



PARENTAL HISTORY, AVERSIVE EXPOSURE AND THE DEVELOPMENT OF SNAKE AND SPIDER PHOBIA IN WOMEN

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Summary—Parental history and experiential factors in the development of snake and spider phobia were studied. Phobic women (DSM-IV, $n = 158$) reported on family history of animal phobia and whether direct (being frightened by the phobic object) or indirect (seeing someone else being frightened by and/or being warned of the phobic object) fear exposure predated phobia development. Fifty-nine mothers (37%) and 11 fathers (7%) had snake or spider phobia, which is higher than the upper 95% confidence interval in the population (Fredrikson, Annas, Fischer & Wik, *Behavior Research and Therapy*, 34, 33–39). Lifetime Relative Risk, RR, of animal phobia in probands' mothers and fathers as a function of at least one phobic grandparent was 3.3 and 13.7 respectively. Indirect fear exposures were more common in snake (45%) than spider (27%) phobics (RR = 1.4). Indirect fear exposures were more common among probands with a positive parental history, the RRs being 3.6 and 2.1 as a function of maternal and paternal family history. Direct exposures were unrelated to parental history. The familial resemblance and transmission of specific phobia could be experiential in origin mediated by indirect exposures or of hereditary origin mediated by genetic factors. It may represent genetically facilitated learning and exemplify imprinting in humans. Copyright © 1997 Elsevier Science Ltd

INTRODUCTION

Irrational fear and the urge to avoid a certain animal characterize specific animal phobia (American Psychiatric Association, 1994). The development of phobias has been attributed to genetic factors (Kendler, Neale, Kessler, Heath & Eaves, 1992; Torgersen, 1979), classical conditioning (Watson & Rayner, 1920; Rachman, 1977), social learning experiences (Bandura, 1986), prepared learning (Seligman, 1971) and described as 'lurking fear' (Gray, 1991). Family and twin studies suggest that both heritable and environmental factors may be of aetiological importance in the development of irrational fears (Kendler *et al.*, 1992). Fyer *et al.* (1990), for example, recently reported a threefold increase in the risk of simple phobia among first degree relatives of simple phobic probands as compared to first degree relatives of never mentally ill controls. In their study, 16 simple (specific according to DSM-IV; American Psychiatric Association, 1994) phobics were compared with 38 never mentally ill controls. Specific phobia included diagnosis of animal phobia, claustrophobia and 'miscellaneous' phobias. No distinction was made between different types of phobias. In a study of twins Kendler *et al.* (1992) reported a heritability estimate of 32% for animal phobia comprising irrational fear of insects, spiders, mice, snakes and bats. The variance associated with individual specific environmental factors were approximately twice that of genetic factors. No distinction was made between type of specific phobias.

Studies in mono- and dizygotic twins show a heritability estimate of 48% for snake fear, and a heritability estimate of 32% for spider fear (Rose, Miller, Pogue-Geile & Cardwell, 1981). This implicates a stronger familial resemblance of snake than spider phobia. Thus, the first aim of the present study was to compare the presence of parental history of snake and spider phobia

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in snake and spider phobics separately. Snake and spider phobia in mothers and fathers of the probands was also related to the presence of snake and spider phobia in the grandmothers and grandfathers of the probands.

A second aim was to determine prevalence of aversive experiences with snakes and spiders in snake and spider phobics predating the development of phobia. To study the interplay between aversive experiences and family history of phobia, we related direct exposures similar to classical fear conditioning (Fredrikson, 1981) and indirect exposures akin to vicarious or informational learning (Green & Osborne, 1985) to parental history of phobia in two groups of selected snake and spider phobics. We addressed the question if snake or spider phobia in the probands is associated with direct and/or indirect aversive exposures and whether this relation is influenced by phobia presence in the probands' parents.

SUBJECTS AND METHODS

Subjects

Snake and spider phobic women were recruited through advertisements in two local papers. An initial interview over the telephone was made in order to assure that the DSM-IV (American Psychiatric Association, 1994) criteria for specific phobia were met (avoidance, life interference and loss of control over fear). All participants were then sent a family history questionnaire inquiring whether the same phobia was present in the proband's mother, father, paternal and maternal grandparents. The questionnaire also included questions on (1) direct aversive exposures: "Did you ever get frightened by a snake/spider?"; (2) indirect aversive exposures: "Did you ever observe someone else being frightened by a snake/spider?" and "Did you ever hear warnings about snakes/spiders being dangerous?". In addition, all participants were sent a Swedish version (Fredrikson, 1983) of the Snake and Spider Questionnaires (SNAQ and SPQ) (Klorman, Weerts, Hastings, Melamed & Lang, 1974). Written informed consent was obtained from all participants. One-hundred and eighty-two questionnaires were mailed back including 43 after one reminder. To assure that questionnaires were completed accurately, 40 individuals were seen for an interview. In no case did interview answers depart from questionnaire answers. Subjects who reported phobias for both snakes and spiders were excluded from the data-analysis because it is not possible to determine the primary phobia ($n = 24$). The final sample consisted of 86 women diagnosed as having snake but not spider phobia and 72 as having spider but not snake phobia.

Statistical methods

Contingency tables were analysed using χ^2 -tests. Fischer's P was used to estimate significance levels when observed frequencies were low. To describe the association between variables, estimates of relative risk (RR) were used (Ahlbom, 1990). For the 95% confidence interval, a variance proposed by Greenland and Robins (1985) was enrolled. Student's t -test was used to compare group means.

To examine familial transmission of fear, two sets of analyses were carried out. First, the parental history of the proband's mother and father was investigated in relation to the proband herself. Second, lifetime phobia prevalence in the proband's mother and father was investigated as a function of presence or absence of the same phobic fear in the proband's grandparents. Proband's children were not included in the analyses, since the age range in the phobic cohort varied and hence the possibility of having children was unequally distributed.

In all analyses of direct and indirect aversive exposures no attempt was made to categorize one of the experiences as more important or prominent than any of the other since both may be relevant. Hence, if both direct and indirect aversive exposures were reported both entered the data-analysis.

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