prior affective neutrality of the conditioned stimulus. If the patient recalls a traumatic event, that event would be categorized in the POQ as a classical-conditioning event. No additional questionnaire items ascertain whether the necessary components of a classical-conditioning event were present at the time of the traumatic event.

Menzies and Clarke (1993b) argue further that the failure of most questionnaires to include a non-associative onset category largely explains the sizeable proportions of pathway ascriptions which could not be slotted into any of Rachman's three pathways. Öst (1991), for example, classified any response as "can't recall" or "other" which deviated from an *associative*-learning experience. Consequently, because most of the questionnaire items have been confined to the three pathways, responses suggesting a non-associative etiology have virtually been ignored (Menzies & Clarke, 1993a).

The Assumptions Underlying The Questionnaire Methodology

Many of the points discussed in this section apply in general to any research endeavour conducted by means of questionnaire methodology. They are, however, of particular relevance to fear acquisition research because the questionnaire has been the main method - and often the only method - of obtaining information on the origin of people's fears.

Alternate methodologies, which include in-depth interviews of respondents, interviews of additional informants such as parents and siblings, investigations of natural disasters such as floods and earthquakes and longitudinal studies, have seldom be used (Öst, 1991). Of the 25 studies in Table 1, only one (Menzies & Clarke, 1993b) was *not* based on the participants' own retrospective accounts. Menzies and Clarke's (1993b) study on childhood water phobias was based on parental reports of fear-onset events. Several assumptions underpinning the use of the questionnaire methodology will now be considered.

(1) People will remember the pathway through which their fear was acquired. Rachman's theory explains causal relationships in terms of the stimulus-response model; the theory is not 'concerned' with the role of memory in the learning process. Yet, because fear acquisition investigations have been based on people's retrospective accounts, the roles of human memory and attributional style become crucial variables in the analysis of Rachman's theory. These cognitive factors lie outside the scope of Rachman's theory. Even so, researchers have yet to either design an alternate methodology (i.e. one more suited to a behavioural theory) or to incorporate into Rachman's theory an account of the cognitive factors underlying causal explanations. Currently, people's questionnaire-prompted attributions constitute the primary 'evidence' on how fears have been acquired. Even if people have an accurate memory of a prior event which they think caused their fear, is that event necessarily *the* causal event? At best, retrospective accounts reflect subjects' causal *attributions* which may or may not represent how their fear originated.

(2) Direct-conditioning experiences and indirect-conditioning experiences will be equally recallable. Fear acquisition questionnaires present respondents with a range of pathway items. Some of the statements describe direct-conditioning events, while others describe observational- and instructional-conditioning. The assumption is that the various types (direct, vicarious and instructional) of conditioning events are equally memorable.

The question, however, of whether memories of directly-conditioned fears are more enduring than memories of indirectly-conditioned fears has yet to be investigated. Given the personal contact involved in direct fear conditioning, it seems reasonable to expect that direct-conditioning experiences may be comparatively more memorable. Indeed, this expectation is compatible with Rachman's view that the particular conditioning pathway is a crucial factor in the *severity* of the acquired fear.

The proposition that the *pathway* to fear may be a factor in the *memorability* of the fear-onset circumstances has implications for the validity of recall. In this regard, research (e.g. Norris & Kaniasty, 1992) on the accuracy of memories of disaster experiences has found that, months following their experiences, people are able to recall events with relative accuracy. The vividness and powerfulness of traumatic events is said to facilitate accurate recall. Traumatic stress research is focused primarily on the behavioural and the cognitive consequences of painful and frightening real-life disasters. As such it has not investigated the comparative accuracy of memory for direct- and indirect-conditioning experiences. Nevertheless, its findings support the view that the memorability of causal events (and hence the quality of the later recall) may differ according to the initial impact of the experiences.

(3) Onset circumstances of concrete fears and abstract fears will be equally recallable. The use of pathway items in questionnaires assumes that the onset circumstances of tangible fears (e.g. a fear of physical objects such as 'spiders') and of abstract fears (i.e. a fear involving non-tangible states such as 'being criticised' and 'speaking in public') are equally memorable. That no published research has been conducted on the comparative memorability of these two different classes of fears means that the empirical status of the assumption of equal memorability remains unknown. Yet, a plausible case could be made for expecting the onset circumstances of abstract fears to be more difficult to remember than the onset circumstances of tangible fears. Rachman (1990) acknowledged that social fears may belong to a class of fears which develop gradually - as opposed to suddenly - in response to a variety of situations. Accordingly, because of the gradual conditioning experiences and the generalization of the fear reaction to other situations, it may be difficult to pinpoint the exact circumstances surrounding the onset of the more abstract fears.

(4) *Once the fear has been acquired, people will not confound subsequent experiences as the causal experiences.* With single pathway theories (e.g. Mowrer's 1939 theory), confounding the type of conditioning experience is not a concern because fears are said to be acquired only through directly-conditioned learning. However, because Rachman's explanation encompasses three theoretically distinct ways of acquisition, the burden becomes one of establishing whether the remembered 'causal' contact involved affectively neutral stimuli. This may be extremely difficult to establish for fears that were first acquired in childhood and for which retrospective reports have been obtained decades later (Öst, 1991). Research (e.g. Ollendick & King, 1991; Merklebach et al., 1989) has found that, if respondents are given the choice, varying numbers of them report that their fear was caused by two or all three of the associative pathways. From a theoretical point of view the endorsement of more than one pathway complicates an analysis of the type of conditioning experience underlying the development of the fear (Ollendick & King, 1991).

(5) *Fears are acquired contiguously.* According to classical-conditioning accounts, fear acquisition requires short delays and explicit pairings of the CS and the US (Catania, 1984). Both Rachman's model of fear and the pathway items contained in questionnaires are based on this 'contiguous' stimulus-response model of fear. However, research suggests that fears can also develop from non-contiguous pairing of stimuli and the fear response (e.g. Seligman & Hager, 1972; Garcia, Ervin & Koelling, 1966). If this is the case, recalling the fear-onset circumstances becomes problematic: Will people 'remember' to associate the later fear reaction with the original fear-producing stimulus? Or will they identify an intervening stimulus as the cause of their fear such as occurs experimentally when rats mis-identify the cause of their food aversion (Seligman and Hager, 1972)?

Concerns About The Questionnaire Methodology

The numerous problems just outlined, although having serious implications for the psychometric properties of questionnaires, have largely been neglected in the research. The extent to which these questionnaires have captured the causes of people's fears is unknown. No validation studies, for example, have been reported on the POQ, the questionnaire most commonly used by Scandinavian researchers (e.g. Merckelbach et. al., 1989; Öst & Hugdahl, 1981, 1985, 1987, etc.). Yet, as noted in an earlier section, the POQ's sensitivity to the criteria for a classically-conditioned fear has been questioned (e.g. McNally & Steketee, 1985). Since instruments such as the POQ have supplied the primary data on fear acquisition, the dearth of validation studies means that it is extremely difficult to ascertain the quality of the published research.

There are other concerns about the psychometric properties of the questionnaires:

(1), In asking subjects to think carefully about the circumstances surrounding their acquisition of fear, do researchers unintentionally encourage subjects to come up with non-memory-based but plausible causal explanations? Although designed to obtain objective data, questions about the onset circumstances of a fear require respondents to make *causal* connections between past events and a (subsequently acquired) fear response. Research on human memory suggests that when people answer such questions, the line separating the remembered *experiences* from *explanations of resulting emotional states* becomes unclear (e.g. Ross, McFarland & Fletcher, 1981). Similarly, experiments on causal explanations have found that, once people have fabricated causal connections between patently unrelated events, they are more likely to believe that a connection actually exists between those events (Croker, 1981; Jennings, Amabile & Ross, 1982). Presumably, people's causal fabrications impose an orderliness on the events which then makes more plausible the possibility that a connection exists (Croker, 1981). Furthermore, in a series of studies investigating the

malleability of human memory, Loftus and her colleagues concluded that people's memories are not copies of past experiences, but are 'reconstructed' to accommodate current knowledge and concerns (Loftus & Zanni, 1975; Loftus, 1979; Loftus & Loftus, 1980).

(2) Regardless of the amount of recall solicited in the questionnaires, almost no information has been sought on the *quality* of people's recall. Some questionnaires (e.g. the POQ, Öst & Hugdahl, 1981) have provided space for subjects to report "other relevant things" that may not have been canvassed in the questionnaire (p.2). Other questionnaires (e.g. The Common Fears Questionnaire, Ollendick & King, 1991) have included several pathway items. Respondents simply choose the item(s) which they think caused their fear. But researchers have yet to investigate the extent to which subjects are prepared to construct answers to particular fear-onset questions.

(3) The published research rarely acknowledges the distinction between people's causal attributions and actual causal events; instead, people's attributions are referred to as "pathways of acquisition" (e.g. Öst, 1991; Ollendick & King, 1991). The attributional accounts then provide the primary basis for evaluating the empirical status of Rachman's propositions - propositions derived from a behaviourally-oriented theory which addresses neither how people recall events nor how they make causal inferences.

In the present study, the terminology will reflect the subjective character of the onset pathways chosen by respondents (i.e. "pathway ascriptions", "choices", etc.). Nevertheless, since the present study cannot avoid entirely the terminology of the published fear acquisition literature, people's ascriptions will occasionally be discussed as if they were causal events.

THE PRESENT STUDY

The Impetus For The Present Research

Rachman's Predictions Tested on a Nonclinical Sample

Unlike the nonclinical research, many of the clinical studies on fear acquisition have found some support for Rachman's proposition that severe fears have direct conditioning etiologies (see Table 1). Öst (1991) has suggested that the general support for Rachman's model found in clinical samples is probably due to patients responding to highly relevant questionnaire items. Clinical samples, as Öst noted, represent a relatively circumscribed group whose fear ratings tend to cluster around the high end of the fear spectrum. Therefore, data from clinical samples is useful for evaluating only those aspects of Rachman's model that involve the relationship of *phobic-level* fears to causal attributions and anxiety response patterns.

Nonclinical studies, on the other hand, have produced a disparate and theoretically preplexing range of findings, with only one or two published studies (e.g. Di Nardo et al., 1988) supporting the direct-conditioning-leads-to-severe-fears proposition. Öst (1991) has argued that the pathway of acquisition for nonclinical fears has not yet been adequately examined. In particular, he proposed that future research needs to assess more than one strength of fear in order to more comprehensively investigate Rachman's theory. Since nonclinical populations, compared with phobic groups, could be expected to have more varied levels of fear, nonclinical subjects would provide the basis for the investigation. To date, very few studies have investigated different-level fears within the same sample. One study (Menzies & Clarke, 1993a) has compared the causal explanations and the anxiety patterns of two groups of nonclinical subjects with different-strength fears. But since Menzies and Clarke (1993a) compared the responses of severely height-fearful subjects with a *non-fearful* comparison group, Rachman's hypothesis regarding the differing etiologies of severe and *moderate* fears remains unexamined.

An Exploration of the Validity of the Questionnaire Methodology

As outlined previously, several highly dubious assumptions underlie the use of the questionnaire. Many of them take for granted the problematic role of human memory in identifying causal relationships in chronologically-distant events. Once memory is acknowledged as a potential confound, the next step is to ascertain the adequacy of the questionnaire methodology in soliciting memory-based accounts of how fears originated. These questions have provided the impetus for incorporating a methodological inquiry into the present study.

Summary of the Research Goals

The present study has three primary goals: 1), To replicate and extend research which has investigated the relationship of conditioning experiences to the strength of fear. The extension allows people to choose pathways (i.e. causal explanations) for each of *two* different fears (i.e. a most-feared stimulus and a moderately-feared stimulus).

(2), To replicate and extend research which has examined the relationship of conditioning experiences to the physiological and cognitive correlates of fears. The extension allows people to report their bodily reactions and negative thoughts for a most-feared and a moderately-feared stimulus.

(3), To provide a preliminary investigation into the methodology of fear acquisition research. Two specifically-constructed questionnaire items will evaluate the validity and consistency of people's memories about how their fear first started. The first one, called the "Memories item", will provide the basis for categorizing people according to whether they remember how they first acquired their fear. While the questionnaire methodology used to test Rachman's theory is based on the assumption that people will remember how their fears were acquired, research has consistently shown that sizeable proportions of people report having

no memories of fear-onset experiences (McKenzies & Clarke, 1993a; McNally & Steketee, 1985). Therefore, classifying causal pathways as either memory-based or non-memory-based serves the broader aim of clarifying the predicted relationship between conditioning experiences and strength of fear.

Furthermore, memory status (i.e. having or not having memories) provides a validity-check on respondents' choice of pathway. When asked to choose a causal pathway for their fear, people who have no memories of fear-onset experiences may theoretically be more likely to construct a pathway. Hence, the present study explores the extent to which people are prepared to guess how their fears originated.

The second validity-check item, called the "Certainty item", involves a rating by respondents on their choice of pathway. This item was also incorporated to assess the consistency of people's responses to the first validity-check item. For example, people who have no memories of fear-onset experiences would be expected to have lower levels of certainty than subjects who indicate they have specific memories of fear onset experiences.

In addition, the degree-of-certainty item will enable a comparison of the quality of the memorability associated with the different pathways. As discussed in an earlier section, it seems reasonable to expect that, among people who remember how a fear started, those who ascribe their fear to direct-conditioning experiences may report higher levels of certainty in their choice than those who have chosen an indirect-conditioning pathway.

The Hypotheses

On the basis of the foregoing goals, five hypotheses have been formulated:

- (1) Subjects will ascribe strong fears to the direct pathway and moderate fears to one of the indirect (i.e. observational or instructional) pathways.
- (2) Subjects who ascribe their fears to the direct pathway will endorse their choice of pathway with higher levels of certainty than subjects who ascribe their fears to one of the indirect pathways.
- (3) Subjects will report *higher* levels of physiological than cognitive responses for fears ascribed to the direct pathway; but for fears ascribed to either of the indirect pathways, they will report *lower* levels of physiological than cognitive responses.
- (4) Subjects who have fear-onset memories will be more likely than subjects who have no fear-onset memories to ascribe strong fears to the direct pathway and moderate fears to one of the indirect pathways.
- (V) Subjects who have fear-onset memories will endorse their choice of causal pathway with higher levels of certainty than subjects who have no fear-onset memories.

METHOD

SAMPLE AND PROCEDURE

One hundred and ninety-one university students participated in this study; there were 155 females (81%) and 36 males.

Initial contact with students was made during university-lecture times in which it was explained that volunteers were being sought for a study on common, everyday fears. These fears were distinguished from 'clinical' fears and phobias (i.e. fears for which psychological or pharmacotherapeutic treatment had been sought). Students who were interested in participating were invited to approach the researcher after the lecture times. They were then provided with further information on what their participation would entail and informed consent was obtained. Students then spent about twenty-five minutes completing the questionnaire. (The Information Sheet outlining the consent procedures can be seen in Appendix A.). Of a total number of 233 students who agreed to participate, 42 (18%) withdrew either by subsequently leaving the research questionnaire blank or failing to hand it in.

University students were selected primarily due to convenience (i.e. access to large numbers of potential participants). However, the questionnaire required a series of moderately complex tasks (e.g. ranking of fears, ratings on repeated measures), and therefore a relatively educated group was appropriate. For the present study, the need for a more representative age range was underscored by research which has found that many fears are age-specific and that the severity of different types of fears can change over the lifespan (Liddell et al., 1991; Arrindell et al., 1987). Therefore, to increase the representativeness of the sample in this respect, two demographically distinct groups of university students were drawn upon: internal students (hereafter "Internals") and extramural students (hereafter "Extramurals").

Extramurals, on average, are older adults who typically combine part-time, home-based university studies with full-time employment or domestic and child-caring duties or both. As can be seen in Table 2, Internals tend to be younger and single.

Table 2: Sample characteristics: comparing internal and extramural students.

	<i>Internals</i>		<i>Extramurals</i>	
	N	%	N	%
<i>Age: (Years)</i>				
18-19	22	28*	1	1
20-29	45	58	20	18
30-39	7	9	43	38
40-49	4	5	38	34
50-59	0	0	9	8
60+	0	0	1	1
<i>Marital status</i>				
Single	65	83	24	20
Married/De facto	9	12	73	65
Divorced/separated	4	5	12	11
Widowed	0	0	4	4
<i>Ethnicity</i>				
European	67	88	102	91
Maori	4	4	5	5
Polynesian	0	0	1	1
Asian	2	2	1	1
Other	5	6	2	2
<i>Papers completed ¶</i>				
None	17	22	13	11
1 - 9	28	36	56	49
10 - 19	11	14	35	31
20 - 21	15	19	4	4
More than 21	7	9	5	5

* Percentages rounded to nearest whole number.

¶ University papers completed at time of participation in the research.

Most respondents (88.5%) identified themselves as of European descent, with 4.7% identifying themselves as Maori. Just under half (47%) of the subjects were single and 39% were married. The mean ages were 31.55 years ($SD = 10.73$; range: 18-64) for females and 34.22 years ($SD = 10.125$; range: 20-50) for males, a non-significant difference [$t(188) = -1.36$].

While all respondents were enrolled in at least one psychology paper, they varied widely in terms of the extent of their university studies. The average number of papers respondents had already completed at the time of their participation in the present study was nine ($SD = 8$; range, 0 - 30). However, as Table 2 shows, there were substantial differences in the age-related number of completed papers between Internals and Extramurals. The majority (88%) of respondents were undergraduates enrolled in Bachelor of Art degrees.

INSTRUMENT

Respondents completed a self-administered questionnaire entitled "People's Reactions to Common Fears" (Appendix A) that had been designed to compare the self-reported causal explanations of and reactions to two different fears of relatively different strengths.

List of Common Fears

The front page of the questionnaire (hereafter also referred to as the Reactions Questionnaire) contains a 'Fear List'. As can be seen from Table 3, the Fear List is an alphabetized inventory consisting of 36 fear 'items' (specific fear stimuli). The Fear List was included to facilitate participation because of the difficulty which respondents may have experienced in calling to mind fears of different strengths. The Fear List would also help concentrate respondents' minds on concrete, identifiable fears as opposed to indistinct and more pervasive "anxieties". Thus, respondents would have a reasonably clear idea of what was meant by the Reaction Questionnaire's reference to 'fears'.

Table 3: The "Fear List" from which subjects selected their fears.

1: Angry people	19: Losing control
2: Auto accidents	20: Making mistakes
3: Bats	21: Mental illness
4: Being criticised	22: One person bullying another
5: Being in a fight	23: Open wounds
6: Being self-conscious	24: Parting from friends
7: Being with drunks	25: People who seem insane
8: Dark places	26: Prospect of a surgical operation
9: Dead bodies	27: Rats and mice
10: Death of a loved one	28: Roller coasters
11: Deep water	29: Seeing a fight
12: Failure	30: Snakes
13: Falling	31: Speaking in public
14: Feeling disapproved of	32: Spiders
15: Hypodermic needles	33: Stinging insects
16: Illness or injury to loved ones	34: Suffocating
17: Looking foolish	35: Untimely or early death
18: Losing a job	36: Witnessing surgical operations

Criteria for Inclusion of Fear Items in the Fear List

Items on the Fear List were selected on the basis of the most commonly reported fears of nonclinical subjects. The fear-survey literature showed that there are about 200 commonly reported fears (Arrindell et al., 1987). However, even widely published fear checklists or schedules do not include all of the 200-odd common fears (e.g. Geer's 51-item Fear Survey Schedule (FSS-II, 1965). For the present study, a short list was required for subjects to be able to complete the questionnaire in a relatively brief time. The items needed to be sufficiently diverse in order to maximise their relevance as strong fears for a wide age range of males and females. Accordingly, a decision was made to include only those fear items from prior research which had been the most frequently endorsed *strong* fears of normal samples.

As a guide to the selection of common, intense fears, the fear survey literature was widely reviewed. No data on commonly reported fears in New Zealand samples could be located. In addition, although the fear survey literature is extensive, relatively little research at the individual fear-item level has been conducted. Instead, the research is predominantly factor analytic (i.e. analysing the statistical categorization of fears rather than specific item scores). Only six studies could be found that provided item-level data. As can be seen from Table 4, the first four of these item-level studies were confined largely to North American university students. Since the present sample is composed of university students, there is a reasonable likelihood that the common, intense fears of the North American samples would have had at least some relevance to the present subjects. The last two item-level studies in Table 4 (Kirkpatrick, 1984; Liddell et al., 1991) involved general samples of older adults. For example, the subjects in Liddell et al.'s (1991) Canadian study were randomly selected from the general population. Since the present sample included extramural students (who, as previously mentioned, tend to be older than internal students) the fear lists of Kirkpatrick (1984) and Liddell et al. (1991) are expected to have been relevant to the older adults in the present study. (Appendix B enumerates the most frequently endorsed fear items in each of the six item-level studies in Table 4 and then considers factors which influence the relevance of the Fear List used in the current study.)

Table 4: Item-level fear-survey studies used in the development of the Fear List.

<i>Study</i>	<i>Fear Checklist*</i>	<i>Sex</i>		<i>Subject Profile</i>	<i>Ages</i>
		<i>M</i>	<i>F</i>		
Geer [1965]	FSS-II [51]§	161	109	American university students	Not reported
Bernstein & Allen [1969]	FSS-II [51]	946	868	American university students	Not reported
Farley et al. [1978]	FSS-III-R [88]	0	132	66 American university student 66 Israeli university students	Mean = 22.7 yrs Mean = 22.8 yrs
Farley et al. [1981]	FSS-III-R [88]	60	60	American university students	Not reported
Kirkpatrick [1984]	FSS-II & FSS-III [133]	200	345	Relatives/friends of American university staff and students	Range, 15-89 yrs
Liddell et al. [1991]	FSS-II [51]	212	300	Randomly selected sample of Canadians over age fifty	Mean: 62 yrs SD = 8 yrs

* FSS-II: Fear Survey Schedule II (Geer, 1965);

FSS-II: Fear Survey Schedule III (Wolpe & Lang, 1964);

FSS-III-R: Revised Fear Survey Schedule III (Wolpe & Lang, 1969).

§ Total number of fear items in the survey.

"The Reactions To Common Fears" Questionnaire

The questionnaire comprised two main parts, the first assessing respondents' "most-feared situation or thing" (referred to in the present study also as "Fear One") and the second part assessing respondents' "moderately-feared situation or thing" (referred to in the present study as "Fear Ten"). In order to determine Fear One, respondents were first asked to select and rank their five most-feared items from the Fear List shown in Table 3. They then responded to the various scales aimed at measuring different fear reactions.

Since the Fear List is not comprehensive, there is the risk that respondents' *strongest* fear may not have been on the 36-item list. Therefore, to ensure that Fear One was their most-feared stimulus, respondents were asked whether the items they had selected "actually

included the situation or thing they regarded themselves as fearing above all else?" If they answered "yes", they then were asked to check that they had put the *most*-feared situation or thing on the top of their ranked list. However, if they answered "No" it implied that the Fear List did not contain their most-feared situation or thing. In order to ensure that these subjects answered the subsequent sections in Part One in terms of their most-feared stimulus, they were asked to write down the unlisted fear. This was the fear item they were to answer questions about in subsequent sections of Part One. To remove any ambiguity regarding which fear was being assessed, this fear was thereafter referred to as "your most-feared situation or thing".

In order to determine their moderately-feared situation or thing (i.e. the tenth-ranked fear), respondents were asked to continue their ranking of fears six through ten, again using the Reactions Questionnaire Fear List. Respondents then responded to the same set of scales used with Fear One.

Fear Scales Used in the Reactions Questionnaire

The Bodily Reactions and the Negative Thoughts scales of Öst and Hugdahl's (1981) Phobic Origins Questionnaire (POQ) were used to measure two different components (i.e. physiological and cognitive) of fear. The POQ is a self-report questionnaire designed to assess phobic patients' memories about the onset experiences of and anxiety responses to their phobias. The 11-item Bodily Reactions (BR) scale assesses the intensity of the physiological reactions ("face becoming hot", "changes in breathing", "stomach becoming upset", etc.) patients experience when they are facing their phobia. The self-administered ratings for each item range from "Not at all" (0) to "Always" (4). The 10-item Negative Thoughts (NT) scale measures the extent to which patients think negatively (e.g. "I can't stand it any longer", "I will fail", "I will lose control and do something crazy", etc.) when they are facing their phobia. Again, items are scaled from "Never" (0) to "Always" (4). Both

the BR and the NT scales were used in the present study for three main reasons: (1), the scales are not overtly oriented towards clinical-level phobias (i.e. their use with nonclinical samples did not appear to be inappropriate). (2), as their names imply, the two scales each appear to measure distinct components of fear. This is a crucial requirement in the present study. (3), because these scales have been used in prior fear acquisition research, fear-ratings obtained in the present study could be directly compared with the prior research (e.g. Öst & Hugdahl, 1981; Öst & Hugdahl, 1985; Öst, 1991).

Two other sections of the POQ (Part A: Acquisition of the Phobia and Part C: Anticipatory Thoughts) were not included in the Reactions Questionnaire because they sought information more suited to clinical-level inquiry.

Whereas in the POQ, patients rate the reactions they *experienced* when they were actually "exposed to" their phobia, in the Reactions Questionnaire, respondents rated the reactions they experienced while *thinking about* facing their most feared situation or thing. The different wording allowed for the possibility that the nonclinical respondents' most-feared stimulus might not yet have been personally faced. For example, it does not make sense to ask people to recall their reactions when they experienced an 'untimely or early death'.

The six-item short form of the state scale of the State-Trait Anxiety Inventory (STAI, Form Y; Spielberger, 1983; Marteau & Bekker, 1992) was also used to assess anxiety responses to the feared stimuli. The STAI, a self-administered anxiety measure widely used in both research and clinical work, consists of a 20-item state scale and a 20-item trait scale. The state scale measures how the individual feels "right now", while the trait scale measures how the individual "generally" feels (Spielberger et al., 1983).

The short-form state scale was developed by Marteau and Bekker (1992) who attempted to identify the smallest number of state-scale items that correlated the highest with the full 20-item state scale. Two hundred subjects took part in the study. From the item remainder correlations of the subjects' scores (i.e. correlations between each item score and the total score of the other 19 items) the six highest-ranking items were selected. The reliability and validity of these six items were then evaluated in a separate study conducted by the same researchers. The reliability coefficient for internal consistency of the six items was $r = 0.82$. T-test comparisons between the short-form and the 20-item form revealed no mean score differences.

The short-form six-item state scale was included in the Reactions Questionnaire as a means of evaluating the validity of the BR and the NT scales. Although they have been used in the clinical assessment of phobias (Öst, 1991) and in research for over ten years, little psychometric data has been reported on these two POQ scales (Menzies & Clarke, 1993a). In contrast, the 20-item state scale (from which the six-item form is derived), and the companion 20-item trait scale of the STAI are among the most widely validated anxiety measures available (Anastasi, 1988; Bellack & Hersen, 1988).

The brevity of the six-item STAI was preferable to the longer 20-item version since all three scales used in the present study were repeated twice. Accordingly, it was important to keep the questionnaire within a manageable length to reduce the risk of subjects losing interest and skipping items (de Vaus, 1985).

Rationale For The Pathway of Onset Items.

Prior research on the causal pathways chosen by respondents has failed to evaluate the quality of people's causal explanations on how their fears first started. In the present study, three questionnaire items (henceforth collectively referred to as the "Origins items") sought

information on the onset circumstances surrounding the fear. Before choosing a pathway, respondents were first asked whether they 'had memories of something happening which involved the feared situation or thing?' The validity of respondents' subsequent choice of pathway could then be checked against their response to the memories item; namely, respondents who reported no memories may have been more likely than respondents who reported fear-onset memories to 'construct' a causal explanation.

Following the Memories item, respondents were presented with a forced-choice question which comprised three different pathways of origin options (henceforth referred to as "the Pathways items"). Respondents had to choose the pathway which "best described how their fear first started". The Pathways items were adapted from Ollendick and King's (1991) Questionnaire of Common Fears (QCF), a self-administered questionnaire for school-age children. At present no data is available on the psychometric properties of the QCF (Ollendick & King 1991; Ollendick, 1983). The Pathways items in the Reactions Questionnaire were as follows:

- "You had a frightening experience similar to or actually involving your most-feared situation or thing" (Direct conditioning experience);
- "Your parents and/or people close to you were afraid of similar kinds of situations or things." (Indirect conditioning experience: observational learning);
- "You were told frightening things about this kind of situation or thing." (Indirect conditioning experience: instructional learning).

In the QCF, children were free to endorse one, two or all three of the pathways options. Ollendick and King (1991) found that the subjects typically endorsed *more* than one pathway. Similarly, the POQ (Öst, 1981) left open the possibility that more than one pathway would be endorsed. While neither Ollendick and King (1991) nor Öst (1991) have commented on the desirability or otherwise of asking subjects to limit their choice to one pathway, Ollendick and King (1991) have acknowledged that multiple pathway endorsements make it difficult

for researchers to ascertain which statement *best* describes the onset experiences. Therefore, to avoid this ambiguity, respondents in the present study were asked to choose the *one* pathway which "best describes how you became afraid of" the situation or thing.

After respondents chose their pathway, they were asked how certain they were about their choice. Respondents who had memories of fear onset experiences, in comparison with respondents who had no memories, could be expected to endorse their choice of pathway with high levels of certainty.

Since the choice of pathways is forced (i.e. respondents had to confine their choice of pathway to one of the Pathways items) the certainty scale, although included primarily as a validity check, served also as a 'barometer' of the confidence respondents had regarding their choice. If respondents endorsed a pathway item only because they were forced to make a choice, this should be reflected in their subsequently reporting a lower level of confidence in that choice.

The Certainty item asked: "As you think about the statement you just circled, how certain are you that it actually describes how your fear started?" The scale ranged from very uncertain (1), to very certain (6).

It was also expected that the two validity-check items would be positively correlated. For example, if respondents reported fear-onset memories, they would also be more likely to endorse with a high level of certainty their choice of pathway. On the other hand, if respondents with memories reported a *low* level of certainty, it would cast doubt on either the strength of their memories or their choice of pathway or both.

RESULTS

OVERVIEW OF THE ANALYSIS

There were three major stages in the present analysis: (1), Respondents' pathway choices for two different fears, and their self-reported anxiety response patterns for these fears were examined. This stage comprised a conventional replication and extension of prior fear acquisition research. (2), The sample was divided into two groups on the basis of whether or not they had memories of fear-onset experiences. Then comparisons involving choice of pathway and degree of certainty of choice were made according to respondents' memory status (i.e. whether or not they had memories of onset). (3), The choice of fear-onset pathways and the anxiety response patterns of "Memories" respondents (i.e. those who had fear-onset memories) alone were examined. Stages two and three comprised both a replication of prior research and a preliminary methodological inquiry into respondents' anxiety response ratings and causal attributions.

The statistical analyses used in the present study were performed using *SPSSPC+* (Norusis, 1988). Prior to analysis, inspection of univariate descriptive statistics revealed no outliers. In addition, although respondents' Bodily Reactions (BR) ratings for the most-feared stimulus ("Fear One") were slightly positively skewed and their certainty-level ratings for the most-feared stimulus and the moderately-feared stimulus ("Fear Ten") were slightly negatively skewed, the extent of nonnormality did not appear to warrant data transformation.

Mean scores were calculated for three "fear" measures for each of the two different-strength fears. The fear measures were the Bodily Reactions scale (BR; Öst & Hugdahl, 1981), the Negative Thoughts scale (NT; Öst & Hugdahl, 1981) and the short-form STAI (Spielberger, 1983; Marteau & Bekker, 1992).

The correlations among the three fear scales, their respective means, standard deviations and t-values are presented in Table 5. Whereas the correlation between the BR and the NT scales for the most-feared stimulus was moderately strong (0.53), these two scales each correlated much lower with the STAI (0.25 and 0.30 respectively). For the moderately-feared stimulus, the correlation between the BR and the NT scales was strong (0.60), but their respective correlations (0.25 and 0.21) with the STAI, again, were lower. The moderately strong correlations between the BR and the NT scales are consistent with the two scales having been developed to each evaluate separate but related components (i.e. physiological and cognitive) of specific fears. In contrast, the six-item short-form STAI was not developed as a measure of anxiety along specific response modes (Marteau & Bekker, 1992). Consequently, the low correlation of the STAI with the BR and the NT scales most likely reflects the STAI's general response mode of orientation and method variance.

Table 5: Correlations among the Bodily Reactions (BR), the Negative Thoughts (NT) and the State-Trait Anxiety Inventory (STAI) scales.

<i><u>Fear One</u></i>	STAI	BR
BR	.3023**	
NT	.2157*	.5345**
<i><u>Fear Ten</u></i>	STAI	BR
BR	.2527**	
NT	.2174*	.6065**

** $p < .001$

* $p < .01$

Mean ratings for the three fear scales are shown in Table 6. The direction and magnitude of the scores for the most-feared stimulus were consistent with the expected higher scores of this fear relative to the moderately-feared stimulus. Paired t-tests revealed that for each of the three scales, mean ratings for the most-feared stimulus were significantly higher ($p < .001$) than they were for the moderately-feared stimulus. This finding confirms that the two fears were of different strengths for respondents.

Table 6: Item means, SDs and t-values for the Bodily Reactions (BR), the Negative Thoughts (NT) and the STAI scales.

Scale	<i>Fear One</i>		<i>Fear Ten</i>		<i>t</i>
	Mean	SD	Mean	SD	
BR	1.9018	0.998	1.1404	0.848	10.06*
NT	1.4036	0.774	0.8961	0.671	8.89*
STAI	2.3425	0.768	1.9825	0.686	6.45*

n = 182

BR: Item means (0-4 scale).

NT: Item means (0-4 scale).

STAI: Item means (1-4 scale).

* $p < .001$ (two-tailed probability).

As explained in the previous chapter, if respondents' most-feared stimulus was not on the Reactions Questionnaire Fear List, they were asked to use that unlisted fear as Fear One. Sixty-one respondents, or just under one-third of the total sample, used an unlisted fear for their most-feared stimulus.

The most frequently selected fears across the entire sample, regardless of ranked position (first-ranked, second-ranked, etc) are shown in Table 7.

Table 7: The ten most frequently chosen fear-items in the present study.

<i>Fear Items</i>	%*
1. Death of a loved one	65
2. Auto accidents	58
3. Illness or injury to loved ones	52
4. Failure	41
5. Speaking in public	41
6. Untimely or early death	41
7. Suffocating	40
8. Dark places	37
9. Deep water	34
10. Angry people	33

* Percent of respondents who included the fear item among their ten ranked fears. Items with the same percentage have been listed in alphabetical order.

HYPOTHESES 1 TO 5 ON ALL RESPONDENTS

Ascribed Pathway And Strength of Fear

Hypothesis 1

In Table 8, respondents' pathway ascriptions have been categorized into one of *two* pathways: "Direct" or "Indirect". Because the observational and the instructional pathways have been conceptualized as indirect-conditioning etiologies (Rachman, 1976) and treated as one pathway in prior research (e.g. Öst, 1991), they have been combined into a single pathway in the present analysis.

The question about whether respondents would ascribe strong fears (i.e. Fear One) to the direct pathway and moderate fears (i.e. Fear Ten) to the indirect pathway (Hypothesis 1) was tested using the Cochran Q test, a nonparametric test for two or more dependent samples (Siegel, 1956). The Cochran Q test determined whether the proportion of subjects who ascribed the most-feared stimulus to the direct pathway was significantly greater than the

proportion who ascribed the moderately-feared stimulus to the direct pathway. Test calculations showed that the proportion of respondents who ascribed the most-feared stimulus to the direct pathway (henceforth: Direct respondents) was not significantly greater than the proportion of Direct respondents for the moderately-feared stimulus (112 vs 106; $Q = .41$).

Table 8: Percent of respondents in the two ascribed pathways

Pathway	<i>Fear One</i>		<i>Fear Ten</i>		<i>Q</i>
	n	%	n	%	
Direct	112	61.5	106	58.2	
Indirect	70	38.5	76	41.8	.41
	182		182		

Hypothesis 1 was not confirmed: ascribed pathways were almost the same for Fear One and Fear Ten. Indeed, for subsequent hypotheses, analysis of Fear Ten usually constituted a replication of the findings with Fear One - which is one of the reasons why, despite the use of multiple t-tests and the associated risk of Type-1 error, no adjustment to alpha was made. Other reasons for making no adjustment were as follows: more conservative two-tailed tests were used throughout the current analyses because of the inconsistency of prior research with nonclinical samples; for some analyses, non-significant effects were predicted; and analyses in which memory status was held constant constituted extended replications. These replications were important to emphasize the consistency of the results. Consequently, to have adjusted alpha (e.g. Bonferroni adjustment) because of the inclusion of the replications was considered unnecessarily restrictive.

Ascribed Pathway And Certainty of Ascription

Hypothesis 2

Hypothesis 2 stated that respondents who ascribed their fear to the direct pathway would endorse that pathway with greater certainty than respondents ascribing their fear to the indirect pathway. In Table 9, respondents' mean certainty levels are displayed. Independent t-tests yielded significant t-values for Fear One and Fear Ten. Regardless of the strength of the fear, Direct respondents reported significantly higher certainty levels than subjects who chose the indirect pathway (henceforth Indirect respondents).

Table 9: Mean certainty ratings, SDs and t-values, according to ascribed pathway.

	Direct		Indirect		<i>t</i>
	Mean	SD	Mean	SD	
<i>Fear One</i>	4.5826 [115]	1.552	3.2162 [74]	1.624	5.75*
<i>Fear Ten</i>	4.3962 [106]	1.547	3.3289 [76]	1.587	4.52*

Certainty scale: 1-6.

* $p < .001$ (two-tailed probability).

Ascribed Pathway And Anxiety Responses

Hypothesis 3

Hypothesis 3 proposed that respondents would have higher levels of physiological than cognitive anxiety responses for directly-conditioned fears; but for indirectly-conditioned fears they would have lower physiological than cognitive anxiety responses. Respondents' mean self-reported ratings on the BR and the NT scales are shown in Table 10. Paired t-tests for dependent samples were calculated to see whether the fear score patterns differed significantly according to ascribed pathway. Direct respondents reported significantly higher BR ratings than NT ratings. However, contrary to the prediction, the higher-physiological-

than-cognitive pattern was also found with Indirect respondents. For both pathways and both fears, respondents scored significantly higher on the BR scale.

Table 10: Mean item ratings, SDs and t-values for Bodily Reactions (BR) and Negative Thoughts (NT), according to ascribed pathway.

	<i>BR</i>		<i>NT</i>		
Pathway	Mean	SD	Mean	SD	<i>t</i>
<i>Fear One</i>					
Direct (n = 106)	1.9132	0.958	1.3388	0.746	7.21*
Indirect (n = 64)	1.9391	1.021	1.4688	0.748	4.05*
<i>Fear Ten</i>					
Direct (n = 101)	1.2861	0.863	1.0027	0.665	4.08*
Indirect (n = 73)	0.9438	0.795	0.7509	0.649	2.37**

* $p < .001$.

** $p < .02$.

Memory Status, Ascribed Pathway And Strength of Fear

Hypothesis 4

Hypothesis 4 stated that respondents who had fear-onset memories for a most-feared stimulus (Fear One) would choose the direct pathway but that respondents who had fear-onset memories for a moderately-feared stimulus (Fear Ten) would chose the indirect pathway. This expectation is compatible with Rachman's (1976) proposition that strong fears would have direct-conditioning etiologies and moderate fears indirect-conditioning etiologies. This predicted relationship would depend on respondents having *memories* of fear-onset events, however; the relationship would not be expected for respondents who had no fear-onset memories. Table 11 presents the percentages of respondents who had fear-onset memories (henceforth: Memories respondents), classified according to ascribed pathways. For the most-feared stimulus, 77 percent of Memories respondents chose the

direct pathway, whereas a similar percentage (75 percent) of respondents with no fear-onset memories (henceforth: No-memories respondents) chose the indirect pathway. Chi-square tests for independent samples were calculated and revealed that the respective proportions were significantly different for the Memories and No-memories groups ($\chi^2 = 46.73$; $p < .001$).

Table 11 also shows, contrary to the prediction that Memories respondents would choose the indirect pathway for moderate fears, that their pathway ascriptions were the same as their ascriptions for the most-feared stimulus: Seventy-nine percent of them chose the direct pathway, and again, a similar percentage (76 percent) of No-memories respondents chose the indirect pathway. Chi-square tests revealed that the proportions were significantly different ($\chi^2 = 50.5$; $p < .001$).

A somewhat striking finding in the present study is that the pathway ascriptions for each group were the virtual reverse of the findings for the other group. For both fears, significantly greater numbers of Memories respondents chose the direct pathway, while significantly greater numbers of No-memories respondents chose the indirect pathway.

Table 11: Percent of respondents in the two ascribed pathways reporting memories of fear-onset events.

	Memories		No Memories		
Pathway	n	%	n	%	χ^2
<i><u>Fear One</u></i>					
Direct	100	77.5	14	24.6	46.73*
Indirect	29	22.5	43	75.4	
	129		57		
<i><u>Fear Ten</u></i>					
Direct	86	78.9	16	24.2	50.5*
Indirect	23	21.1	50	75.8	
	109		66		

* $p < .001$.

Memory Status, Ascribed Pathway And Certainty of Ascription

Hypothesis 5

Hypothesis 5 proposed that Memories respondents would report higher levels of pathway-certainty than No-memories respondents. Displayed in Table 12 are respondents' mean certainty ratings according to their memory status. For the most-feared stimulus, "Direct" Memories respondents (i.e. those who chose the direct pathway) reported significantly higher levels of certainty than "Direct" No-memories respondents. However, for the most-feared stimulus, "Indirect" Memories respondents did not report significantly higher levels of certainty than "Indirect" No-memories respondents-pathway. For the moderately-feared stimulus, Memories respondents reported significantly higher levels of certainty than No-Memories respondents for both pathways.

Table 12: Mean certainty ratings, SDs and t-values according to memory status.

	Memories		No Memories		
Pathway	Mean	SD	Mean	SD	<i>t</i>
<i>Fear One</i>					
Direct	4.7605	1.471	3.2143	1.477	3.67**
	[n = 100]		[n = 14]		
Indirect	3.4828	1.805	3.0698	1.518	1.01
	[n = 29]		[n = 43]		
<i>Fear Ten</i>					
Direct	4.7209	1.316	2.6875	1.537	4.96*
	[n = 86]		[n = 16]		
Indirect	3.8696	1.217	3.1450	1.644	2.24***
	[n = 23]		[n = 50]		

Certainty scale: 1-6.

* $p < .001$.

** $p < .002$.

*** $p < .029$.

HYPOTHESES 1 TO 3 ON MEMORIES RESPONDENTS

Given the findings that fear-onset memories were related to pathway ascriptions and to levels of pathway-related certainty, Hypotheses 1 to 3 were re-tested on the original data for Memories respondents alone. By holding the memory variable constant, the potentially confounding role of memory in the relationship of pathway ascriptions to certainty levels and anxiety response patterns could be controlled. One hundred and twenty-nine subjects reported fear-onset memories for the most-feared stimulus and 109 subjects reported fear-onset memories for the moderately-feared stimulus. Only 76 subjects, however, indicated that they had fear onset memories for *both* Fears One and Ten.

Ascribed Pathway And Strength of Fear

Hypothesis 1

The hypothesis that respondents would ascribe their most-feared stimulus to the direct pathway and their moderate fear to the indirect pathway was tested using the Cochran Q test. No significant relationship was found between strength of fear and pathway ascription. As can be seen from Table 13, Memories respondents were just as likely to ascribe their most-feared *and* moderately-feared stimuli to the direct rather than the indirect pathway.

Table 13: Percent of Memories respondents in the two ascribed pathways

Pathway	<i>Fear One</i>		<i>Fear Ten</i>		<i>Q</i>
	n	%	n	%	
Direct	55	72.5	59	77.5	
Indirect	21	27.5	17	22.5	.66
	76		76		

Ascribed Pathway And Certainty of Ascription

Hypothesis 2

Memories respondents, as previously mentioned, reported significantly higher levels of pathway-certainty compared with No-memories respondents. The hypothesis that Direct pathway respondents would report higher levels of certainty was now tested on Memories respondents alone. Table 14 displays the mean pathway-certainty ratings. T-tests for independent groups were calculated and revealed that respondents who ascribed either their most-feared or their moderately-feared stimuli to the direct pathway reported significantly higher levels of certainty.

Table 14: Memories respondents' mean certainty ratings, SDs and t-values, according to ascribed pathway.

	Direct		Indirect		<i>t</i>
	Mean	SD	Mean	SD	
<i>Fear One</i>	4.7600	1.471	3.4828	1.805	3.49*
	[n = 100]		[n = 29]		
<i>Fear Ten</i>	4.7209	1.316	3.8696	1.217	2.93**
	[n = 86]		[n = 23]		

* $p < .001$ (two-tailed probability).

** $p < .006$ (two-tailed probability).

Post Hoc Analysis: No-memories Respondents' Pathway-Certainty.

An assumption underlying the use of the Certainty Item was that it would provide an index of respondents' confidence in their pathway ascriptions, and by extension, their fear-onset memories. As stated previously, No-memories respondents would be expected to guess the 'best' pathway item for their fear. Hence, their certainty levels, unlike those of Memories respondents, should *not* differ according to pathway ascriptions. To see whether certainty levels were related to memory status, a post hoc inquiry into the certainty levels of No-memories respondents was conducted. As can be seen from Table 15, there were no

significant certainty levels for direct or indirect pathways. Thus, while Memories respondents' pathway-certainty levels differed according to ascribed pathway, No-memories respondents' pathway-certainty levels did not.

Table 15: No-Memories respondents' mean certainty ratings, SDs and t-values, according to ascribed pathway.

	Direct		Indirect		<i>t</i>
	Mean	SD	Mean	SD	
<i>Fear One</i>	3.200	1.47	3.060	1.50	0.32
	[n = 14]		[n = 43]		
<i>Fear Ten</i>	2.680	1.53	3.100	1.64	-0.92
	[n = 16]		[n = 50]		

Ascribed Pathway And Anxiety Responses

Hypothesis 3

Table16 displays "Direct"- and "Indirect" Memories respondents' mean anxiety ratings and t-values. The hypothesis that the anxiety components of a fear would differ according to pathway of acquisition (Hypothesis 3) was tested. No pathway-related differences in anxiety ratings were found. For both the most-feared and the moderately-feared stimuli, Direct-Memories respondents' and Indirect-Memories respondents' BR ratings were significantly higher than their NT ratings.

Table 16: Memories respondents' mean Bodily Reactions (BR) and Negative Thoughts (NT) ratings, SDs and t-values, according to ascribed pathway.

	<i>BR</i>		<i>NT</i>		
Pathways	Mean	SD	Mean	SD	<i>t</i>
<i>Fear One</i>					
Direct (n = 93)	1.9312	0.962	1.3666	0.754	6.34*
Indirect (n = 25)	2.316	0.834	1.5782	0.730	4.26*
<i>Fear Ten</i>					
Direct (n = 83)	1.3265	0.825	1.035	0.675	3.68*
Indirect (n = 23)	1.0217	0.746	0.6403	0.530	2.91**

* $p < .001$.

** $p < .02$.

DISCUSSION

In the present study, no support was found for the propositions derived from Rachman's theory: Neither pathway ascriptions nor anxiety response patterns were in the predicted directions. All predictions concerning respondents' relative levels of certainty in their ascriptions, however, were confirmed by the results.

THE HYPOTHESES

Ascribed Pathway And Strength of Fear

The hypothesis that respondents would ascribe strong fears to the direct pathway and moderate fears to either of the two indirect pathways was not supported by the findings. Respondents were equally likely to ascribe their most-feared and tenth-ranked fear to direct conditioning pathways. In the present study, 58% ascribed the most-feared item to the direct pathway, while 61% ascribed the tenth fear to the direct pathway. When the hypothesis was replicated for Memories respondents, it again failed to be supported by the results.

The high proportion of Direct respondents in the present nonclinical study is consistent with the findings of several clinical studies. Two studies, in particular, reported similar percentages to the present findings. In their respective research, Öst and Hugdahl (1981) found 58% of the social phobics and Öst (1991) 57% of the injection phobics ascribed their phobia to the direct pathway. Patients' ascriptions in both studies were based on a ten-item section of the POQ entitled Acquisition of the Phobia (Öst & Hugdahl, 1981), whereas the ascriptions in the present study were based on an adaptation of the three pathway items used in the nonclinically-oriented QCF (Ollendick & King, 1991).

The percentage of Direct respondents in the present study lies at the 'upper limit' of the widely dispersed findings found in previous nonclinical research. Direct pathway ascriptions reported in the published literature range from 17% (Fazio, 1972) to 56% (Di Nardo et al., 1988; see Table 1 for an overview of pathway findings). One relatively clear pattern emerging from the nonclinical studies is that, unlike the findings for clinical studies, the direct pathway has seldom been endorsed by a majority of respondents. In some of these studies indirect pathways have been the most frequently ascribed (e.g. Ollendick & King, 1991; Kleinknecht, 1982; Hekmat, 1987). In several other studies, however, non-pathway responses such as "I've always been afraid" or "I can't remember" have predominated (e.g. Kleinknecht et al., 1973; Rimm et al., 1977; Menzies & Clarke, 1993a). Only one published nonclinical study (Di Nardo et al., 1988) found that a majority of subjects ascribed their strong fears to the direct pathway. Of the dog-phobic subjects in Di Nardo et al., 56% chose the direct pathway - a finding consistent with the present results. Di Nardo and associates' (1988) methodology (a structured interview) and sample composition differed from the present study's.

It is possible that the present methodology may have contributed to the high percentage of direct pathway ascriptions: the pathways items comprised a forced-choice response format (i.e. only one choice).

When placed alongside the clinical research, the present findings for direct-pathway ascriptions *appear* to support Rachman's proposition that strong fears stem from direct pathways. But, since a similar-sized majority also ascribed their tenth-ranked fear to the direct pathway, the latter part of the proposition - that moderate fears stem from indirect pathways - was not confirmed. This finding raises a question about whether the clinical studies would also have obtained a similar percentage of direct-pathway ascriptions for a *moderate* strength fear, had the moderate fears of the patients also been examined.

Since most of the nonclinical studies, including the present one, share a similar methodology involving the use of self-administered questionnaires, the divergent results suggest three possibilities: Either the underlying theory or the methodology or both are inadequate.

Memory Status Comparisons of Pathway Ascriptions

There was no support in the present study for the hypothesis that Memories respondents would be more likely than No-memories respondents to ascribe strong fears to the direct pathway and moderate fears to the indirect pathway. For both Fears One and Ten, a significantly greater proportion of Memories respondents chose the direct pathway. These findings suggest that direct-conditioning experiences may be more memorable than indirect-conditioning experiences. If this is the case, then people who acquire fears through an indirect pathway may be less likely to recall the memories, and so less likely to indicate this pathway.

The tacit expectation for No-memories respondents was that they would be equally likely to choose any one of the three pathway items. The findings, however, showed that for both Fears One and Ten, significantly greater proportions of them chose the *indirect* pathway - findings that are the virtual opposite of those found for Memories respondents (see Table 11).

The pattern of findings for No-memories respondents is difficult to explain, particularly in the absence of any follow-up interviews. One possibility is that No-memories respondents engaged in 'on the spot' rationalizing in their selection of pathway items. Since they had no fear-onset memories, they would have to guess which of the pathways items best described the onset circumstances of their fear. In making their choice, they may have reasoned that, *if* their fear had been acquired through direct contact with the now-feared stimulus, they ought to remember the contact. But since they had no memories, they would opt for one of the

indirect pathways - pathways for which an absence of memories would be more understandable.

Ascribed Pathway And Anxiety Responses

The hypothesis that Direct respondents will report higher bodily than cognitive anxiety responses, and that Indirect respondents will report the reverse pattern received no support in the present study. The pattern was confirmed for Direct respondents who reported significantly higher Bodily Reactions ratings than Negative Thoughts ratings. However, for Indirect respondents, the predicted higher cognitive response pattern was not found. In fact, these respondents reported the same significantly higher bodily than cognitive ratings reported by Direct respondents.

The finding that the pathway of ascription does not lead to different anxiety response patterns is in accordance with the findings of previous nonclinical research and most clinical research. Di Nardo et al.(1988) found that nonclinical respondents who reported direct-conditioning etiologies for their fears did not manifest higher physiological and behavioural fear symptoms than cognitive fear symptoms. Similarly, in their study of height-fearful students, Menzies and Clarke (1993a) found no relationship between pathway of onset and anxiety response patterns.

The higher BR anxiety responses found in the present study are in agreement with the clinical study by Merckelbach et al. (1989) who found that both direct-conditioning patients and indirect-conditioning patients had higher physiological than cognitive scores. The higher physiological scores in their study, however, failed to reach significance.

In a series of studies examining the anxiety response correlates of various phobic groups, Öst and his colleagues (e.g. Öst & Hugdahl, 1981; Öst & Hugdahl, 1987) found only limited support for the differential-anxiety-response hypothesis. For example, in a comparison of the

anxiety response patterns of claustrophobics, animal phobics and social phobics, Öst and Hugdahl (1981) found that animal phobics alone scored significantly higher on the physiological component of fear. In a study on blood phobics and injection phobics, Öst (1991) again failed to find any significant anxiety response differences related to pathway of acquisition.

In a subsequent attempt to see if the differential response hypothesis may apply to some but not other phobias, Öst (1992) investigated the relationship between type of phobia (blood phobia versus injection phobia) and individual item response differences on the Negative Thoughts and the Bodily Reactions scales of the POQ (Öst & Hugdahl, 1981). With two exceptions, the item-score differences between the blood and the injection phobic groups failed to reach significance. The exceptions were the injection phobics significantly higher scores on items 4 ("Muscles becoming tense") and 9 ("Lump in throat") of the BR scale. Behavioural test score differences between the two phobic groups were nonsignificant.

In the fear acquisition research, respondents' anxiety responses have been assessed by a variety of measures. Behavioural approach tests (e.g. Öst, 1992) and physiological monitoring (e.g. Öst, 1991) have been used in several of the clinical studies. However, the majority of nonclinical studies, including the present one, have assessed the anxiety components solely by means of self-administered questionnaires. Of the questionnaire-based studies, few have published the mean scale ratings, and fewer still have used the POQ. Some of the studies which have used the POQ have employed a rating scale different from the one devised by Öst and Hugdahl (1981). For example, in their POQ-based study of animal phobics, Merckelbach et al. (1989) used visual analogue scales, ranging from 0 (never/not at all) to 10 (always/extremely). The original POQ rating scale ranges from 0 (Never) to 4 (Always). The only studies which have consistently used the POQ - and for which relevant comparisons with the present study can be made - is the series of clinical

investigations by Öst and his colleagues. Table 17 provides a descriptive cross-comparison of the present study with three of these studies (Öst & Hugdahl, 1981; Öst & Hugdahl, 1985; Öst 1991). As can be seen, the fear ratings of the phobic groups are more elevated than the present nonphobic sample's fear ratings. The higher ratings are consistent with Öst's assessment of phobias. The mean differences between the ratings reported by the phobic samples and the present sample, however, are not large. The present ratings suggest that the respondents found the BR and the NT items relevant to their experience of fear.

Öst (1991) reports that, in addition to its use in research, the POQ has also been used in the clinical assessment of phobias and fears. The lack of validation studies on the POQ (Menzies & Clarke, 1993a), and the non-standard rating scales accompanying its use in different research (e.g. Mercklebach et al., 1989) makes an assessment of the psychometric status of this instrument extremely difficult.

Table 17: Comparison of three clinical studies with the present nonclinical study: Mean item ratings and SDs for the Bodily Reactions (BR) and the Negative Thoughts (NT) scales.

	PHOBLAS							
	Animal		Social		Claustrophobia			
	Öst & Hugdahl (1981)							
Pathway	Mean	SD	Mean	SD	Mean	SD		
BR								
Direct	2.17	0.79	2.16	0.89	2.33	0.79		
Indirect	2.08	0.84	2.03	0.89	2.79	0.57		
NT								
Direct	1.97	0.81	2.60	0.83	2.78	0.89		
Indirect	1.95	0.95	2.42	0.89	3.13	0.66		
	Blood		Dental		Blood		Injection	
	Öst & Hugdahl (1985)							
	Öst (1991)							
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
BR								
Direct	2.65	0.61	2.31	0.65	2.21	0.67	2.57	0.76
Indirect	2.68	0.62	2.27	0.64	1.97	0.65	2.42	0.80
NT								
Direct	2.31	0.71	1.89	0.94	2.01	0.83	2.33	0.90
Indirect	2.63	0.42	2.16	0.75	1.92	0.80	2.19	1.05
NONCLINICAL FEARS								
	Fear One		Fear Ten					
	The Present Study							
	Mean	SD	Mean	SD				
BR								
Direct	1.91	0.95	1.28	0.86				
Indirect	1.93	1.02	0.94	0.79				
NT								
Direct	1.33	0.74	1.00	0.66				
Indirect	1.46	0.74	0.75	0.64				

* The four studies are compared for descriptive purposes only.

BR: Item means (0-4 scale).

NT: Item means (0-4 scale).

When the differential-anxiety-response-pattern hypothesis was replicated for Memories respondents alone, they also scored significantly higher on the BR scale for both Fears One and Ten. This invariant response pattern could be a reflection of the respondents' viewing the Bodily Reactions scale items as more relevant than the Negative Thoughts scale items to their conscious experience of fear.

A further possibility concerns subjects perceiving the items on the Negative Thoughts scale as indicative of "psychiatric" disturbance. Inspection of the two fear scales reveals that the items in the Negative Thoughts scale could suggest an 'undesirable' mental state more so than the items in the Bodily Reactions scale. For example, "I will lose control and do something crazy" (NT) versus "Face becoming hot" (BR); and "I can't stand it any longer" (NT) versus "Stomach becoming upset" (the full scales are in Appendix A). The Bodily Reactions items are based on specific physical symptoms, whereas the Negative Thoughts items are based on fearful 'states' of mind. It may be that it is more socially desirable acknowledging the physical reactions than admitting to the more emotive cognitive reactions. One way to clarify this would be to include a social desirability scale in future studies.

Because no research on the normative properties of the BR and the NT scales appears to have been conducted, it remains unknown whether nonclinical samples usually rate BR items higher than NT items. Nor is it known whether nonclinical samples' mean scores on the two scales are higher or lower than, or about the same as the present sample's scores. In other words, the equivalency of these two scales for comparison purposes is questionable.

Certainty of Ascribed Pathway

The results supported the hypothesis that Direct respondents would report higher levels of pathway-certainty than Indirect respondents. There are several possible reasons for the different levels of certainty found between these two pathway groups:

One reason involves respondents' levels of certainty about *their memories*. The underlying assumption is that the greater memorability of direct-conditioning events produces greater levels of certainty. If correct, this assumption explains why a greater number of respondents chose the direct-conditioning pathway for *both* of the different-strength fears.

Another reason for Direct respondents' higher levels of certainty concerns the possibility that the direct-pathway item may comply with popular, everyday lay accounts of how fears are caused. The two indirect pathway items may have been endorsed with less certainty simply because they conveyed less 'familiar' pathways to fear. This raises the question about how people - particularly those who have no memories of onset - construct 'causes' for their fears. If people have no memories of onset, then they be more likely to call on personal theories or lay beliefs in constructing causal pathways.

A further reason for the different levels of certainty involves the possibility that the *wording* of the direct pathway item engendered greater certainty as a fear-conditioning account. Accordingly, Direct respondents endorsed their ascription of the pathway item with higher levels of certainty. The lower certainty reported by Indirect respondents may have simply reflected their relatively lower confidence in the wording of the items.

A comparison of the wording of the pathway items shows that the direct-conditioning pathway item is possibly the most general and all-embracing in its description of conditioning events. The wording of the two indirect pathway items is relatively more specific. Hence, these two items may have been weaker at capturing many different kinds of

indirect conditioning events. The recommendation is that a more comprehensive range of pathway items be developed for inclusion in future questionnaires.

Memory Status And Pathway-Related Certainty

The hypothesis that, regardless of chosen pathways, Memories respondents would endorse pathway items with greater certainty than No-memories respondents was also supported by the results. Memories respondents reported significantly higher levels of certainty in their pathway ascriptions for both the most-feared and the moderately-feared stimuli.

The differential pathway-certainty levels found between Memories and No-memories respondents are amenable to straightforward explanation. In selecting the single best pathway statement for a fear, respondents would compare the events accompanying the onset of their fear with the various pathway items. In making the comparisons, Memories respondents would draw upon memories, whereas No-memories respondents would have to construct an answer.

When replicated for Memories respondents only, the hypothesis that direct pathway ascriptions would be endorsed with higher certainty levels was again supported. Direct Memories respondents were significantly more certain than Indirect Memories respondents.

In earlier comparisons, the findings suggested that the key 'explanatory' variable was memory (i.e. if respondents had memories, they also had higher levels of certainty in their ascriptions). Logically, if memory status were the sole variable explaining certainty levels, there would be no pathway-related differences *among* Memories respondents. On the other hand, if direct-conditioning experiences create more lasting memories, Direct Memories subjects would be expected to report greater levels of certainty than Indirect Memories respondents. The findings of the present study support this expectation.

CONCLUSIONS

The strength of the present study is its attempt to utilise a within-subjects design: Respondents' ascriptions and anxiety ratings for two different fears were compared. Few, if any, previous studies have made these sorts of comparisons. The present study is also one of the first to investigate the ascribed pathways of *common* adult fears. Prior research has tended to focus on one specific fear such as "heights" or "dogs" shared by all subjects (e.g. Menzies & Clarke, 1993a; Di Nardo et al., 1988). The inclusion of two validity-check items also sets the present study apart. These items helped clarify key relationships advanced in Rachman's theory; they also suggest potential areas of follow-up for future research. Several limitations of the present design, however, prevent firmer conclusions regarding the findings.

Limitations of the Present Study

The information on fear acquisition sought from respondents in the present study was very limited, consisting of one item each for memory, ascribed pathway and certainty of ascription. No follow-up interviews were used. The present questionnaire method, however, has been used in the overwhelming majority of prior studies (e.g. Öst & Hugdahl, 1981; Mercklebach et al., 1989; Ollendick & King, 1991; Menzies & Clarke, 1993a).

In the present study, subjects responded first to questions on the most-feared stimulus and then to the same series of questions on the moderately-feared stimulus. Having selected one set of answers for Fear One (e.g. indicating memories of onset and choosing the direct pathway), respondents may have then selected the same set for Fear Ten regardless of the accuracy (Babbie, 1992). To gauge the possible extent of response set, the Memories and the Pathway items responses for both fears were compared. Forty-one percent of subjects who reported memories for Fear One also reported them for Fear Ten, compared with 44 percent of No-memories subjects also reporting no memories for Fear Ten. As regards pathway ascriptions, 57 percent of those who chose the direct pathway for Fear One also chose the

direct pathway for Fear Ten, whereas 40.5% of subjects who chose the indirect pathway for Fear One, also chose it for Fear Ten.

Given the limited range of answers that could have been given, these findings are reassuring. Respondents did not invariably repeat the same pattern of answers in the second part of the questionnaire. In fact, respondents who reported no memories for Fear One were *less* inclined to report no memories for Fear Ten. Similarly, Indirect respondents for Fear One were less likely to choose an indirect pathway for Fear Ten.

In completing the questionnaire, it was crucial that respondents treat Fear One as a "most-feared" stimulus and Fear Ten as a "somewhat-feared" stimulus. The order of presentation of the questionnaire (i.e. questions firstly on Fear One), as well as the instructions (e.g. Fear One was to be the *most*-feared), may have been prone to reactivity effects. This problem underscores the need to ensure that the structure and the wording of questionnaires do not influence people's responses (de Vaus, 1985). Solutions include reversing the order of presentation of the questionnaire for half the respondents, and refraining from explicit labelling such as "most-feared".

Fear Ten is described through-out the present study as a "moderately-feared stimulus". Yet, the way in which the strength of this fear was determined was potentially flawed. The mean lower ratings for this fear could reflect an expectancy-type effect. Moreover, there may not have been sufficient or consistent differences between fear levels for all respondents. A standard ranking procedure was used in an attempt to 'standardize' the distance numerically between the two fears. For some respondents, however, the fear rating difference between their most-feared and tenth-ranked may have been small, whereas for other respondents Fear Ten may have been an inconsequential fear. A more objective basis for determining the strength of the tenth fear would have addressed concerns about the strength of Fear Ten.

Summary of The Findings

Rachman postulated that conditioning experiences were related to severity of fear. The present study did not support this proposition, but supported instead an alternate one which related conditioning experiences to *memories* of fear onset. Specifically, the memories reported in the present study were predominantly of direct-conditioning events for strong and moderate fears. This finding implies that direct-conditioning events may lend themselves to easier recall than indirect-conditioning events.

Further evidence supporting the proposition of the greater memorability of direct conditioning is provided by the findings for the pathway-related levels of certainty. The three predictions for certainty were confirmed: (1), For all respondents, direct pathway ascriptions were endorsed with greater certainty than indirect pathway ascriptions. (2), Although predominantly choosing the direct pathway, Memories respondents endorsed their choice of pathway with greater certainty than No-memories respondents - *even when they chose the indirect pathway*. (3), Comparisons *among* Memories respondents showed that those who chose the direct pathway endorsed it with greater certainty than those who chose the indirect pathway.

One implication of these findings is that the questionnaire methodology may be unable to investigate Rachman's proposition relating conditioning experiences to fear severity. Pathway items may be unavoidably loaded in favour of direct-conditioning ascriptions. People may find it easier to access memories of direct contact because of not remembering prior indirect-conditioning experiences.

The present findings also imply that the direct pathway could be more compatible with lay explanations of the causes of fears. This raises the question, How do people explain the origins of their fears? While no research has been done on 'attributional' pathways to fear and

fear severity, numerous studies on attributional style have found that people are prone to a variety of systematic biases in explaining the causes of events (e.g. Jennings, Amabile & Ross, 1982). Questions also arise over the extent to which the methodology itself is influencing the 'structure' of recall. Without assistance from the questionnaire-based Pathway items, would respondents have explained their fear onset in the same or some other way?

No-memories respondents predominantly ascribed their fears to the indirect pathway. This finding indicates that, in the absence of relevant causal memories, people will still construct a causal pathway; although *if asked* they will report comparatively low levels of certainty in their construction. More research on the extent to which people construct 'memories' in response to questionnaire items would be useful. Comparisons could also be made between people's lay ascriptions of fears and their questionnaire-based ascriptions.

Rachman proposed that conditioning experiences were related to anxiety response patterns. No support was found for this differential-anxiety-response hypothesis. Irrespective of either pathway ascriptions or memory status, respondents' Bodily Reactions ratings were significantly higher than their Negative Thoughts ratings.

The differential-anxiety-response hypothesis, as argued in the Introduction, is an inadequately developed theoretical proposition, it predicts an anxiety response pattern contrary to that reported in clinical accounts and, above all, it has consistently failed to be confirmed across a variety of empirical studies. The present findings for two different-strength common fears concur with these studies. A compelling case exists for re-thinking the theoretical 'purpose' of the proposition and possibly abandoning it.

Future Directions

Attributional Research

On the basis of the present findings, three broad possibilities emerge for future research, each one having different implications for the testing of Rachman's (1977) theory of fear. The first new direction involves modifying Rachman's theory to include a more explicit cognitive account of fear acquisition. Currently, fear acquisition research ^{has} treads an ambiguous line regarding the status of the questionnaire-based causal attributions. While researchers have acknowledged the limitations of data based upon retrospective reports, the terminology in many fear acquisition studies implies that actual pathways have been identified and investigated (Menzies & Clarke, 1993a; Öst, 1991; Mercklebach et al., 1989).

An attributional approach to fear acquisition would emphasize the relationship of fear severity to "attributional style", without implying that causal pathways have been investigated. Prior research, for example, has linked attributional style (i.e. people's inferences about the causes of events) to levels of depression. In research by Beck (1976), "internal-personal attributions" (i.e. causes attributed to oneself) were correlated with higher levels of depression than "external-situational attributions" (i.e. causes attributed to the situation). No equivalent research has investigated attributional style and the severity of fears and phobias. Attributional research would be useful for identifying lay beliefs which may underlie the acquisition of different-strength fears. Do people with intense fears of a particular stimulus, for example, have a different attributional style than people with less intense fears of the stimulus?

Disaster Research

The second potential new direction involves the use of methodologies more suited to an examination of Rachman's behavioural account of fear. The study of naturally-occurring disasters involves methods such as direct observation, physiological measurement of bodily

symptoms and in-depth interviewing of disaster victims (e.g. Dollinger, O'Donnell & Staley, 1984). This approach may also provide the basis for longitudinal studies of the reliability of delayed accounts of people's experiences and the symptomatology following tragic events (Norris & Kaniasty, 1992). Research on the effects of disasters has the potential to provide highly valid data on direct-conditioning experiences, fear acquisition and fear severity.

Disaster research could also investigate the indirect transmission of fears by assessing, for example, whether people who were not present during a disaster subsequently acquire similar fears to others who were present. This would allow an on-the-spot examination of the 'mechanisms' involved in the indirect transmission of fears.

Research on the Memorability of the Different Pathways

The third and final new direction relates directly to the findings in the present study. Although no relationship was found between strength of fear and conditioning pathway, the present data may well be a 'symptom' of an inadequate methodology, rather than of an inadequate theory. The present findings *are* compatible with the view that experiences involving direct contact with feared stimuli may be more easily recalled than experiences involving indirect contact. This view, as noted, has sobering implications for the use of the questionnaire methodology in fear acquisition research. However, within the limits of its methodology, the present study does not offer unqualified support for the view that direct experiences are more accessible to later recall. More in-depth research on the comparative levels of memorability associated with the various conditioning experiences would be extremely useful. Such research has the potential to answer more conclusively whether the questionnaire is an appropriate methodology for testing Rachman's (1977) three-pathways theory of fear acquisition.

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APPENDIX A

THE RESEARCH QUESTIONNAIRE

PEOPLE'S REACTIONS TO COMMON FEARS

Information Sheet

This information sheet is for you to keep. Please read it carefully, then detach it before the booklet is collected.

This sheet provides information about a study being conducted by **Rody Withers**, a Massey Psychology postgraduate student who is under the supervision of **Dr Frank Deane**, Massey Psychology Department lecturer. The study has been approved by the Massey University Ethics Committee.

The aim of this study is to explore the kinds of situations or things that people fear, their reactions to those fears, and the kinds of things they remember about how their fears first started.

You will be asked to complete a questionnaire asking you to identify your fears from a list of common fears reported by others. A variety of questions will ask you about your memories of and reactions to these fears.

If you take part in this study, you have a right to:

- Refuse to answer any particular question, and to withdraw from the study at any time
- Ask any further questions about the study that occur to you during your participation
- Provide information on the understanding that it is completely confidential to the researcher. All information is collected anonymously, and it will not be possible to identify you in any reports that are prepared from the study.

If you have any additional questions or concerns about any aspect of the study, the researcher can be contacted at the Psychology Department, 356 69099, extension 8231.

Thank you

Researcher: Rody Withers

GENERAL INFORMATION:

Age: _____ (years) **Sex:** (circle one) Female Male

Ethnic Origin: (circle one) European Maori Polynesian Asian

Other

Marital status: (circle one) Single Married Widowed

Divorced Separated De facto

Student profile: (circle one) Internal Extramural

Degree or Diploma in which you are enrolled: _____

Total number of university papers completed so far: _____

LIST OF COMMON FEARS

- | | |
|-------------------------------------|--------------------------------------|
| 1: Angry people | 19: Losing control |
| 2: Auto accidents | 20: Making mistakes |
| 3: Bats | 21: Mental illness |
| 4: Being criticised | 22: One person bullying another |
| 5: Being in a fight | 23: Open wounds |
| 6: Being self-conscious | 24: Parting from friends |
| 7: Being with drunks | 25: People who seem insane |
| 8: Dark places | 26: Prospect of a surgical operation |
| 9: Dead bodies | 27: Rats and mice |
| 10: Death of a loved one | 28: Roller coasters |
| 11: Deep water | 29: Seeing a fight |
| 12: Failure | 30: Snakes |
| 13: Falling | 31: Speaking in public |
| 14: Feeling disapproved of | 32: Spiders |
| 15: Hypodermic needles | 33: Stinging insects |
| 16: Illness or injury to loved ones | 34: Suffocating |
| 17: Looking foolish | 35: Untimely or early death |
| 18: Losing a job | 36: Witnessing surgical operations |

LIST OF COMMON FEARS:

1. Please read through the list of common fears on the previous page. Of all the items on the list, select **FIVE** which you consider yourself to be **MOST** afraid of. List your five fears in order of (1) most-feared to (5) fifth-most-feared. For example, the one you choose for the first line (below) should be more frightening to you than the one for the second line, and so on.

- (1) The most-feared situation or thing on the list: _____
 - (2) The next most-feared situation or thing on the list: _____
 - (3) The third most-feared situation or thing on the list: _____
 - (4) The fourth most-feared situation or thing on the list: _____
 - (5) The fifth most-feared situation or thing on the list: _____
-

2. Do the fears you have selected from the previous page actually include the situation or thing that you regard yourself as fear *above all else*? (Circle one)

YES

NO

If you have answered "YES" to Question 2 (above), please ensure that the situation or thing which you fear above all else is at the TOP of your list before proceeding.

THIS IS THE FEAR REFERRED TO THROUGHOUT THE REMAINDER OF THIS BOOKLET AS "YOUR MOST-FEARED SITUATION OR THING".

3. **If, however, you have answered "NO" to Question 2 (above)**, this means that the situation or thing which you fear above all else is not listed on the previous page. If that is the case, write down the situation or thing that you fear above all else:

THE FEAR THAT YOU HAVE JUST WRITTEN DOWN IS THE FEAR REFERRED TO THROUGHOUT THE REMAINDER OF THIS BOOKLET AS "YOUR MOST-FEARED SITUATION OR THING".

YOUR BODILY REACTIONS

These questions are about various bodily reactions that you may experience when you are thinking about facing your most-feared situation or thing: (Please circle the relevant number after each question)

	<i>Never</i>			<i>Always</i>	
1 Face becoming hot	0	1	2	3	4
2 You are in a cold sweat	0	1	2	3	4
3 Perspiration in palms or armpits	0	1	2	3	4
4 Muscles becoming tense	0	1	2	3	4
5 Muscles becoming weak (e.g. knees and arms)	0	1	2	3	4
6 You become dizzy	0	1	2	3	4
7 Changes in your heartbeat	0	1	2	3	4
8 Changes in breathing	0	1	2	3	4
9 Lump in throat	0	1	2	3	4
10 Stomach becoming upset	0	1	2	3	4
11 You feel an urge to empty your bladder	0	1	2	3	4

YOUR THOUGHTS

Indicate the extent to which you experience the following thoughts when you are thinking about facing your most-feared situation or thing:

	<i>Never</i>			<i>Always</i>	
1 I will panic	0	1	2	3	4
2 I will lose control and do something crazy	0	1	2	3	4
3 I will faint	0	1	2	3	4
4 What will other people think of me?	0	1	2	3	4
5 I must get out of this situation	0	1	2	3	4
6 I will go crazy (insane)	0	1	2	3	4
7 I can't stand it any longer	0	1	2	3	4
8 I can't handle this situation	0	1	2	3	4
9 I will fail	0	1	2	3	4
10 I will blush and make a fool of myself	0	1	2	3	4

YOUR FEELINGS

Indicate how you feel right now, at this moment, as you think about your most-feared situation or thing:

Not at all Somewhat Moderately Very much

I feel calm	1	2	3	4
I am tense	1	2	3	4
I feel upset	1	2	3	4
I am relaxed	1	2	3	4
I feel content	1	2	3	4
I am worried	1	2	3	4

THE ORIGIN OF YOUR FEAR

The following questions require you to think about your earliest memories involving the situation or thing that you fear the most. Try to remember how this particular fear first started.

1. Do you have memories of something happening which involved your most-feared situation or thing? (Circle one) YES NO

2. Which one of the following three statements do you think *BEST* describes how your fear first started?

Circle ONE

 - A. You had a frightening experience similar to or actually involving your most-feared situation or thing **A**
 - B. Your parents or people close to you were afraid of similar kinds of situations or things **B**
 - C. You were told frightening things about this kind of situation or thing **C**

3. As you think about the statement you just circled, how certain are you that it actually describes how your fear first started?

	<i>Very Uncertain</i>	<i>Uncertain</i>	<i>Somewhat Uncertain</i>	<i>Somewhat Certain</i>	<i>Certain</i>	<i>Very Certain</i>
Circle One	1	2	3	4	5	6

BACK TO THE LIST OF COMMON FEARS

1. From the List of Common Fears, select FIVE new fears that are ***NOT*** as strong as the first five fears you selected. The fears you select still should be situations or things which you have ***SOME*** fear of.

Write down your five fears on the blank lines just as you did earlier. For example, the one chosen for the first line should be relatively more frightening to you than the second, and so on.

[The lines are numbered 6 to 10 as a continuation from the five fears you selected in the earlier section.]

- (6) _____
- (7) _____
- (8) _____
- (9) _____
- (10) _____

THE FEAR YOU HAVE LISTED ON THE TENTH LINE IS REFERRED TO THROUGHOUT THE REMAINDER OF THIS BOOKLET AS "THE SITUATION OR THING THAT YOU HAVE SOME FEAR OF". Keep that fear in mind as you answer the remaining questions.

YOUR BODILY REACTIONS

These questions are about various bodily reactions that you may experience when you are thinking about facing the situation or thing you have *some* fear of:

	<i>Never</i>			<i>Always</i>	
1 Face becoming hot	0	1	2	3	4
2 You are in a cold sweat	0	1	2	3	4
3 Perspiration in palms or armpits	0	1	2	3	4
4 Muscles becoming tense	0	1	2	3	4
5 Muscles becoming weak (e.g. knees and arms)	0	1	2	3	4
6 You become dizzy	0	1	2	3	4
7 Changes in your heartbeat	0	1	2	3	4
8 Changes in breathing	0	1	2	3	4
9 Lump in throat	0	1	2	3	4
10 Stomach becoming upset	0	1	2	3	4
11 You feel an urge to empty your bladder	0	1	2	3	4

YOUR THOUGHTS

Indicate the extent to which you experience the following thoughts when you are thinking about facing the situation or thing you have *some* fear of:

	<i>Never</i>			<i>Always</i>	
1 I will panic	0	1	2	3	4
2 I will lose control and do something crazy	0	1	2	3	4
3 I will faint	0	1	2	3	4
4 What will other people think of me?	0	1	2	3	4
5 I must get out of this situation	0	1	2	3	4
6 I will go crazy (insane)	0	1	2	3	4
7 I can't stand it any longer	0	1	2	3	4
8 I can't handle this situation	0	1	2	3	4
9 I will fail	0	1	2	3	4
10 I will blush and make a fool of myself	0	1	2	3	4

YOUR FEELINGS

Indicate how you feel right now, at this moment, as you think about the situation or thing you have *some* fear of:

Not at all Somewhat Moderately Very much

I feel calm	1	2	3	4
I am tense	1	2	3	4
I feel upset	1	2	3	4
I am relaxed	1	2	3	4
I feel content	1	2	3	4
I am worried	1	2	3	4

THE ORIGIN OF YOUR FEAR

The following questions require you to think about your earliest memories involving the situation or thing that you have *some* fear of. Try to remember how this particular fear first started.

- Do you have memories of something happening which involved this situation or thing?

(Circle one) YES NO

- Which one of the following three statements do you think *BEST* describes how this fear first started?

Circle ONE

- You had a frightening experience similar to or actually involving situation or thing you have some fear of. A
- Your parents or people close to you were afraid of similar kinds of situations or things B
- You were told frightening things about this kind of situation or thing C

- As you think about the statement you just circled, how certain are you that it actually describes how your fear first started?

Very Somewhat Somewhat Very
Uncertain Uncertain Uncertain Certain Certain Certain

Circle One 1 2 3 4 5 6

APPENDIX B:

THE DEVELOPMENT OF THE FEAR LIST

THE DEVELOPMENT OF THE FEAR LIST

This appendix contains an outline of the steps followed in the development of the fear list used in the present study.

The Purpose of Fear Survey Research

In recent decades, researchers have developed fear 'surveys' or 'checklists' to quantify the frequency and strength of various kinds of clearly identifiable fears and phobias in either clinical groups (e.g. psychiatric patients) or general populations (e.g. university students). These surveys are useful for a variety of clinical- and research-based applications. For example, they provide normative data on a range of specific fears (Bellack & Hersen, 1988).

The most widely used fear surveys are Wolpe & Lang's (1964) Fear Survey Schedule-III (FSS-III) and Geer's (1965) similarly-titled Fear Survey Schedule-II (FSS-II). Both of these schedules were developed through empirical item selection procedures; they consist of the most frequently reported common fears in a variety of populations. For example, the 72-item FSS-III (Wolpe & Lang, 1965) was originally derived from the self-reported greatest fears of American university students. The FSS-III has since served as the basis of innumerable studies on adult fears (Arrindell et al., 1987).

In completing a fear survey schedule (such as FSS-III), subjects rate their own level of disturbance to each of the listed fear items along a scale such as the following: 0 ("not at all fearful"); 1 ("a little fearful "); 2 ("a fair amount of fear "); 3 ("much fear "), and 4 ("very much fear"). Among other things, the separate fear ratings provide a profile of the range and kind of stimuli the subject finds fearful. For example, is the subject "very much" fearful of a wide or a narrow range of stimuli? Also, what 'classes' of fears (e.g. animal fears, negative social evaluation fears, social interaction fears, etc.) does the subject find most fearful? In

addition, the item scores are usually summed to produce a grand "fear" score which can then be compared with available normative data.

For the present study, the use of the fear survey research was confined to generating a pool of common intense fears to include on the Reactions Questionnaire Fear List. A list of *intense* fears was sought because it was expected that such fears would be more successful in eliciting endorsements at the high fear level than would items which previous research has shown have been less frequently endorsed as intense.

Prior Item-level Fear Survey Research

The six studies whose item-level findings were used in the preparation of the Reactions Questionnaire Fear List were: Geer (1965); Bernstein and Allen (1969); Farley et al. (1978); Farley et al. (1981); Kirkpatrick (1984) and Liddell et al. (1991). Tables 1 to 6 itemise the most frequently reported fears in each of these studies. Differences among the six studies in the method of reporting results made it difficult to rank-order the most frequently reported fears over the six studies. For example, while Geer (1965) reported data for all items whose mean ratings exceeded 2 ("very little fear"), Bernstein and Allen (1969) provided data only for items whose mean ratings exceeded 3 ("some"), and Kirkpatrick (1984) confined the reporting to fear items which five percent or more of the subjects had endorsed at the highest point ("terror") of the scale.

Furthermore, while some of the studies (e.g. Geer, 1965; Liddell et al. 1991) reported the mean per item scores, other studies (e.g. Farley et al. 1981; Kirkpatrick, 1984) rank-ordered but did not report the mean scores for the most frequently reported fears. Thus, there is an unavoidable element of ambiguity regarding the precise empirical status (i.e. assessed by means of scores) of the individual fear items in the Reactions Questionnaire Fear List.

On the basis of the criteria outlined in the Method, 41 items were eventually selected for the Fear List. After overlapping items (e.g. "seeing a fight" / "sight of fighting" and "rats"/"rats and mice") were reduced to single items, a total of 36 fear items remained for inclusion in the Reactions Questionnaire Fear List.

Table 1: FSS-II items on which subjects' mean ratings exceeded 2 ("very little" (Geer, 1965).

FEMALES		MALES	
Item	Mean	Item	Mean
Death of a loved one	4.25	Death of a loved one	3.41
Illness/injury to loved ones	4.08	Failing a test	3.30
Failing a test	3.32	Illness/injury to loved ones	3.11
Snakes	3.05	Looking foolish	2.79
Auto accidents	2.98	Not being a success	2.79
Looking foolish	2.94	Speaking before a group	2.59
Speaking before a group	2.87	Making mistakes	2.22
Untimely or early death	2.66	Being self-conscious	2.18
Being with drunks	2.63	Suffocating	2.05
Making mistakes	2.52	Auto accidents	2.05

Table 2: FSS-II items on which subjects' mean ratings exceeded 3 ("a little") (Bernstein & Allen, 1969).

FEMALES		MALES	
Item	Mean	Item	Mean
Illness/injury to loved one	5.26	Illness/injury to loved one	4.74
Auto accidents	4.38	Auto accidents	3.67
Dead bodies	4.18	Being in a fight	3.44
Snakes	4.02	Untimely/early death	3.35
Untimely or early death	3.96	Dead bodies	3.23
Rats and mice	3.49	Snakes	3.07
Stinging insects	3.47		
Spiders	3.46		
Seeing a fight	3.23		
Being with drunks	3.22		
Dark places	3.21		
Hypodermic needles	3.19		
Being in a fight	3.04		

Table 3: The ten most highly rated fear items of female subjects by nationality (Farley et al. 1978).

<u>American</u>		<u>Israeli</u>	
Item	Mean	Item	Mean
Feeling rejected by others	3.24	Becoming mentally ill	4.24
Dead people	3.19	Dead people	4.05
Sight of fighting	3.17	One person bullying another	3.88
Prospect of a surgical operation	3.15	Prospect of a surgical operation	3.68
Failure	3.14	Feeling rejected by others	3.41
One person bullying another	3.03	Failure	3.36
Speaking in public	2.96	Fainting	3.36
Open wounds	2.92	Witnessing surgical operations	3.25
Feeling disapproved of	2.88	Speaking in public	3.24
Bats	2.76	Losing control	3.14

Table 4: The ten most highly rated FSSR-III items by sex (Farley et al. 1981).

<u>Females</u>	<u>Males</u>
Item	Item
Prospect of a surgical operation*	Failure
Feeling rejected by others	Speaking in public
Losing control	Feeling rejected by others
Dead people	Losing control
Speaking in public	Prospect of a surgical operation
People who seem insane	Angry people
Failure	Looking foolish
Bats	Falling
One person bullying another	Sight of fighting
Sight of fighting	One person bullying another

* Individual fear item mean scores not reported.

Table 5: Fear items on which five percent or more of the subjects' endorsed the highest rating of terror (Kirkpatrick, 1984).

FEMALES					
15-24 yr		25-44yr		45-89yr	
Item	%	Item	%	Item	%
Death of a loved one	34.5	Death of a loved one	23.5	Deep water	30.0
Untimely/early death	27.0	Roller coasters	23.5	Looking down from high	
Death	26.5	Snakes	21.0	buildings	25.0
Illness/injury to loved ones	26.0	Deep water	16.5	Fire	22.5
Ideas of being homosexual	22.0	Swimming alone	14.5	Death of a loved one	18.5
Being punished by God	18.0	Illness/injury to loved ones	14.5	Roller coasters	18.5
Dead people	14.0	Looking down from high		Snakes	18.5
Fire	13.5	buildings	13.5	Swimming alone	17.5
Deep water	12.0	Untimely or early death	13.5	Illness/injury to loved ones	15.0
Snakes	11.5	Fire	12.5	Strange dogs	15.0
Roller coasters	7.5	Death	12.0	High places on land	10.0
Strange dogs	7.0	Being punished by God	9.0	Untimely/early death	9.0
Swimming alone	6.0	High places on land	7.0	Ideas of being homosexual	6.5
		Strange dogs	7.0	Death	5.5
		Ideas of being homosexual	6.0		
MALES					
15-24 yr		25-44yr		45-89yr	
Item	%	Item	%	Item	%
Being punished by God	21.5	Deep water	7.0	Spiders	12.0
Death	18.5	Looking down from high		Being punished by God	9.5
Death of a loved one	18.0	building	6.0	Death of a loved one	7.5
Untimely or early death	14.5	Death of a loved one	5.0		
Masturbation	14.0				
God	10.0				
Ideas of being homosexual	10.0				
Suffocating	10.0				
Illness/injury to loved ones	8.5				
Deep water	7.5				
Taking written tests	7.0				
Weapons	6.5				
Prospect of surgical					
operation	6.0				

* Items with the same percentage ratings for an age group are listed in alphabetical order.

Table 6: FSS-II items on which mean ratings exceeded 4 ("much") by age group (Liddell et al. 1991).

50-64 yr		65-74 yr		75 and over	
Item	Mean	Item	Mean	Item	Mean
Death of a loved one	5.75	Death of a loved one	5.00	Death of a loved one	5.45
Illness/injury loved one	5.46	Illness/injury loved one	5.52	Illness/injury loved one	5.22
Suffocating	4.85	Auto accidents	4.85	Roller coasters	4.80
Auto accidents	4.85	Being with drunks	4.71	Being with drunks	4.57
Roller coasters	4.71	Snakes	4.64	Auto accidents	4.40
Being in a fight	4.55	Suffocating	4.60	Seeing a fight	4.27
Untimely or early death	4.42	Being in a fight	4.58	Snakes	4.21
Being with drunks	4.34	Roller coasters	4.53		
Failing a test	4.22	Untimely or early death	4.42		
Looking foolish	4.18	Mental illness	4.30		
Losing a job	4.14	Seeing a fight	4.27		
Snakes	4.03	Rats and mice	4.07		
		Deep water	4.06		

Ascertaining The Relevance of The Fear Items

Three factors influence the extent to which the 36 fear items used in the present study may be considered representative of the common intense fears of adults.

(1) The unknown generalisability of adult fear survey data. Research has found that people tend to strongly endorse fear-items which have not just age-related but also socio-cultural relevance (e.g. Kirkpatrick, 1984). The American research has found that for young adult university students, the strongest reported fears commonly include "negative social evaluation" items such as "making mistakes" and "being criticized", whereas the strong fears of middle-aged Americans usually involve physical dangers or death-oriented themes (e.g. death of a loved one) (Arrindell et al., 1987). Complicating these broad age-related fears are the widely differing socio-cultural backgrounds that influence people's choice of specific intense fears. For example, Kirkpatrick (1984) noted that moral fears (e.g. abortion, masturbation) may have less to do with age differences than with subjects' differing social environments. It is evident from Table 5 (Kirkpatrick, 1984), for example, that, at least for a sizable portion of one midwestern-American sample, religious fears were rated as the most

intense. Yet, in most other published American studies, religious-oriented fears (e.g. punishment by God, the end of the world, etc) have been rarely, if ever, reported.

Consequently, because of people's divergent socio-cultural backgrounds, prior research on specific common intense fears - especially that undertaken overseas - may not necessarily have included the sorts of fears which were relevant to the present New Zealand sample.

(2) The comprehensiveness of the Fear List. In fear survey research subjects rate their level of fear to just those items which are on the list. Kirkpatrick (1984) has stated that the more wide-ranging the fears that comprise a survey, the less comparable the results are with research utilising fewer fear items. In his 133-fear item survey, Kirkpatrick found that religious and moral-oriented fear items were among the most strongly endorsed fear items. In contrast, other item-level studies (e.g. Liddell et al., 1991) which were based on less comprehensive fear surveys report different 'classes' of intense fears.

Regardless of how many items are included in a survey, researchers are generally aware that the fear stimuli which their subjects could well be *most* fearful of may not have been included in the fear survey (Kirkpatrick, 1984; Arrindell et al., 1987). For this reason, subjects in the present study were given the choice of going beyond the Fear List if it did not include their most feared situation or thing.

(3) Some fears are more acceptable than other fears. The social desirability of particular fear-items seems to influence people's preparedness to strongly endorse those items. For example, Kirkpatrick (1984) found that while men reported being "very much fearful" of losing loved ones in death, they less frequently reported intense fears of animals or physically dangerous situations. Kirkpatrick also noted that women tended not to report strong fears of pregnancy and motherhood. He speculated that, in fear survey research, people may be

reluctant to report fears which contradict their image of themselves (e.g. a woman's being intensely fearful of pregnancy, yet having an image of herself as a fairly normal female). The irony to which Kirkpatrick alludes is that genuinely intense fears are possibly too frightening for subjects even to report. The anonymous completion of the questionnaire may have encouraged respondents to be more candid in both their selection of fear items and their reporting of their reactions; but even with anonymity, respondents may not have felt like writing down their strongest fears.

The three factors just discussed mean that, in the absence of follow-up interviews, the extent to which the Fear List represented the fears of the present sample remains difficult to ascertain. However, one important indication of the relevance of the Fear List was the fact that two-thirds of the present sample were able to locate their single most-highly feared stimulus on that Fear List.

APPENDIX C:

THE MOST FREQUENTLY SELECTED FEARS IN THE PRESENT STUDY

THE MOST FREQUENTLY SELECTED FEARS

<i>Fear Items</i>	<i>Ranked Number of Fear</i>										Total
	<i>1*</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10[□]</i>	
Death of Loved One	54¶	23	10	10	7	14	6	§			124
Auto accidents	10	16	14	13	10	17	8	7	8	7	110
Illness to loved one	8	17	13	6	7	18	14		11	5	99
Failure	9	7	16	10	7	6	8	5	11		79
Speaking in public	14		8	16		9	6	6	5	14	78
Untimely/early death	9	13	8	8	5	6	7	9	8	5	78
Suffocating	8	9	14	8		8	9	10	9		75
Dark places	7	5		10	9	13	5	8	8	6	71
Deep water	8	7	12	9	8	9	5			7	65
Angry people		6			13	9	5	9	10	11	63
Feeling disapproved of	6	5		5		8	9	12		12	57
Snakes	10	7	6	8	7		7	5		7	57
Being criticised			6	7	5		15	5	10	5	53
Spiders	8	9	5	6	10			6	5		49
Losing control		6		5	10	9		9	6		45
Falling		9	7	5	5		7	5		6	44
Looking foolish			5		9	6		7	6	9	42
Being in a fight				5	5		7	6	8	5	36
Making mistakes				6	7		7	6		9	35
Prospect of surgery				5	5	7	7			6	29
Hypodermic needles	5	6			6	6					23
Losing a job			5		5		5		8		23
Mental illness			6	6	6						18
Being self-conscious							7	6		5	18
Dead bodies						7	5	5			17
Rats and mice	7							8			13
Seeing a fight								5	7		12
Parting from friends								5		6	11
Being with drunks									5	5	10
Roller coasters									5	5	10
Stinging insects								6			6
Open wounds							5				5

* Fear One in the present study (i.e. the most-feared stimulus).

□ Fear Ten in the present study (i.e. the moderately-feared stimulus).

§ Blank cells: Four or fewer respondents selected the fear item for this ranked position.

¶ The number of respondents who ranked the fear item as their most-feared stimulus.