INTRODUCTION

According to Rachman's (1977, 1990) influential model of phobic etiology, there are three pathways to phobic fear: aversive classical conditioning, modeling (i.e. vicarious learning), and negative information transmission. To evaluate the reliability of the information provided by the children, parents were independently interviewed about the origins of their children’s phobias. While 46% of the children claimed to have always been afraid, 41% ascribed the onset of their fear to aversive conditioning events. The large majority of these events were confirmed by parents. These findings cast doubts on a strong version of the non-associative account of spider phobia, i.e. the idea that spider phobia is acquired in the complete absence of learning experiences. Copyright © 1996 Elsevier Science Ltd

SHORTER COMMUNICATIONS

Pathways to fear in spider phobic children

HARALD MERCKELBACH, PETER MURIS and ERIK SCHOUTEN
Department of Psychology, Limburg University, PO Box 616, 6200 MD, Maastricht, The Netherlands

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Summary—Twenty-two children with spider phobia were interviewed about the origins of their fear. More specifically, children were asked about conditioning events, modeling experiences, and negative information transmission. To evaluate the reliability of the information provided by the children, parents were independently interviewed about the origins of their children’s phobias. While 46% of the children claimed to have always been afraid, 41% ascribed the onset of their fear to aversive conditioning events. The large majority of these events were confirmed by parents. These findings cast doubts on a strong version of the non-associative account of spider phobia, i.e. the idea that spider phobia is acquired in the complete absence of learning experiences. Copyright © 1996 Elsevier Science Ltd

INTRODUCTION

According to Rachman's (1977, 1990) influential model of phobic etiology, there are three pathways to phobic fear: aversive classical conditioning, modeling (i.e. vicarious learning), and negative information transmission (i.e. exposure to negative information about the phobic object). A number of studies have sought to evaluate the contribution of these pathways to the acquisition of clinical phobias (e.g. Öst & Hugdahl, 1981; Öst, 1987; see, for a review, Merckelbach, de Jong, Muris & van den Hout, 1996). Most of these studies made use of the Phobic Origins Questionnaire (POQ; Ost & Hugdahl, 1981), a self-report instrument that asks patients to give a retrospective judgement as to whether the three pathways played a decisive role in the onset of their complaints. The findings of the POQ studies can be summarized as follows. Firstly, while a slight majority of all phobic patients attribute their symptoms to conditioning experiences, this type of experience seems to play a more prominent role in some phobias (e.g. claustrophobia) than in other phobias (e.g. animal phobias; Öst, 1987, 1991). Secondly, modeling experiences are more frequently reported by animal phobics than by claustrophobics (Öst, 1987; Merckelbach, Arntz & de Jong, 1991), whereas negative information processing is the least prominent factor across all phobias (Öst, 1987). Thirdly, patients often indicate that more than one pathway contributed to the onset of their fears and there is evidence to suggest that this is associated with higher fear levels (Ollendick & King, 1991; Merckelbach, de Ruiter, van den Hout & Hoekstra, 1989).

In general, the POQ studies support Rachman's (1977, 1990) three-pathway model of phobic etiology. That is, the findings of these studies underline the role of classical conditioning, modeling, and to a lesser extent, negative information in the acquisition of fears and phobias. However, recently some authors have criticized the validity of the POQ studies (e.g. Menzies & Clarke, 1994, Whithers & Deane, 1995). These authors argue that the POQ is a retrospective instrument that might be susceptible to memory bias. Another critical point raised by these authors is that POQ studies do not employ a strict definition of what qualifies as a conditioning experience. Another critical point raised by these authors is that POQ studies do not employ a strict definition of what qualifies as a conditioning experience. This could have lead to an overstatement of the role of conditioning in the origins of phobias. A third criticism is that the POQ is biased in favour of Rachman's (1977) model. That is, the POQ items are restricted to conditioning, modeling, and negative information transmission and consequently, this instrument does not include other options (e.g. "I've always been afraid"). This might have led to an underestimation of etiological scenarios that do not involve learning experiences. For example, using the Origins Questionnaire, Jones and Menzies (1995) found that the majority of their spider fearful undergraduates (i.e. 13 out of 19 Ss) endorsed the "have always been afraid of spiders" option of this questionnaire, an option that is not available in the POQ. Jones and Menzies (1995) argue that this finding supports a non-associative account of phobias (Menzies & Clarke, 1995). Central to this account is the assumption that most specific phobias derive from developmental fears that are elicited by evolutionary-relevant cues. Accordingly, the acquisition of these phobias would not depend on critical learning experiences (i.e. conditioning, modeling, information transmission). The non-associative account and the empirical findings on which it rests are difficult to reconcile with recent findings reported by Kheriaty, Kleinknecht and Hyman (1996). These researchers employed the POQ and the Phobia Origins Structured Interview (POSI) to evaluate the role of learning experiences in a sample of undergraduates with dog fear or blood/injection fear. With both methods, conditioning-like experiences were found to be the most frequently reported cause of fear onset. Moreover, in a majority of cases, the reported onset experiences were confirmed by parents.

While the study by Kheriaty et al. (1996) and that by Jones and Menzies (1995) yielded conflicting findings, they share two important limitations. To begin with, these studies predominantly relied on analogue Ss, i.e. fearful rather than clinically phobic Ss. Furthermore, the Ss in these studies were adult students. As most specific phobias typically begin before the age of 10, one might question the retrospective accounts of these Ss about the origins of their complaints. A failure to retrieve relevant memories might lead to an overestimation of the "have always been afraid" (i.e. the non-associative) category and an underestimation of conditioning, modeling, and/or negative information factors.
Jones and Menzies (1995) argued that studies on etiological pathways in phobias might profit from two strategies: "First, parental reports could be used to confirm phobic memories of events in early childhood. Second, child Ss with early onset phobias could be used to reduce the time between onset and subsequent conditioning" (Jones & Menzies, 1995; p. 233). The present study combined both strategies. That is, spider phobic children were interviewed about the onset of their fears and independently, parents were asked about the circumstances that surrounded the onset of their child's phobia.

**METHOD**

**Subjects**

Children were 22 spider phobic girls with a mean age of 11.6 yr (range: 9-14 yr). They applied for treatment at the Spider Phobia Project for Children at Limburg University. Children and their parents were invited to participate in ongoing research in return for "free" treatment. All children met DSM-III-R criteria for simple phobia (animal type). This diagnosis was assigned on the basis of the Diagnostic Interview Schedule for Children (DISC; National Institute of Mental Health, 1992); a semi-structured interview that was conducted by a senior psychologist. The mean score of the children on the 15-item version of the Spider Phobia Questionnaire for Children (SPQ-C; Kindt, Brosschot & Muris, 1996) was 9.7 (SD = 1.9).

**Procedure**

All children were accompanied by one of their parents (5 fathers; 17 mothers). Before receiving one-session behavioral treatment, the children and their parents completed spider phobia questionnaires (SPQ or SPQ-C) and an instrument measuring Disgust Sensitivity. The data thus gathered will be described in detail in another article.

Next, children were interviewed about the onset of their spider phobia. This was done with a revised and extended version of the POQ (Öst & Hugdahl, 1981). This version consists of two sections. The first section asks about the onset age and the course of the fear. This section also contains a "have always been afraid" option. The second section consists of questions about conditioning events (2 items), modeling experiences (2 items), and exposure to negative information (2 items). If a question is answered affirmatively, the S is invited to provide details of the event. If the S is able to describe such details, he/she is asked whether he/she was already phobic when the event took place.

During the interview with the POQ, the accompanying parent was not present. Following the interview, the child received treatment. During this time, the parent was interviewed about the onset and origins of the child's spider phobia. In this interview, the same POQ items were used as in the interview with the child. The parent was not informed about the POQ answers of the child. Child and parent interviews were conducted by a senior psychologist. A child was assigned to conditioning, modeling or negative information pathway if, and only if: (a) she responded positively to the pertinent item; (b) she could provide details of the event; (c) she felt that the event qualified as an onset event.

Agreement between parents' and children's responses to the POQ items were evaluated by means of Cohen's Kappa. Ambiguities in children's or parents' reports were resolved through a consensus discussion among the researchers.

**RESULTS**

The mean age of onset reported by the children was 5.1 yr (SD = 3.4). Parents tended to give an earlier age of onset for their child's phobia [M = 4.3; SD = 2.8; t(19) = 1.5, P = 0.16, two-tailed]. Most children (i.e. 73%) said that their phobia had become worse over time, although parents did not always confirm this (κ = 0.10).

Table 1 presents the percentage of children who reported conditioning, modeling, and/or negative information events as well as the percentage of children who claimed that their fear had always been present. The distribution of parents' reports on phobia onset and resulting χ values are also shown. In general, satisfactory χ values were found for the agreement between parents and children. Children's reports were not evenly distributed over the different options [Cochran's Q(5) = 24.8, P < 0.001]: the "always been afraid" option and the conditioning onset were more often mentioned than the other options.

Table 2 shows the frequency of conditioning, modeling, and negative information reports in the subsample of children who indicated that they had always been afraid of spiders (10 out of 22 children; 45.5%). To construct this table, more liberal criteria for conditioning, modeling etc. were adopted. That is to say, conditioning, modeling etc. had to be described in some detail, but they were not related to fear onset. Interestingly, high percentages of negative information and modeling mediated by others and a relatively low percentage of conditioning were found [Cochran's Q(4) = 23.2, P < 0.001].

Table 1. Percentage of conditioning modeling and negative information reports and "always been afraid" option of children (N = 22) and parents (N = 22)

<table>
<thead>
<tr>
<th></th>
<th>% Children</th>
<th>% Parents</th>
<th>κ</th>
</tr>
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<tbody>
<tr>
<td>Conditioning</td>
<td>40.9</td>
<td>36.4</td>
<td>0.89</td>
</tr>
<tr>
<td>Modeling mother</td>
<td>13.6</td>
<td>13.6</td>
<td>0.72</td>
</tr>
<tr>
<td>Modeling father</td>
<td>4.5</td>
<td>4.5</td>
<td>1.00</td>
</tr>
<tr>
<td>Modeling others</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Negative information</td>
<td>4.5</td>
<td>0.0</td>
<td>0.44</td>
</tr>
<tr>
<td>Always been afraid</td>
<td>45.5</td>
<td>54.5</td>
<td>0.84</td>
</tr>
</tbody>
</table>
Table 2. Conditioning modeling and negative information reports (employing liberal definitions) in children who claimed that their phobia has always been present (N = 10).

<table>
<thead>
<tr>
<th>Percentage</th>
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<tbody>
<tr>
<td>Conditioning</td>
</tr>
<tr>
<td>Modeling mother</td>
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<tr>
<td>Modeling father</td>
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<td>Modeling others</td>
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DISCUSSION

The chief results of the present study can be catalogued as follows. First, conditioning onset events were reported by a substantial proportion of spider phobic children (i.e. nearly 41%). Second, the majority of these events were confirmed by parents. Third, 46% of the children claimed that they had always been afraid of spiders. Fourth, even in this subsample, reports about negative information, modeling, and, to a lesser extent, conditioning were found, albeit that these events were not related to onset.

By and large, the findings of the present study are difficult to reconcile with a strong version of the non-associative account of phobias (Menzies & Clarke, 1995). According to this position, specific phobias such as spider phobia are innate fears that are acquired in the absence of discrete learning experiences (e.g. conditioning, modeling). The main argument in favour of this position is the finding that adults with, for example, spider phobia often indicate that their fear has always been present (Kirkby, Menzies, Daniels & Smith, 1995; Jones & Menzies, 1995). Given the extensive time period between adult age and the typical early childhood onset for spider phobia, this argument is not convincing.

In the current study, nearly 41% of the children with spider phobia were able to provide an articulated report of a conditioning onset event and most of these events were confirmed by their parents. It should be noted that we employed a strict criterion for conditioning onset events: children not only had to describe the events in some detail, but also had to indicate explicitly that these events were related to the onset of their complaints. Inspection of the incidents that qualified for a conditioning onset revealed that most of them could be interpreted in terms of a CS-UCS scenario. For example, one child told that she and her parents moved to a new house. At night, she felt very uneasy in her new bedroom (UCS) and discovered a black spider (CS) on the wall. After that she developed an intense spider fear. Another girl described how she was sitting in a bath. She was alone and was startled (UCS) when unexpectedly a spider (CS) crept out of the outlet. The girl called her mother, who did not respond. After this incident, the girl developed a spider phobia. While such events can be construed in terms of a CS-UCS sequence, it should be acknowledged that none of them involved the pairing of a spider CS with a painful UCS.

A minority of children reported modeling experiences as a factor contributing to the onset of their fears. In these cases, vicarious learning was mediated by the mother rather than the father. This is in accordance with the study by Muris, Steerneman, Merckelbach and Meesters (1996). In that study it was found that fearful behavior of mothers, but not that of fathers contribute to anxiety levels of children.

It is worth noting that exposure to negative information, modeling experiences, and, to a lesser extent, conditioning were also reported by children who said that their fear had always been present. Clearly, these reports did not refer to onset events. However, the possibility that in these cases, post-onset negative information, modeling, etc. contributed to a chronic course of spider phobia should not be overlooked. Note that a strong version of the non-associative account, i.e. clinical phobias derive from spontaneous, developmental fears, leaves unexplained why not all people suffer from such phobias (Merckelbach et al., 1996; Merckelbach & de Jong, 1996). Indeed, a weak version of the non-associative account, i.e. specific phobias are the product of discrete learning experiences superimposed on developmental fears, may provide a better model for the subsample of phobics who claim that their phobia has always been present. Consistent with such an interpretation is the fact that most girls in the present study (i.e. 73%) said that their phobia had become worse over the years.

While the present study supports the notion that conditioning and, to a lesser extent, modeling play a role in the etiology of spider phobia, it does not allow for firm conclusions as to the causal status of these onset events. An obvious limitation of the current study is the absence of a non-phobic control group. It may well be the case that conditioning and modeling events do also figure in the learning history of non-phobic children (e.g. Merckelbach, Arntz, Arrindell & de Jong, 1992). If true, this would suggest that these pathways to fear only give rise to spider phobia if they interact with certain personality characteristics (e.g. disgust sensitivity; Matchett & Davey, 1991; Merckelbach, de Jong, Arntz & Schouten, 1993) and/or developmental fears.

REFERENCES


