The etiology of childhood spider phobia

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Summary—Twenty-six girls with a clinical spider phobia and 26 matched control girls were interviewed using the Parental Report Questionnaire, and negative information experiences in connection with spiders. In addition, parents of the phobic girls were independently interviewed about the origins of their child’s phobia. Phobic children more often reported aversive conditioning experiences with spiders than did control children. Also, in a number of cases, conditioning events described by the phobic children were confirmed by their parents, a result that replicates the findings of Mézénès and Schouten (1995). Together, the results contral to a strong version of the non-associative account of phobias and suggest that in at least some cases, conditioning events may contribute to the development of (childhood) spider phobia. © 1997 Elsevier Science Ltd

INTRODUCTION

According to Rachman’s (Rachman, 1977) three-pathways model, the etiology of phobias depends on conditioning, modeling and/or negative information experiences (see for reviews, Rachman, 1990, 1991). In an attempt to evaluate this model, several studies have interviewed adult phobic patients about the onset of their phobia (e.g. Ost & Hugdahl, 1981; Merckelbach, Arntz & de Jong, 1991). By and large, these retrospective clinical studies have found evidence supportive of Rachman’s three-pathways model (see for a review, Merckelbach, de Jong, Muris & van den Hout, 1996a). Mézénès and Clarke (1994, 1995) have criticized this line of research on the ground that it primarily relied on a biased instrument, namely the Phobic Origin Questionnaire (POQ). More specifically, Mézénès and Clarke (1994) emphasize that the POQ comprises poorly defined conditioning-, modeling-, and negative information-items and this may have resulted in an overestimation of the extent to which the three pathways play a role in phobic etiology. Another difficulty with the POQ identified by Mézénès and Clarke (1994) is that it does not include items referring to a non-associative scenario of fear acquisition (see below). That is, the POQ does not contain answer categories such as ‘I’ve always been afraid of this object or situation’. Mézénès and Clarke (1994) reason that by not including these answer options, the POQ limits its findings from the outset.

As an alternative to the three-pathways model, Mézénès and Clarke (1995) have proposed a non-associative model of phobic etiology. This model assumes that specific phobias may occur in the absence of any antecedent negative experience. In the words of Mézénès and Clarke (1995): "(...) what is being claimed (...) is that fear of some stimulus can develop in the absence of any previous experience with the feared stimulus. No direct or indirect traumatic pairing with the feared stimulus is required, and neither is negative information" (p. 38). According to their Darwinian-based model, specific phobias like spider phobia represent innate fears of special evolutionary dangers. By this view, specific fears arise more or less spontaneously on the first encounter with these dangers and in some individuals, they may take a chronic course and result in clinical phobias.

In line with the non-associative account of phobic etiology, Jones and Menzies (1995) found that a majority of their sample of spider fearful undergraduates (i.e. 63%) claimed to have always been afraid of spiders. Likewise, in a study by Kirkby, Menzies, Daniels and Smith (1995), a majority (86%) of adult spider phobics indicated that their phobia had always been present, i.e. had arisen in a non-associative way. From results such as these, Menzies, Clarke, and co-workers conclude that spider phobia is a typical example of a non-associative fear (see e.g. Jones & Menzies, 1995; Menzies & Clarke, 1995). Yet, as Menzies and Clarke (1994, p. 308) themselves admit, a problem with these studies is that they cannot distinguish phobics who have always been afraid from those who have never had conditioning, modeling, and/or negative information events related to the onset of their fear. This point seems to be especially relevant to spider phobia, as this condition is known to have an early onset (Ost, 1987).

One strategy to reduce this problem is to study pathways to specific fears and phobias in children. Another strategy to increase the reliability of research concerned with phobic etiology is to collect parental reports about etiologic factors and examine whether they confirm reports provided by the phobic subjects. Recent studies have employed both strategies. For example, Olendick and King (1991) tested Rachman’s three-pathways model with an analog sample of Australian and American children. These authors found support for Rachman’s model in that children often attributed their fear to a combination of conditioning events and modeling or negative information. Using a stricter definition of the three pathways, Muris, Merckelbach and Collaris (1997) found their analog sample that conditioning was the most commonly reported pathway related to the exacerbation or onset of children’s top intense fear. A similar finding was reported by King, Cowles-Hollins and Olendick (1997) who interviewed parents of children with a clinical dog phobia. A substantial proportion of the parents (27%) believed conditioning events to be responsible for their child’s phobia, while an even greater proportion of parents (53%) endorsed modeling as the most significant factor. A somewhat differ-
ent pattern was found in a study by Merckelbach, Muris and Schouten (1996b) for a sample of spider phobic children. In that study, children were asked about the onset of their phobia, while their parents were independently interviewed about this issue. Almost half of the children claimed to have always been afraid, 41% of the children attributed the onset of their fear to conditioning experiences, whereas modeling experiences and negative information experiences were less often reported by the children (18% and 5%, respectively). Most importantly, a substantial proportion of the conditioning and modeling events reported by the children were confirmed by their parents (see, for similar findings in an adult sample, Khairatly, Kleinman & Hyman, 1995).

Taken together, these recent findings cast doubts on a strong version of the non-associative account, i.e., the idea that specific phobias develop in the complete absence of learning experiences associated with the phobic object. Still, one could counter that conditioning or modeling experiences reported by phobics and their parents do not demonstrate that these experiences "in and of themselves carry an increased risk to develop phobia because their base rate in the population has not been determined" (Fredrickson, Annas & Wik, 1997, p. 27). In other words, it would be useful to have etiologic reports of phobic children and their parents and to compare them to the base rate of such reports in matched control children. The current study followed that strategy.

METHOD

Subjects and assessment

Subjects were 26 spider phobic girls with a mean age of 12.6 yr (SD = 2.6). They fulfilled DSM criteria for simple (specific) phobias, as was confirmed by an interview with their parents using the revised version of the Diagnostic Interview Schedule for Children (DISC-R; National Institute of Mental Health, 1992). The children applied for treatment at a university-based phobia-treatment program.

Non-phobic control girls (n = 26) were recruited from a pool of children attending regular classrooms. Only girls who stated that they were not afraid of spiders were included in the study. Their mean age was 12.4 yr (SD = 2.5).

Phobic girls were tested individually at the university laboratory. They were accompanied by one of their parents. Non-phobic girls were tested individually in a class room. Both phobic and non-phobic girls completed the Spide Phobia Questionnaire for Children (SPQ-C; Kinck, Broschot & Muris, 1996), a 15-item self-report instrument that measures fear of spiders. SPQ-C scores range from 0 (not at all fearful of spiders) to 15 (extremely fearful of spiders). Phobic and non-phobic girls also underwent a Behavior Avoidance Task (BAT): children were asked to approach a live spider in a gradual fashion that involved 10 steps. Accordingly, BAT performance was scored on a 10-point scale ranging from 1 (spider at 2 m distance) to 10 (spider on the hand). As expected, phobic girls had significantly higher SPQ-C scores than non-phobic girls, means being 10.0 (SD = 1.6) and 9.7 (SD = 1.6), respectively (t(50) = 2.14, P < 0.001). Likewise, phobic girls exhibited considerably more avoidance behavior on the BAT than did non-phobic controls, means being 5.1 (SD = 2.4) and 9.7 (SD = 0.7), respectively (t(50) = 9.1, P < 0.001).

‘Origin of fear’ interview

Following the SPQ-C and the BAT, phobic and non-phobic girls were interviewed with an extended and revised version of the POQ (Ott & Hugdahl, 1981; see also Merckelbach et al., 1996b). More specifically, children were asked whether they had conditioning experiences, modeling experiences mediated by mother, father or others, and/or negative information experiences. Children were instructed that only experiences associated with spiders were relevant. Phobic children were also explicitly asked whether they had always been afraid of spiders. Phobic children who claimed to have conditioning, modeling and/or negative information experiences were invited to describe them in detail. In addition, they were asked whether they thought that the experiences played a role in the onset of their phobia.

Following the POQ interview, the phobic girls received a one-session exposure treatment. During this time, the accompanying parents were interviewed with an adapted version of the POQ. Parents were asked whether they believed that their child had conditioning, modeling and/or negative information experiences related to spiders. If so, they were invited to provide details about these experiences and asked whether they thought that the experiences were related to the onset of their child’s spider phobia. Parents were not aware of the POQ answers of their child.

Analysis of the data was done in two steps. First, phobic and non-phobic children were compared with regard to the frequency of conditioning, modeling, and negative information reports. Second, the experiences reported by the phobic children were compared with the information provided by the parents. For this part of the data analysis, more stringent criteria for the three pathways were adopted. That is, phobic children and their parents were assigned to a specific pathway if and only if (a) they reported experiences that were relevant to that pathway; (b) they were able to describe the experiences in some detail; and (c) they believed that the experiences played a role in the onset of the phobia.

Table 1. Percentage of conditioning, modeling, and negative information reports (employing liberal criteria) for phobic children and matched controls

<table>
<thead>
<tr>
<th>Experience</th>
<th>Phobics (n = 26)</th>
<th>Controls (n = 26)</th>
<th>χ²</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioning</td>
<td>42.3</td>
<td>7.7</td>
<td>8.3</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>Modeling mother</td>
<td>65.4</td>
<td>38.5</td>
<td>3.8</td>
<td>&lt; 0.10</td>
</tr>
<tr>
<td>Modeling father</td>
<td>3.8</td>
<td>7.7</td>
<td>0.4</td>
<td>NS</td>
</tr>
<tr>
<td>Modeling others</td>
<td>92.3</td>
<td>76.9</td>
<td>2.4</td>
<td>NS</td>
</tr>
<tr>
<td>Negative information</td>
<td>76.9</td>
<td>65.4</td>
<td>1.6</td>
<td>NS</td>
</tr>
</tbody>
</table>
Table 2. Percentage of conditioning, modeling, and negative information reports (using strict criteria) and the 'always been afraid' option for phobic children and their parents

<table>
<thead>
<tr>
<th></th>
<th>Children (n = 30)</th>
<th>Parents (n = 30)</th>
<th>Percent agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditioning</td>
<td>23.1</td>
<td>11.5</td>
<td>65.4</td>
</tr>
<tr>
<td>Modeling mother</td>
<td>7.7</td>
<td>23.1</td>
<td>36.9</td>
</tr>
<tr>
<td>Modeling father</td>
<td>3.8</td>
<td>0.0</td>
<td>96.2</td>
</tr>
<tr>
<td>Modeling others</td>
<td>3.8</td>
<td>3.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Negative information</td>
<td>3.8</td>
<td>3.8</td>
<td>92.3</td>
</tr>
<tr>
<td>Always been afraid</td>
<td>61.5</td>
<td>61.5</td>
<td>50.0</td>
</tr>
</tbody>
</table>

RESULTS

Table 1 shows percentages of phobic and non-phobic girls reporting conditioning, modeling, and/or negative information events. Phobic girls more often reported conditioning events than non-phobic girls, percentages being 42.3% and 7.7%, respectively ($\chi^2 = 8.3, P < 0.005$). In addition, phobic girls tended to report more modeling experiences mediated by their mothers than non-phobic girls ($\chi^2 = 3.8, P < 0.10$). The two groups did not differ with regard to other POQ categories (e.g., modeling mediated by father or others and negative information experiences). In both phobic and non-phobic girls, reports about observing others reacting fearfully to spiders (i.e., modeling others) and exposure to negative information about spiders were rather common.

Table 2 shows the frequency of conditioning, modeling, and negative information experiences in the phobic sample, using stringent criteria. The frequency of parents' POQ answers and percentage agreement between parents and children about the presence or absence of certain learning experiences are also shown. Interestingly, with a stricter definition of the three pathways, the percentage of conditioning, modeling, and negative information reports declined. Still, children's reports were not evenly distributed over the various etiological categories [Cochran's Q (3) = 37.7, $P < 0.001$]. That is, phobic girls more often endorsed the 'always been afraid' and conditioning options than either the modeling or negative information categories. In general, there was a reasonable agreement between children and parents with regard to the absence or presence of certain options. Percentage of agreement was somewhat higher for the conditioning category than for the 'always been afraid' option (65.4% and 50.0%, respectively). Examples of conditioning reports provided by the children are: 'I was on the top of a climbing frame, when I saw a spider on the frame. I startedle and fell down'; and 'I was lying in bed with high fever and felt very ill. Suddenly, I saw something that looked like a spider approaching me'. The mean ages of onset of the phobia according to children and parents were 5.2 (SD = 3.6) and 4.7 (SD = 3.0), a difference that did not attain significance ($t(24) = 1.0$).

DISCUSSION

The current study found that spider phobic and non-phobic girls differ with regard to the frequency of conditioning events that they report in relation to spiders. Furthermore, there was a tendency for phobic girls to report more modeling experiences mediated by mother than non-phobic girls. Moreover, a reasonable agreement was found between phobic girls and their parents about the absence or presence of conditioning and/or modeling-by-mother events in the learning history of the phobic girls. By and large, these findings replicate the results of an earlier study that examined fear acquisition patterns in spider phobic children (Merekelbach et al., 1996b). In that study, spider phobic children endorsed conditioning and modeling-by-mother as influential pathways to fear. To a large extent, these accounts were confirmed by their parents, though it should be added that the degree of agreement between children and parents found by Merekelbach et al. was higher than that found in the present study.

Other recent studies have found similar indications for the role of conditioning and modeling in the development of specific fears and phobias (e.g. King et al., 1997; Fredriksson et al., 1997; Kheriaty et al., 1999), though the details of the results vary as a function of the precise type of fear that is studied and the analog or clinical characteristics of the sample. Although each of these studies is not without methodological limitations (in terms of sample size, retrospective inference etc.), combined they call into question the idea that specific phobias typically are acquired in the absence of any previous aversive experience associated with the phobogenic object (Menzies & Clarke, 1995; Jones & Menzies, 1995).

The current finding that phobic children report more conditioning events than non-phobic controls deserves some comment. It is worthy of note that Merekelbach, Arntz, Arrindell and de Jong (1992) found that conditioning events related to spiders are highly prevalent among both adult spider phobics and adult control subjects (66% and 60%, respectively). Apparently, conditioning events differentiate phobic from non-phobic children, but not phobic from non-phobic adults. It is tempting to interpret this discrepancy in terms of latent inhibition. Latent inhibition refers to the phenomenon that prior uneventful exposure to a phobogenic stimulus will retard (i.e. inhibit) the subsequent acquisition of a fear response to that stimulus if it is paired with an aversive event (e.g. Doogan & Thomas, 1992). Accordingly, older people will have both aversive and non-aversive encounters with spiders and in this group, prior familiarity with spiders will reduce the likelihood that an aversive encounter with spiders results in a chronic spider phobia. In contrast, the probability that aversive encounters with spiders will give rise to spider phobia is higher in younger subjects, because this group will be characterized by a relative lack of uneventful exposure to spiders.

The current study found that the percentage of spider phobic children who can be assigned to a conditioning pathway drops when stricter criteria for conditioning experiences are adopted. This underlines the point of Menzies and Clarke (1994) that broad definitions of conditioning experiences promote an overestimation of conditioning onset in the etiology of phobias. Another finding consistent with Menzies and Clarke's (Menzies & Clarke, 1994, 1995) analysis is the high percentage of phobic children who claimed that their fear had always been present. However, it would be premature to accept this finding as straightforward support for a non-associative etiology. With an average onset age of 4.7 yr (according to the parents), it is plausible to assume that a number of children had onset within the age range that is characterized by childhood amnesia. For these children, it is simply impossible to retrieve discrete events and this
may give rise to the subjective experience of having always been afraid (see, for a similar argument, Kerity et al., 1996).

While the present study relied on phobic and matched control children, employed strict definitions of the three pathways, included an ‘always been afraid’ option, and used information of parents to assess the validity of children’s reports, it is subject to one serious limitation. Self-reported causal attributions of phobic children and their parents might be heavily inspired by meta-beliefs about the origins of phobias. These meta-beliefs do not necessarily reflect actual etiology (e.g. Withers & Deane, 1995). To tackle this problem, future studies could include non-phobic samples that are interviewed about their beliefs concerning the origins of phobias.

In a recent study, Jones and Menzies (1995) pointed out that the etiology of spider fear might follow a non-associative scenario. The present findings do not lead to the opposite conclusion, but they do show that conditioning and modeling pathways in childhood spider phobia should not be easily dismissed.

REFERENCES


