Pathways to spider phobia

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Summary—Using a revised version of the Phobic Origin Questionnaire (POQ; Öst, L. G. & Hugdahl, K. Behavior Research and Therapy, 19: 439-47; 1981), the present study examined whether conditioning experiences, modelling experiences, and/or informational learning experiences were more often reported by spider phobics (n = 41) than by non-terrorful controls (n = 30). The two groups did not differ with regard to the overall frequency of conditioning or modeling events. Remarkably, the frequency of informational learning was higher among non-terrorful Ss than among phobics. Although the limitations inherent to the retrospective nature of the present study should be borne in mind, the data suggest that, at least in spider phobics, conditioning events, modeling experiences, and/or informational learning do not necessarily give rise to phobic fears.

INTRODUCTION

In contrast to the popular view that classical conditioning does not provide a valuable approach to phobias (e.g. Lazarus, 1971), a number of recent studies have found evidence to suggest that aversive conditioning experiences play an important role in the etiology of phobic fears (e.g. Öst, 1985, 1991; Öst & Hugdahl, 1981; Merckelbach, de Ruijter, van den Hout & Hockstra, 1989; Merckelbach, Arntz & de Jong, 1991). Without exception, these studies were based on the Phobic Origin Questionnaire (POQ; Öst & Hugdahl, 1981), a questionnaire that asks phobic patients to what extent their fears developed along a direct (traumatic experiences) and/or an indirect (vicarious learning and/or negative information) pathway (Rachman, 1977). The studies that relied on the POQ have yielded fairly consistent results (see reviews by Hugdahl, 1989; Rachman, 1990). For example, across all phobic subgroups (agoraphobia, social phobia, blood phobia etc.), a slight majority of the patients traced the origin of their fears to an aversive conditioning incident (Öst & Hugdahl, 1981; Merckelbach et al., 1989). Furthermore, acquisition through vicarious learning (modeling) was more common among animal phobias than among agoraphobias (Hugdahl & Öst, 1983; Merckelbach et al., 1991). Informational learning has been found to be relatively seldom among severe, clinical phobias.

The conclusions that can be drawn from the POQ-studies have two important limitations. To begin with, these studies are retrospective in nature. Mood-congruent recall effects or incorrect attributions cannot be ruled out when patients are invited to describe past how the origins of their complaints. Secondly, thus far, the POQ-studies have failed to take into account the responses of a non-phobic control group. Therefore, it is impossible to determine whether, for example, aversive conditioning events are sufficient to elicit phobic fear. While it is difficult to circumvent the potential problems that are inherent to retrospective investigations, it is possible to ask non-phobic controls whether they have had any traumatic experiences, modeling experiences, and/or informational learning experiences in connection with certain phobogenic stimuli (e.g. spiders). The inclusion of a non-phobic control group might provide a clue as to whether conditioning events and/or modeling necessarily give rise to phobic complaints. As for conditioning events, there are reasons to believe that these events do not always represent a sufficient condition for the development of fears. For example, Rachman (1990) drew attention to the fact that “people fail to acquire fears in what should be fear-conditioning situations, such as air raids” (p. 9; see also Rachman, 1977, 1985; Saigh, 1984). Lauch (1971) reported that the traumatic experiences recalled by dental phobics can also be found among non-terrorful Ss (but see Davey, 1989). Similarly, di Nardo, Guzy, and Baker (1988) found that dog phobics do not differ from non-terrorful Ss with respect to the frequency of aversive encounters with dogs. Heimst (1987) even found that animal phobics are “significantly less likely to report traumatic encounters with respect to their feared objects as compared to non-phobics” (p. 204).

Given the conflicting data concerning the status of conditioning events in phobias, one could, of course, retreat to a more pragmatic stance and abandon looking for the history of fears. Apart from the fact that such a pragmatism is theoretically unsatisfactory (van den Hout & Merckelbach, 1991), there might be good clinical reasons for considering the role of conditioning experiences in the development of fears. For example, Rachman (1977) hypothesized that there is a systematic relationship between type of etiology (direct acquisition vs indirect acquisition) and symptomatology. More specifically, he argued that directly acquired fears (conditioning) as opposed to indirectly acquired fears (modeling; negative information) load stronger on physiological than on cognitive symptoms. In their study of animal phobics, Öst and Hugdahl (1981) and Merckelbach et al. (1991) found, indeed, some evidence for this association between etiology and symptomatology (but see e.g. Öst, 1991). The first aim of the present study was to examine to what extent conditioning experiences, vicarious learning, and informational learning are characteristic for phobic Ss. In order to explore this issue, the POQ scores (see below) of severe spider phobics were compared to those of non-terrorful controls. The second issue that was examined concerned the relationship between mode of acquisition and symptomatology.

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METHOD

Subjects
Forty-one spider phobics (1 man) were included in the present study. They fulfilled DSM-III® criteria for simple phobia. Ss volunteered for an ongoing research program on spider phobia and were offered 'free treatment' in return for participation in experiments. Mean age was 28 yr (range: 15–61 yr). Mean onset age was 10 yr (range: 3–21 yr). The mean score on the Spider Questionnaire (SQ; Klieorman, Weerts, Hastings, Molendam & Lang, 1974) was 22.8 (range: 14–29; SD = 3.9). This score is comparable to the scores that were reported by Fredriksson (1983) and Merckelbach et al. (1991) for their samples of spider phobics.

Control Ss were recruited among students and university employees. From the sample of 38 control Ss, 8 had to be excluded because of SQ scores in the subclinical range (14 or above). This finding is in itself interesting and confirms the idea that spider fear is a widespread phenomenon (Merckelbach, van den Hout & van der Molen, 1987; Aron et al., 1993). The mean age of the remaining Ss (n = 30; 1 man) was 25 yr (range: 18–53 yr). Their mean SQ score was 5.5 (range: 2–11; SD = 2.5).

Assessment
Before receiving one-session treatment as described by Öst (1989), phobic Ss completed the SQP (Klieorman et al., 1974) and a revised version of the POQ (Öst & Hugdahl, 1981). The POQ is a paper-and-pencil test that is concerned with learning history and phobic symptomatology. The POQ version used in the present study consists of two sections. The first section contains 9 questions that have to be answered in a yes/no format. Three questions pertain to conditioning events (e.g. "Do you think that the start of your fear can be traced back to any specific event or situation where you have been frightened or hurt?"), 3 questions pertain to vicarious learning (e.g. "Did your mother fear the same situation[s] at the time your phobia started?"); and 3 questions pertain to exposure to negative information (e.g. "Do you have any memory of having heard unpleasant things in relation to the situation you now fear?"). In the present study, the occurrence of at least one affirmative answer was considered to be sufficient to assign the patient to the conditioning, modeling, and/or informational learning category in contrast to the procedure used by Öst and Hugdahl (1981); this scoring system allows for the possibility that patients (and control Ss) are assigned to more than one category (see for a similar procedure Ollendick & King, 1991).

The second section of the POQ lists 21 symptoms, 10 of these being physiological symptoms (e.g. 'Lump in throat'; 'you become dizzy') and 11 being cognitive symptoms (e.g. 'I will faint'; 'I will lose control and do something crazy'), that might occur during confrontation with the phobic stimulus. Using 10 cm Visual Analog Scales (VASs) that ranged from 0 (never/not at all) to 10 (always/extremely), phobic Ss rated to what extent they suffered from these symptoms. VAS-scores were averaged separately for physiological and cognitive symptoms.

Control Ss also completed the SQP. Following this they were given an oral version of the first POQ-section. That is to say, Ss were asked whether they remembered any traumatic or painful incidents in connection with spiders (3 questions), whether they had family members or friends who were strongly afraid of spiders (3 questions) and whether they heard more often about spiders. Again, for example, "Have you ever met a spider?" was considered sufficient to assign the S to the conditioning, modeling, and/or informational learning category. To ensure that these Ss would represent a non-fearful rather than a low-fearful control group, the records of Ss with a SQP score higher than 14 were excluded.

RESULTS
The frequency of phobic Ss and control Ss who endorsed at least one conditioning item, modeling item, and/or information item is represented in Table 1. The frequency of conditioning experiences was not significantly higher among spider phobics than among control Ss ($\chi^2(1) = 0.7, P = 0.38$). Similarly, the groups did not differ with regard to the frequency of modeling experiences ($\chi^2(1) = 0.36, P = 0.54$). Interestingly, informational experiences were more common among control Ss than among spider phobics ($\chi^2(1) = 9.1, P < 0.01$).

Table 2 shows the frequency distribution when mutually exclusive categories are used. When all categories are entered into a $\chi^2$ test, no significant differences emerge ($\chi^2(7) = 11.7, P = 0.11$). Yet, when the $\chi^2$ is limited to the 'pure' categories (conditioning-only, modeling-only, and informational learning-only), a significant difference appears ($\chi^2(2) = 8.7, P < 0.05$), due to the fact that the informational learning-only category contains more control cases than phobic cases, while the reverse is true for the conditioning-only and the modeling-only category. However, given the small numbers of Ss in these categories, the latter finding should be interpreted with caution. When $\chi^2$ testing is limited to the mixed categories (conditioning plus modeling etc.), no convincing difference appears ($\chi^2(3) = 6.3, P = 0.10$).

In order to assess whether there was a relationship between pathways to fear (first section POQ) and symptomatology (second section POQ), a direct and an indirect acquisition group was formed. The direct group contained 27 phobic cases with a conditioning event (conditioning-only, conditioning plus modeling etc.; see Table 2). The indirect group contained 10 phobic cases without conditioning event (modeling-only, modeling plus informational learning etc.; see Table 2). There

<table>
<thead>
<tr>
<th>Spider phobics</th>
<th>Control Ss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathway of fear</td>
<td>n</td>
</tr>
<tr>
<td>Conditioning</td>
<td>27</td>
</tr>
<tr>
<td>Modeling</td>
<td>24</td>
</tr>
<tr>
<td>Informational learning</td>
<td>14</td>
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</tbody>
</table>

Table 2. Frequency distribution when phobics (n = 41) and control Ss (n = 30) are classified using mutually exclusive categories.

<table>
<thead>
<tr>
<th>Spider phobics</th>
<th>Control Ss</th>
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<tbody>
<tr>
<td>Pathway to fear</td>
<td>n</td>
</tr>
<tr>
<td>Conditioning-only</td>
<td>9</td>
</tr>
<tr>
<td>Modeling-only</td>
<td>4</td>
</tr>
<tr>
<td>Information-only</td>
<td>1</td>
</tr>
<tr>
<td>Conditioning plus modeling</td>
<td>10</td>
</tr>
<tr>
<td>Conditioning plus information</td>
<td>3</td>
</tr>
<tr>
<td>Modeling plus information</td>
<td>5</td>
</tr>
<tr>
<td>All three pathways</td>
<td>5</td>
</tr>
<tr>
<td>No real/role of the pathways</td>
<td>4</td>
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was no difference between the direct and indirect group with regard to the intensity/frequency of physiological symptoms, the means being 5.9 (SD = 1.5) and 6.0 (SD = 1.2), respectively [r(35) < 1.0]. In addition, direct acquisition and indirect acquisition Ss were not different with regard to their cognitive symptom ratings, the means being 5.7 (SD = 1.5) and 5.1 (SD = 1.1), respectively [r(35) < 1.0].

DISCUSSION

The findings presented above are in accordance with earlier studies (e.g. Öst & Hugdahl, 1981; Merkelbach et al., 1991) in that they show that a small majority of the spider phobics (66%) attribute their fear to conditioning experiences. However, concluding from this that conditioning represents a predominant pathway to spider fear is problematic because a majority of non-fearful Ss (60%) also reported conditioning experiences. Thus, it appears that conditioning experiences per se do not give rise to spider phobias. Similar conclusions were reached by di Nardo et al. (1988) in their study of dog phobias and Hekmat (1987) in his study of animal phobias. Nor did the frequency of modeling experiences differentiate spider phobics from non-fearful Ss. The only convincing difference between the two groups concerned informational learning: non-fearful Ss more frequently recalled instances of informational learning than spider phobics. This finding can be accounted for by the plausible assumption that spider phobics avoid information about spiders, while non-fearful Ss do not.

In all, the present data show that conditioning and modeling experiences are highly prevalent among fearful and non-fearful Ss. Yet, before jumping to the conclusion that conditioning and modeling do not play a decisive role in the etiology of phobias, the following remarks are in order. Firstly, like all previous POQ-studies (e.g. Öst & Hugdahl, 1981), the present study concentrated on the occurrence of conditioning events, modeling experiences etc. No attempt was made to measure the intensity of these experiences. It may well be that intensity of conditioning and/or modeling events rather than their mere occurrence differentiates phobics from non-fearful controls.

Secondly, spider fear represents a special subgroup of the phobias: it is a common fear (e.g. Kirkpatrick, 1984) and many people, phobic or not, must have been teased with spiders (which can be construed as a conditioning event; Hekmat, 1987) and/or must have been exposed to negative information about spiders. Likewise, most people probably know someone who is strongly afraid of spiders. It would not be surprising if future investigations would find that this state of affairs is characteristic for spider phobia and does not occur in, say, agoraphobia. Also relevant to this issue are the studies by Davey and co-workers (Foster & Davey, 1991; Matchett & Davey, 1991). Starting from the finding that in a normal population disgust/somatopsychic sensitivity correlates with fear of such animals as spiders, rats, cockroaches etc., these authors proposed a disease/avoidance model of animal fears. According to this model, fear of spiders is acquired on the basis of disgust/somatopsychic sensitivity rather than conditioning or modeling experiences. The source of this disgust/somatopsychic sensitivity would be an intra-familial transmission process (Foster & Davey, 1991). However, whether disgust/somatopsychic sensitivity is a defining characteristic of severe spider phobias remains to be shown.

Thirdly, the present results do, of course, not preclude the possibility that spider phobias develop along the more subtle conditioning scenarios that are the focus of neo-Pavlovian learning theories (e.g. Davey, 1989; Rachman, 1991; van den Hout & Merckelbach, 1991). For example, there are reasons to believe that traumatic conditioning events give rise to fear to the extent that there has been no 'latent inhibition', i.e. no CS pre-exposure (Davey, 1989). Furthermore, processes that lead the individual to reevaluate conditioning experiences more favourably ('UCS revaluation') are known to attenuate fear responses (White & Davey, 1989; Merckelbach & de Jong, 1991). That far, phenomena such as latent inhibition and UCS-revaluation have been documented in the laboratory and their clinical usefulness awaits further study. But, as Rachman (1991) argues in his recent review of neo-Pavlovian notions, "the new view is still too liberal. It lacks limits, and there is little that it disallows" (p. 169).

The present study failed to find evidence for Rachman's (1977) hypothesis that there is a systematic relationship between mode of acquisition (conditioning vs indirect acquisition) and (self-reported) phobic symptomatology (physiological vs cognitive symptoms). Some of the previous POQ studies did find such a relationship (Öst & Hugdahl, 1981; Merkelbach et al., 1991), though not of a dramatic magnitude, whereas a number of others did not (Hugdahl, 1983; Merkelbach et al., 1988; Öst, 1991). Thus, it seems fair to conclude that if there is an association between mode of acquisition and self-reported symptomatology, it is at best a weak one.

To summarize, the current study found no significant differences in the frequency of conditioning and modeling experiences among spider phobics and non-fearful controls. This finding is difficult to reconcile with traditional conditioning or modeling accounts of spider phobia. Future investigations should consider whether UCS intensity, disgust/somatopsychic sensitivity, and neo-Pavlovian phenomena such as latent inhibition and UCS-revaluation play a role in the etiology of spider phobia.

REFERENCES


