

## CONDITIONING EXPERIENCES AND PHOBIAS

HARALD MERCKELBACH,\*<sup>1</sup> CORINE DE RUITER,<sup>2</sup> MARCEL A. VAN DEN HOUT<sup>1</sup>  
and RENSE HOEKSTRA<sup>1</sup>

<sup>1</sup>Department of Mental Health Sciences/ Experimental Psychopathology, University of Limburg, P.O. Box 616, 6200 MD Maastricht and <sup>2</sup>Department of Psychiatry, University of Utrecht, Hoofddijk 23, 3584 CW Utrecht, The Netherlands

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**Summary**—A retrospective study was conducted to examine the extent to which phobias are associated with a conditioning pathway to fear. The Phobic Origin Questionnaire (Öst and Hugdahl, *Behav. Res. Ther.* 19, 439-477, 1981) was administered to a sample of 91 phobic outpatients (patients with panic disorder with agoraphobia, social phobics, simple phobics). Results show clearly that conditioning experiences occur more frequently than either vicarious or informational, learning experiences, which confirms the findings previously reported by Rimm, Janda, Lancaster, Nahl and Dittmar (*Behav. Res. Ther.* 15, 231-238, 1977) and by Öst and Hugdahl (1981; *Behav. Res. Ther.* 21, 623-631, 1983). Yet, conditioning experiences consist mainly of panic attacks in confined environments. The findings also suggest that a considerable number of phobias are based on a combination of different pathways to fear.

### INTRODUCTION

According to the classical conditioning model, phobic fears of objects or situations result from these objects or situations having been associated with traumatic or painful experiences (Eysenck, 1987). Experimental studies show that it is possible to condition autonomic responses of normal Ss to a neutral cue by pairing that cue with an aversive event, like an electric shock (e.g. Deitz, 1982). Consequently, several authors have argued that classical conditioning in the laboratory can mimic the etiology of clinical fears (Öhman, 1979; Deitz, 1982).

Yet, the role which conditioning actually plays in the origins of phobias is still much discussed. For example, in their studies of analog animal phobics, Kleinknecht (1982) and Murray and Foote (1979) conclude that fear acquisition is rarely based on a confrontation with a traumatic event. Goldstein and Chambless (1978) found that the onset of agoraphobia was preceded by a conditioning event in only 4 out of 32 agoraphobics. In contrast, Rimm, Janda, Lancaster, Nahl and Dittmar (1977) found in their study of analog animal phobias that 35% (i.e. 16 out of 45 Ss) had had aversive conditioning experiences. This finding is comparable to results reported by Hekmat (1987). Working also with analog animal phobias, Hekmat reported that 26% (i.e. 13 out of 56 Ss) had experienced an aversive encounter with the phobic object.

Some authors (e.g. Emmelkamp, 1982) have suggested that the severity of phobic fears might be an important variable in studies concerned with conditioning experiences in phobias. It may well be that conditioning experiences form a more prominent etiological factor in clinical than in analog fears. There is some evidence to support this. Wolpe (1981) claimed that out of a series of 40 clinical cases, 26 (65%) could be defined as classically conditioned fears. Similarly, McNally and Steketee (1985) reported that 5 out of 7 severe animal phobics who were able to recall the circumstances which lead to their phobias ascribed their fears to an aversive encounter with the animal (see also Davey, 1989).

Until now, the most systematic research on the origins of phobias has been carried out by Öst (1985, 1989), Öst and Hugdahl (1981, 1983) and Hugdahl and Öst (1985). Based on Rachman's (1976, 1977) Theory of fear acquisition, Öst developed a questionnaire (Phobic Origin Questionnaire; POQ, Öst and Hugdahl, 1981) which distinguishes between three pathways to fear: fear as the result of conditioning, fear acquisition through vicarious learning, and fear caused by exposure to negative information. Examining POQ scores of Swedish samples of phobics, Öst repeatedly documented that some 60% of all patients remember direct, aversive experiences of the condition-

\*To whom reprint requests should be addressed.

ing type. In their sample ( $N = 106$ ) of animal-, social-, and claustrophobic patients, Öst and Hugdahl (1981) found that 58% of the patients ascribed their phobias to conditioning experiences, 17% ascribed their phobias to vicarious learning, and 10% ascribed their phobias to informational learning. This study also reported evidence suggesting that animal phobics with a conditioning history score higher on physiological than on cognitive inducers of fear. This provides some support for Rachman's (1977) proposal that a conditioning pathway to fear is likely to result in more severe physiological than cognitive symptoms, whereas the reverse would be true for fears based on indirect pathways to fear (i.e. vicarious or informational learning).

In a subsequent study ( $N = 183$ ), Öst (1985) found remarkably similar percentages for the frequency of conditioning experiences, vicarious learning and informational learning: 65, 14 and 7%, respectively. These findings were, again, replicated by Öst (1989) in a study based on 370 patients. In this study, separate analyses were carried out for each diagnostic subgroup. The conditioning pathway to fear was found to preponderate in all subgroups, but was especially pronounced in agoraphobia (81%) and least dominant in blood (45%) and animal (48%) phobias.

Öst's findings are difficult to reconcile with the view that aversive conditioning experiences are rare among phobics (Lazarus, 1971). Indeed, the findings of Öst have been taken as support for a classical conditioning approach to the etiology of phobias (Mineka, 1985; Eysenck, 1987). Mineka (1985), for example, remarked that "to the extent that Öst and Hugdahl's (1981) findings can be replicated in other countries, there is support for the proposition that direct conditioning models are useful for at least a slight majority of cases of severe phobias" (p. 213).

The present study seeks to replicate the findings by Öst and Hugdahl (1981) in a Dutch sample of phobic outpatients. A second issue in the present study is the nature of conditioning experiences in clinical phobias. McNally (1987) rightly remarked that controversy about the role of conditioning experiences in the etiology of phobias is complicated by "different definitions of what qualifies as a conditioning event" (p. 295). Barlow (1988) recently suggested that the conditioning experiences implicated in the study of Öst and Hugdahl (1981, 1983) consist mainly of panic attacks ('false alarms') in a context which prevents escape rather than painful, traumatic events.

## METHODS

### *Subjects*

Ss were 91 patients (37 male and 54 female) who applied for behavioral treatment at either the Behavior Therapy Unit, RIAGG, University of Limburg or at the Anxiety Disorders Research Project of the Psychiatric Department, University of Utrecht. The patients met DSM-III-R criteria for panic disorder with agoraphobia ( $n = 74$ ), agoraphobia without history of panic disorder ( $n = 1$ ), social phobia ( $n = 10$ ), or simple phobia ( $n = 6$ ). Patients ranged in age from 19 to 60 yr ( $M = 33$  yr). The mean duration of patients' complaints was 78 months ( $SD = 69$  months).

### *Assessment*

During his or her second visit to either clinic, the patients was asked to complete a Dutch version of the POQ (Öst and Hugdahl, 1981). The POQ consists of two sections. The first section contains 9 items concerning the origins of the phobia: 2 items ask about conditioning experiences, 4 are concerned with vicarious learning, and 3 ask about negative information. The response to each item is quantified in the form of a 2-fold classification (1 = yes, 0 = no). On the basis of these scores, fears can be classified as having a conditioning, modeling and/or informational background (Rachman, 1977). Presence of at least one yes-score was considered to be sufficient to assign the patient to the conditioning, modeling, and/or informational group. The second section of the POQ is concerned with physiological and cognitive concomitants of fear. The patient is asked to indicate on visual analog scales (VASs), ranging from 0 (never/not at all) to 10 (always/extremely), the extent to which he/she suffers from 11 physiological symptoms (e.g. flashes, respiratory irregularities) when confronted with the phobic object or situation. Furthermore, the patient is invited to indicate the extent to which he/she experiences 10 negative cognitions (e.g. I will faint, I will lose control) while in the phobic situation.

In addition, each patient was interviewed at which time, among other things, information

Table 1. Frequency of conditioning, vicarious learning and informational learning experiences in the sample ( $N = 91$ )

Pathway to fear	<i>n</i>	%
Conditioning	71	78
Vicarious learning	38	42
Informational learning	41	45

Table 2. Frequency distribution when patients are classified using mutually exclusive categories

Pathway to fear	<i>n</i>	%
Conditioning—only	26	29
Vicarious learning—only	03	03
Informational learning—only	01	01
No recall	13	14
Mixed	48	53

regarding the type of conditioning, modeling, and/or informational experiences, their context etc. was obtained.

## RESULTS

### *Mode of fear acquisition*

Table 1 shows the number of patients who indicated one or more conditioning, vicarious learning, and/or informational learning experiences. A  $\chi^2$  1-sample test (Siegel, 1956) revealed that conditioning experiences are reported far more frequently than either informational or vicarious learning experiences [ $\chi^2(2) = 14.9$ ,  $P < 0.01$ ]. It should be noted that the unequal number of items representing the three pathways to fear (i.e. 2 items for conditioning, 4 for vicarious learning, 3 for negative information) works against a frequency distribution in which conditioning prevails.

Table 1 also suggests that there must be a fair number of patients who indicate more than one type of experience. The data shown in Table 2 support this suggestion. In this table patients are classified using mutually exclusive categories. It is worth noting that, 45 out of 48 patients (94%) in the mixed category indicated a combination of conditioning and vicarious and/or informational learning. Only 3 (6%) patients reported both informational and vicarious learning experiences, but no conditioning events. A  $\chi^2$ -test revealed that the frequency in the mixed category significantly outweighs the frequencies in other categories [ $\chi^2(4) = 82.6$ ,  $P < 0.01$ ]. Yet, when  $\chi^2$ -testing was limited to the 'pure' categories of conditioning-only, vicarious learning-only, and informational learning-only, conditioning experiences were found to occur with significantly more frequency [ $\chi^2(2) = 38.6$ ,  $P < 0.01$ ].

The 'pure' conditioning category contained 21 patients with panic disorder with agoraphobia, 1 patient with agoraphobia without a history of panic, 2 social phobics, and 1 simple phobic. Closer examination of the interview data (see Table 3) showed that their conditioning experiences were of the following types: DSM-III-R defined panic attacks (18), fainting (3), nausea (2), sweating (2) and startle (1). None of the patients reported having experienced harm or pain inflicted by an external agent. It is worth noting that the conditioning event occurred outside the home in 20 (77%) patients. Seventeen (65%) patients recalled medical (e.g. kidney insufficiency, intestinal illness, pregnancy) or psychological (e.g. divorce, financial problems, death of a relative) factors that possibly contributed to the conditioning experience.

### *Physiological and cognitive concomitants*

For each patient a mean physiological and cognitive index of fear was computed by averaging the VAS-scores on physiological and cognitive items.

Table 3. Types of conditioning experiences and their environmental context as reported by phobic patients ( $n = 26$ )

Context	Panic attack (18)	Fainting (3)	Nausea (2)	Sweating (2)	Startle (1)
At work/school (6)	5		1		
In a shop (2)	2				
In a street (4)	2	1	1		
Other situations					
Outside home* (7)	4	1		2	
Alone at home (5)	4	1			
At home, but not alone (1)	1				1

\*Church, train etc.

Table 4. Mean ratings of physiological and cognitive symptoms of patients with a direct (conditioning) or patients with an indirect (informational/vicarious learning) fear acquisition. Standard deviations are given between parentheses

Pathway to fear	<i>n</i>	Physiological symptoms	Cognitive symptoms
Conditioning	26	5.4 (2.1)	4.9 (2.5)
Indirect	7	5.4 (2.8)	4.1 (2.4)

Table 4 shows the mean scores of patients in the 'pure' conditioning category and those in the indirect acquisition category (i.e. 'pure' vicarious/learning, 'pure' informational learning and combined vicarious informational learning category). *t*-Tests yielded no significant differences [for all comparisons:  $t(31) < 1$ ].

When the 'pure' categories were collapsed into one group ( $n = 30$ ) and compared to the 'mixed' category ( $n = 48$ ), there was a tendency for patients in the 'mixed' category to score higher than patients in the 'pure' category on physiological and cognitive symptoms. The means of 'mixed' and 'pure' patients were 6.1 (SD = 2.0) and 5.5 (SD = 2.2) [ $t(76) = -1.21$ ,  $P = 0.12$ , 1-tailed] for physiological symptoms, and 5.7 (SD = 2.4) and 4.9 (SD = 2.5) [ $t(76) = -1.37$ ,  $P = 0.08$ , 1-tailed] for cognitive symptoms.

## DISCUSSION

Three conclusions can be drawn from the results presented above. First, in accord with earlier studies (Rimm *et al.*, 1977; Öst and Hugdahl, 1981), it was found that conditioning experiences are common among phobic patients. If the overall frequency of conditioning experiences (i.e. 78%) is considered, the present study can be taken as a successful replication of findings reported by Öst and Hugdahl (1981, 1983). However, if patients with 'pure' exclusive pathways to fear are considered, the frequency of conditioning experiences (i.e. 29%) is more in line with data reported by Rimm *et al.* (1977). Thus, an important conclusion drawn from the present data is that the frequency of conditioning experiences found in a sample of phobics depends partially on the way in which these experiences are categorized (overall vs exclusive). Yet, whichever classification is chosen, it is clear that the present findings and those reported by Rimm *et al.* (1977) and by Öst and Hugdahl (1981) seem to cast doubt on the view that conditioning events play a negligible role in the etiology of phobias (Lazarus, 1971). Bearing in mind the limitations of retrospective studies, these findings seem to support the validity of experimental attempts to mimic phobias by using a classical conditioning procedure (e.g. Deitz, 1982; Malloy and Levis, 1988). However, it should also be noted that the conditioning experiences reported by the patients in the present study are certainly not of the same type as the aversive electric shock commonly employed in laboratory conditioning. In fact, it was found that a majority of the conditioning experiences fit very well with Barlow's (1988) 'false alarm' hypothesis. Most of the conditioning experiences our patients reported consisted of panic attacks which had occurred in a context in which escape was difficult.

Although it cannot be ruled out that in some monosymptomatic phobias, painful unconditioned stimuli play a crucial role (e.g. dental phobias; Davey, 1989), the data presented above indicate that, in the more complex phobias, frightful interoceptive sensations serve as conditioning experiences. The fact that for a majority of patients (i.e. 65%), these frightful sensations are precipitated by medical or psychological factors is in agreement with previously reported results (Burglass, Clarke, Henderson, Krietman and Presley, 1977). There is, however, one important problem with the view that acute panic attacks or aversive bodily sensations may serve as unconditioned stimuli promoting situational fears. It is far from settled that panic differs qualitatively from fear. Indeed, a strong case can be made for considering panic as intense anxiety (Ehlers and Margraf, 1989). To the degree that this view is correct, the etiology of (agora)phobias would not be fully elucidated by the somewhat question begging statement that phobias date back to the first occurrence of intense fear. Why do first panics occur and why do the majority of them occur outside the home in potentially agoraphobic places? Psychological models fare well when it comes to explaining the dynamics of the panic episode and its consequences (Franklin, 1987). Yet, the specific relation between panic and agoraphobia remains to be clarified. Are humans

biologically prepared to respond hyperalert to bodily sensations when these sensations occur in extra-territorial places (Marks, 1987)? *Post hoc*, this view fits much of the data but controlled evidence is sparse (van den Hout, Lavy, Boek, Dieren, de Jong, Lulofs and Merckelbach, 1989).

Second, a point that has not yet received much attention in discussions about pathways to fear is the possibility that clinical fears are the result of conditioning, vicarious and/or informational learning operating jointly. In the present study, 53% of patients reported having had more than one type of experience. Of course, it is possible that this percentage is somewhat inflated. For example, it may be that patients with an upsetting modeling experience not only react positively to questions concerning vicarious learning but also to questions concerning conditioning. Indeed, experimental conditioning studies (e.g. Hygge and Öhman, 1978; Mineka, 1987) have provided solid evidence that vicarious learning experiences can act as unconditioned stimuli. Even if it is accepted that the percentage of mixed experiences found in this study is overestimated, there are reasons to consider the 'mixed' pathways to fear a real and clinically relevant possibility. The present data showed a tendency for patients with a 'mixed' pathway to report more intense cognitive and physiological symptoms than patients with a 'pure' pathway.

Third, we found no evidence for Rachman's (1977) suggestion that phobias based on conditioning are dominated by physiological symptoms, whereas indirectly acquired phobias are dominated by cognitive symptoms. This negative finding is in line with the results reported by Öst and Hugdahl (1983) whose patient sample was highly similar to the sample of the present study in that it also consisted mainly of agoraphobics. These authors found no systematic relationship between mode of acquisition and loadings on anxiety components. However, in a sample of animal phobics, Öst and Hugdahl (1981) did find some evidence for the suggestion that a conditioning background is associated with physiological symptoms, while indirect fear acquisition is associated with cognitive symptoms. Thus, a relationship between mode of acquisition and symptoms, possibly depends on the type of phobia studied. Further, from Öst's evidence (1985), it can be concluded that Rachman's suggestion about an association between mode of fear acquisition and symptoms is potentially fruitful when the outcomes of different behavioural treatments are analysed.

In summary, the present study found that conditioning experiences are frequently reported by phobic patients. In all cases, the conditioning experiences were found to consist of frightful bodily sensations. Furthermore, the findings suggest that these experiences often operate jointly with vicarious and/or informational learning. This points to the necessity to take 'mixed' or combined pathways to fear into account.

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