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Spider phobia in children: disgust and fear before and after treatment

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Summary—Fear of spiders, disgust sensitivity, and spiders' disgust-evoking status were assessed in a group of spider phobic girls (n = 22) who applied for treatment, in a group of non-phobic girls (n = 21), and in the parents of both groups of children. The phobic girls were tested both before and after behavioural treatment which consisted of 1.5 hr eye movement desensitization and reprocessing and 1.5 hr exposure *in vivo*. Findings support the idea that disgust is an important aspect of spider phobia: (a) spider phobic girls exhibited higher levels of disgust sensitivity and considered spiders *per se* as more disgusting than non-phobic girls; (b) there was a parallel decline of spider fear and spiders' disgust-evoking status as a result of treatment; and (c) spiders' disgust-evoking status was relatively strong in mothers of spider phobic girls. The latter finding may indicate, that the acquisition of spider fear is facilitated by specific parental disgust reactions when confronted with spiders. © 1997 Elsevier Science Ltd

INTRODUCTION

Several studies have provided indirect evidence for the idea that disgust plays a role in fear of spiders (e.g. Matchett & Davey, 1991; Davey, 1994). These studies have demonstrated that subclinical spider fear correlates with a general disgust and contamination sensitivity (as measured with the Disgust Questionnaire, DQ: Rozin, Fallon & Mandell, 1984). Also women with a clinically diagnosed spider phobia were found to be characterized by substantially higher levels of disgust sensitivity (i.e. lower DQ scores) than non-phobic controls (Merckelbach, de Jong, Arntz & Schouten, 1993; Mulkens, de Jong & Merckelbach, 1996).

The relationship between disgust sensitivity and fear of spiders may be explained by assuming that spiders are more likely to acquire a disgust-evoking status in people with high than in people with low levels of disgust and contamination sensitivity (cf. Davey, Forster & Mayhew, 1993). Yet, if disgust sensitivity is, indeed, a vulnerability factor in the genesis of spider phobia, the relationship between disgust sensitivity and spider phobia should already be evident in childhood years because spider phobia is characterized by an early age of onset (e.g. Arntz, Lavy, van den Berg & van Rijsoort, 1993). Therefore, the first aim of the present study was to investigate whether spider phobic children, indeed, display higher levels of disgust sensitivity and consider spiders *per se* as more disgusting than non-phobic children (cf Mulkens *et al.*, 1996).

The second aim of the present study was to investigate the influence of treatment on disgust sensitivity and spiders' disgust-evoking status. To the extent that disgust is a critical feature of spider phobia, one would expect that treatment results in a parallel decline of fear and disgust of spiders. To the extent that disgust sensitivity is, indeed, a vulnerability factor rather than an epiphenomenon of spider phobia, DQ scores should remain unaffected by treatment. Finally, we investigated the familial resemblances of disgust sensitivity, fear of spiders, and the disgust-evoking properties of spiders. Davey *et al.* (1993) provided tentative evidence to suggest that the familial transmission of disgust sensitivity plays an important role in the genesis of small animal fear in children. We explored whether this also holds true for children with a clinically diagnosed spider phobia.

METHOD

Participants

Participants were a group of phobic (n = 22) and a group of non-phobic (n = 21) girls and their parents. Children of the phobic group applied for treatment at our department and had a mean age of 11.6 yr (range = 9–14). All children met the DSM-III-R criteria for simple phobia. Diagnoses were made by a senior psychologist who interviewed one of the children's parents using the Diagnostic Interview Schedule for Children (DISC: National Institute of Mental Health, 1992). From this group, 14 fathers and 17 mothers were willing to cooperate in the present study. Mean age of the fathers was 42.2 yr (range = 33–54); mean age of the mothers was 40.0 yr (range = 33–48). The non-fearful children were recruited through advertisements in a regional newspaper. Mean age was 11.6 yr (range = 9–14). From this group, 19 fathers and 21 mothers were willing to cooperate in this study. Mean age of the fathers was 41.6 yr (range = 34–49); mean age of the mothers was 40.0 yr (range = 33–47).

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Assessment

Spider fear. The 15-item version of the Spider Phobia Questionnaire for Children (SPQ-C: Kindt, Brosschot & Muris, 1996) was used to index children's spider fear. Parental spider fear was measured by means of the Spider Phobia Questionnaire (SPQ: Klorman, Weerts, Hastings, Melamed & Lang, 1974).

Disgust. The Disgust Questionnaire (DQ: Rozin *et al.*, 1984) was used to assess disgust sensitivity. The DQ consists of 24 questions about specific events in which food is involved and asks participants to rate on a 9-point scale how much they would like to eat 'contaminated' food-items (1 = Do not want to eat at all; 9 = Would like to eat very much).

To assess spiders' disgust-evoking status we extended the original DQ with 2 items (DQ-spider): "How much would you like to eat your favourite chocolate bar after a spider has walked across the bar when it is still wrapped in its package?" and "How much would you like to eat your favourite chocolate bar after a spider has walked across the unpacked bar?".

Treatment. The spider phobic children were treated individually at the university laboratory. Treatment consisted of 1.5 hr eye movement desensitization and reprocessing following the protocol recommended by Shapiro (1995); (for a more detailed description of this treatment procedure, see Muris & Merckelbach, 1995), and 1.5 hr of exposure *in vivo* (cf. Nelissen, Muris & Merckelbach, 1995).

RESULTS

Spider fear and effect of treatment

Spider phobic children had higher scores on the SPQ-C than the non-phobic girls. The post-treatment scores of the phobic girls were significantly lower than their pre-treatment scores, $t(21) = 11.5$, $P < 0.05$ (Table 1).

Disgust sensitivity

The spider phobic girls displayed a stronger disgust sensitivity than the non-phobic control group, $t(41) = 3.03$, $P < 0.05$ (Table 1). By and large, the digust sensitivity remained unaffected by treatment (Table 1).

Spider's disgust-evoking status

The phobic group considered the spider as more disgusting than the control group (i.e. displayed lower DQ-spider scores), $t(33.95) = 7.35$, $P < 0.05$ (Table 1). The spider's disgust-evoking properties diminished after treatment, $t(21) = 3.5$, $P < 0.05$. The decline of the DQ-spider scores (after treatment) was parallelled by the decline of the SPQ-C scores, $r = 0.43$, $P < 0.05$.

Familial resemblances

Spider fear. A 2 Group (phobic/non-phobic daughter) × 2 Sex (father/mother) ANOVA revealed a main effect of Group, $F(1,32) = 4.78$, $P < 0.05$, indicating that the parents of the phobic children are more spider fearful than the parents of the non-phobic children (Table 2). There was no Group × Sex interaction, $F(1,32) = 2.19$, $P = 0.15$, indicating that this effect was similar for fathers and mothers. Finally, a main effect of Sex emerged, $F(1,32) = 10.3$, $P < 0.05$, indicating that, in general, mothers were more fearful than fathers.

Disgust sensitivity. A 2 Group (phobic/non-phobic daughter) × 2 Sex (father/mother) ANOVA revealed neither a main effect of Group, $F(1,32) = 0.35$, nor a Group × Sex interaction, $F(1,32) = 1.05$. Thus, there were no differences between both groups of parents regarding their disgust sensitivity. Yet, there was a main effect of Sex, $F(1,32) = 5.68$, $P < 0.05$, indicating that mothers displayed higher levels of disgust sensitivity than fathers. In line with previous studies, there was a negative correlation between SPQ scores and DQ scores, $r = -0.35$, $P < 0.05$. In other words, high levels of digust sensitivity are linked with high levels of spider fear.

Spider's disgust-evoking status. A 2 Group (phobic/non-phobic daughter) × 2 Sex (father/mother) ANOVA revealed no main effect of Group, $F(1,32) = 1.61$, $P = 0.21$. Yet, the Group × Sex interaction reached significance, $F(1,32) = 4.02$, $P = 0.05$. This effect is mainly carried by the fact that specifically mothers of phobic girls considered the spiders as highly disgusting (Table 2). In addition, a main effect of Sex emerged, $F(1,32) = 8.95$, $P < 0.05$, indicating that, in general, mothers considered the spiders as more disgusting than fathers.

DISCUSSION

It has been suggested that disgust sensitivity is related to the etiology of spider phobia (e.g. Davey, 1994). Note that spider phobia in adults may be best conceptualized as a childhood fear that survived adolescence (e.g. Merckelbach, de Jong, Muris & van den Hout, 1996). Thus, if disgust sensitivity, indeed, plays a critical role in the development of spider phobia, the relationship between disgust sensitivity and fear of spiders should already be evident in children. In line with this, the present study clearly showed that spider phobic children are also characterized by elevated levels of disgust sensitivity. The finding that DQ scores remained unaffected by treatment adds to the evidence that disgust sensitivity is a vulnerability factor rather than an epiphenomenon of spider fear (cf. Merckelbach *et al.*, 1993).

Table 1. Fear of spiders (SPQ-C), spiders' disgust-evoking status (DQ-spider) and disgust sensitivity (DQ) in phobic and non-phobic girls

Measure	Phobic girls				Non-phobic girls	
	Before treatment		After treatment			
SPQ-C	9.7	(1.9)	2.6	(2.4)	0.6	(0.7)
DQ-spider	7.9	(4.7)	11.4	(4.7)	16.3	(2.6)
DQ	111.4	(30.9)	111.4	(42.1)	141.9	(46.7)

Table 2. Fear of spiders (SPQ), spiders' disgust-evoking status (DQ-spider), and disgust sensitivity (DQ) reported by parents of phobic and non-phobic girls

Measures	Phobic daugther				Non-phobic daugther			
	Father		Mother		Father		Mother	
SPQ	3.2	(3.0)	8.9	(8.9)	2.1	(2.0)	4.1	(5.7)
DQ-spider	16.3	(2.2)	13.1	(4.5)	15.9	(2.7)	15.4	(3.5)
DQ	124.8	(33.5)	109.5	(43.0)	127.0	(36.5)	122.0	(37.0)

The fact that adults and children with spider phobia show elevated levels of disgust and contamination sensitivity does not necessarily imply that spiders *per se* are considered disgusting. Yet, the present finding that spiders can reduce the edibility of favourite food-items in spider phobic children (see also Mulkens *et al.*, 1996) indicates, that also spiders *per se* are considered disgusting. The finding that the spiders' disgust evoking properties diminished after treatment sustains the idea that disgust is an important feature of spider phobia. This view is substantiated further by the parallel decline of fear and disgust after treatment.

Familial resemblances

In line with the evidence that specific phobias run in families (e.g. Torgersen, 1979; Davey, 1992), parents of phobic girls reported higher levels of spider fear than parents of explicitly non-phobic girls. The finding that mothers were generally more spider fearful than fathers is in accordance with previous studies indicating that fear of spiders is far more prevalent in women than in men (e.g. Cornelius & Averill, 1983). The present finding, that mothers not only reported higher levels of spider fear but also higher levels of disgust and contamination sensitivity than fathers, underlines the role of disgust in spider phobia. In addition, the uneven distribution of disgust sensitivity across both sexes may help to explain why spider fear is more prevalent in women than in men (cf. Davey, 1994).

In contrast to the earlier finding of Davey *et al.* (1993), that subclinical fear of small animals in undergraduates is closely linked to parental disgust sensitivity, parents of the phobic children did not show higher levels of disgust sensitivity than those of the control group. Apparently, observing parents' reactions to disgusting objects in general is not necessary nor sufficient to acquire a fear of spiders in the phobic range. Yet, it is highly likely, that parents' disgust reactions to specific animals (e.g. spiders) have more impact on offsprings' fear than reactions to disgusting objects in general. To the extent that spider fears are transmitted primarily from mother to daugther via same-sex modelling (Cornelius & Averill, 1983), mothers' disgust reactions to spiders may be expected to have a particularly strong influence on their daughters' fear of spiders. In line with this, the current study showed that especially mothers of spider phobic girls considered spiders *per se* as disgusting. Although the current study was not designed to actually monitor the mothers' reactions towards spiders, it seems reasonable to assume that the mothers' negative appreciation of spiders is also evident from their behaviour when confronted with spiders.

Taken together, the available evidence converges to the conclusion that clinical spider phobia fits comfortably well into a disease-avoidance model. The evidence can be summarized as follows: First, adults as well as children with a clinically diagnosed spider phobia are characterized by a relatively strong disgust sensitivity. Second, adults and children with spider phobia consider spiders *per se* as disgusting (i.e. spiders can render tasty food-items inedible by brief contact). Third, there is a parallel decline of fear and disgust as a result of treatment. Finally, mothers' disgust of spiders is associated with their offsprings' fear of spiders.

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