

ORIGINS OF FEAR OF DOGS IN ADULTS AND CHILDREN: THE ROLE OF CONDITIONING PROCESSES AND PRIOR FAMILIARITY WITH DOGS

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Summary—One hundred adults and 30 children completed questionnaires to investigate fear of dogs. Dog fearful adults asked to recall the origins of their fear reported classical conditioning experiences more frequently than vicarious acquisition or informational transmission. Overall, however, there was no difference in the frequency of attacks reported by the fearful and non-fearful groups. Significantly more fearful than non-fearful adults reported little contact with dogs prior to the onset of their fear which suggests that early non-eventful exposure to dogs may prevent a conditioning event from producing a dog phobia. Most adults reported that their fear began in childhood, and dog fears were more frequently reported by children than by adults. In the aggregate, however, dog-fearful adults and children differed in several ways: children were more likely than adults to report having received warnings about dogs, but also to recognize the potential attractiveness of a friendly dog. Unlike dog-fearful children, dog-fearful adults reported many other fears in addition to their fear of dogs. A better understanding of fear of dogs in adults may depend on discovering why some dog-fearful children, but not others, apparently lose their fear of dogs as they become older.

Although it is now widely recognized that there are several possible 'pathways' to fear (see Rachman, 1977, 1990), Pavlovian conditioning is still considered the most likely cause of many phobias. According to this account, previously neutral stimuli are transformed into the objects of phobic fear by chance pairings with frightening or painful incidents.

Apparently strong support for the importance of conditioning in many phobias comes from the patients who have reported that conditioning experiences were the initial cause of their fear (see Merckelbach, de Ruiter, Van Den Hout & Hoekstra, 1989; Ost, 1985; Ost & Hugdahl, 1981, 1983). The significance of these reports of conditioning experiences, however, is challenged by the discovery that non-fearful *Ss* have also often had similar painful or frightening experiences, but without subsequently developing a phobia. Thus, Di Nardo, Guzy, Jenkins, Bak, Tomasi and Copland (1988) found that histories of painful and/or frightening encounters with dogs were equally often reported by *Ss* with low- and high-fear of dogs respectively.

Even with refinements, such as the concept of prepared learning (Seligman, 1971), a conditioning model cannot easily explain why a bad experience with a dog should produce fear of dogs in some people but not in others. If conditioning experiences do in fact play a causal role in the origins of these particular fears, some additional factor or factors must determine whether or not a conditioning experience will give rise to longlasting fear in a given individual.

The present study was performed to investigate further the role of conditioning experiences in the origins of fear, and to identify possible co-factors that might influence the likelihood of a painful or traumatic incident giving rise to longlasting fear of stimuli associated with that incident. Fear of dogs is an example of a simple phobia and was chosen for investigation because painful or frightening encounters with dogs are not uncommon.

As in previous studies (e.g. Di Nardo *et al.*, 1988; McNally & Steketee, 1985), potential conditioning experiences were divided into S-R experiences (encounters with dogs producing fear but no physical injury or pain) and S-S experiences (encounters producing injury and pain). We also asked about experiences relating to vicarious learning or information transmission as possible routes to fear.

Our search for possible co-factors that might influence whether or not conditioning experiences produce enduring fear was focussed primarily on the role of prior familiarity (see Rachman, 1990).

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Laboratory studies have shown that prior exposure to a stimulus reduces the ease with which fear (or any other response) can be subsequently conditioned to that stimulus (Lubow, 1973). This effect of prior exposure has been termed latent inhibition, and is thought to be a consequence of reduced processing of familiar stimuli in a familiar setting (Wagner, 1978). If latent inhibition occurs to dogs as a class of stimuli, we might expect that a painful or frightening experience with a dog is more likely to produce a dog phobia in *Ss* unfamiliar with dogs than in *Ss* with a prior history of uneventful or pleasurable contacts with dogs. Furthermore, *Ss* with prior experience of dogs are likely to know how dogs behave and thus find their behaviour predictable and controllable. Such individuals might be more likely than inexperienced *Ss* to discriminate genuinely threatening behaviour from playful behaviour in dogs, and thus be less likely to acquire fear of dogs in general.

We also investigated the possibility that dog-fearful individuals are generally more prone to be fearful by asking about fear of other things besides dogs, thus testing for a possible personality factor responsible for differences in susceptibility to fear conditioning (see Eysenck & Rachman, 1965).

Our sample of adult *Ss* was made up of undergraduate students because they provide an accessible pool of *Ss* in which fears of animals are relatively common (Geer, 1965). As in earlier studies of animal phobics by Di Nardo *et al.* (1988) and by Murray and Foote (1979) fear was assessed by means of Geer's (1965) 'Fear Survey Schedule 2' (FSS-2). We devised a questionnaire to explore *Ss*' fear of dogs, using two pilot studies ($n = 8$ in each) to check the wording of the questions and the response categories.

We planned from the outset to supplement the adult study with a survey of fear of dogs in children, because previous studies of adult phobic patients have found that they often cannot recall the circumstances from which their fears arose. In view of this memory limitation, Martin (1973) has argued that children may be better than adults as a source of data on conditioning histories, because they are closer in time to relevant early experiences. We chose 8-9 yr olds for our survey of children, because our pilot work indicated that younger children had difficulty answering our questions about their past experiences with dogs.

METHOD

Subjects

The *Ss* in the adult sample consisted of 100 undergraduate student volunteers from the University of Birmingham, mostly studying a social science or one of the humanities. Twenty-eight were male and 72 were female. Their ages ranged from 18 yr 1 month to 30 yr 8 months with a mean age of 20 yr 1 month. When recruited to the study *Ss* were simply told that the survey concerned fear of dogs.

The child sample comprised 30 children (15 boys and 15 girls), recruited from a school in South Birmingham. Most were from middle-class English families and their ages ranged from 8 yr 2 months to 9 yr 1 month with a mean age of 8 yr 7 months.

Test materials

Fear in the adult sample was assessed by means of Geer's FSS-2, consisting of 51 items to which *Ss* were asked to rate their fear on a 7-point scale ranging from 'none' to 'terror'. A subset of 8 questions relating to fear of animals, and a 4-point rating scale were derived from the FSS-2 for use with the child sample.

The questionnaire exploring fear of dogs administered to the adults consisted of three sections. The first section asked for details of dog-ownership and of dog attacks. The second section comprised 38 questions asking about other dog related experiences and reactions to dogs. Questions in this second section required responses on a 6-point scale ranging from 'none' to 'exceedingly'; the six response categories were collapsed into two for the purposes of analysis. The third and final section of the questionnaire was given only to *Ss* who had ever been afraid of dogs, and asked about the origins and resolution of their fear.

The questionnaire given to the children consisted of a shortened and simplified version of Sections 1 and 2 of the adult questionnaire, with the addition of two initial 'warm-up' questions about favourite and disliked animals.

Procedure

Adult *Ss* were recruited individually on the University campus. They were first presented with the fear assessment and questionnaire and asked to read through the instructions. The investigator (Sharon Doogan) then checked that they understood what they were required to do and left them to complete the answers on their own. The completed forms were then collected later by the investigator.

The children were questioned individually in their own school by Sharon Doogan in a quiet, and otherwise unoccupied, room separate from the children's classrooms. All the children were first given a modified version of the FSS-2, and then a simplified version of the adult questionnaire. The response categories were explained to them and probe questions checked their understanding of the procedure, before the main part of the questionnaire was administered. All the questions were read out aloud by the interviewer who wrote down the children's replies.

RESULTS

Fear assessment

Completed questionnaires were collected from all the adult *Ss* who had agreed to participate. Question 45 of Geer's (1965) Fear Survey Schedule (FSS-2) asked *Ss* to describe the amount of fear they experienced towards a strange dog. *Ss* who answered 'much', 'very much' or 'terror' to this question were classified as *Ss* with high fear of dogs. Those who answered 'none', 'very little', 'a little' or 'some' were classified as *Ss* with low fear of dogs. Out of 100 adults who completed the questionnaire and FSS-2, 75 were classified as having low fear of dogs, and 25 were classified as having high fear of dogs. The low-fear group of 75 *Ss* included four *Ss* who currently reported no fear of dogs, but who indicated that they had been afraid of dogs in the past.

Each child was asked twice to what extent they were afraid of strange dogs, once in a question in the abbreviated and simplified FSS-2 at the start of testing, and a second time toward the end of the questionnaire. Nine children gave conflicting responses to these two presentations of the question about fear of strange dogs, and were excluded from further analyses. Of the remaining children, 11 indicated that they had 'quite a lot' or 'a lot' of fear of strange dogs and were classified as high-fear *Ss*. The remaining 10 children reported that they had 'little' or 'no' fear of strange dogs and were classified as having low fear.

Fear of dogs and other fears. To compare fear of dogs with other fears, adults' responses to the FSS-2 were further analysed into animal and non-animal fears. By assigning numerical values to the response categories, 0 for 'no fear' through to 6 for 'terror', we derived a mean fear score for animal and non-animal fears. Questions 8, 10, 35, 39 and 48 asked about fear of animals other than dogs (worms, rats/mice, spiders, snakes, insects). The mean animal and non-animal fear scores for *Ss* with high fear of dogs were 2.23 ($SD = 0.77$) and 2.45 ($SD = 0.72$) respectively. The corresponding mean animal and non-animal fear scores for adults reporting low fear of dogs were 1.583 ($SD = 0.83$) and 1.98 ($SD = 0.58$). A two-way ANOVA on mean fear scores found that adults with high fear of dogs reported significantly more fear of other situations and things and of other animals than did adults with low fear of dogs; $F(1,98) = 18.02$, $P < 0.01$. Furthermore, there was overall a significant difference between levels of animal and non-animal fears, $F(1,98) = 12.49$, $P < 0.01$. The interaction between fear group and fear type, however, was not significant.

To compare fear toward dogs with that toward other animals in the child sample, the children's responses to the questions about other animals in the simplified FSS-2 were further analysed by assigning numerical values to the response categories: 0 for 'no fear at all' through to 3 for 'a lot of fear'. The mean fear score of the dog-fearful children was 0.78 ($SD = 0.45$) and that of the non-fearful children was 0.64 ($SD = 0.33$). Thus, the dog-fearful children reported on average a slightly higher level of fear to other animals than did the children with low fear of dogs. A *t*-test indicated that this difference was not statistically reliable.

Experiences concerning dogs. In the following analyses of questionnaire responses, chi-square tests of significance were performed on the numbers of high- and low-fear *Ss* making each category of response. Fisher exact probability tests were substituted where expected frequencies in any cell fell below 5.

Table 1. Numbers of *Ss* reporting specified past experiences relating to dogs

	Adults		Children	
	High-fear <i>n</i> = 25	Low-fear <i>n</i> = 75	High-fear <i>n</i> = 11	Low-fear <i>n</i> = 10
Bitten by a dog at least once†	4	25	1	0
Chased by a dog at least once	16	32	4	6
Frightened by a dog at least once	12	9*	8	3*
At least one painful or frightening encounter with a dog	21	49	10	7
Little or no direct contact with dogs prior to first frightening/painful experience with one	20 out of 21	15* out of 49	9 out of 10	5 out of 7
Mother dislikes dogs	15	34	5	5
Father dislikes dogs	14	29	8	5
Observed fear in others	11	22	3	4
Scared by dog stories and films	8	2	4	0
Distressed by reports in press of dog attacks	20	33*	9	5*
Warned about dogs when a child	7	11‡		
Warned about dogs by parents			7	2*

*Difference between high- and low-fear *Ss* significant at $P < 0.05$.

†Difference between low-fear adults and low-fear children significant at $P < 0.05$.

‡Difference between high-fear adults and high-fear children significant at $P < 0.05$.

The first section of the questionnaire sought detailed information about *Ss*' experiences with dogs (see Table 1). Within the child and adult samples there were no significant differences in the numbers of *Ss* with low and high fear of dogs respectively reporting having ever been bitten or chased by a dog. Low-fear adults were significantly more likely than low-fear children to report having been bitten by a dog ($P < 0.05$).

Significantly more high-fear than low-fear adults reported a frightening experience with a dog [$\chi^2(1) = 22.32$, $P < 0.01$], but this result may reflect only that any encounter with a dog will be frightening to a dog-phobic person.

There were no significant differences in the frequency with which high- and low-fear *Ss* (both adults and children) reported at least one aversive encounter with a dog (either a painful or frightening experience). When asked specifically about their experience with dogs prior to their first aversive encounter with one, significantly more high-fear than low-fear adults reporting such encounters claimed little or no previous direct contact with dogs [$\chi^2(1) = 24.56$, $P < 0.01$]. There were no significant differences between high- and low-fear children in this regard.

Overall, there was little evidence for imitation or vicarious learning of fear of dogs: that is to say, there were no significant differences in frequencies of high- and low-fear *Ss* reporting that they had observed fear in others, or that their parents disliked dogs, or that they had been scared by dog stories and films. With regard to informational transmission, however, significantly more high- than low-fear adults and children reported being distressed by media reports of dog attacks [$\chi^2(1) = 13.15$, $P < 0.01$]. There was no significant difference between the numbers of high- and low-fear adults recalling warnings about dogs given in childhood. In contrast, dog-fearful children were significantly more likely than dog-fearful adults to report having received warnings about dogs ($P < 0.05$), and also significantly more likely to report having received such warnings than non-fearful children ($P < 0.05$).

Behaviour and reactions toward dogs. Data on the numbers of *Ss* reporting various responses toward dogs are presented in Table 2. High-fear *Ss* were significantly more likely than low-fear *Ss* to report the typical phobic behaviours of watching for dogs when outside ($P < 0.01$), and avoiding them when possible ($P < 0.01$).

Furthermore, high-fear adults were significantly more likely than low-fear adults to report fear of being bitten, a dog jumping up, loud barking, sudden movements by dogs, and dogs snapping, approaching, or snarling/growling [$\chi^2(1) = 28.127$, 38.115, 14.694, 39.56, 50.636, 44.457, 35.295, respectively; all P s < 0.01]. The child sample resembled the adult sample in that high-fear children were more likely than low-fear children to report fear of snapping, snarling/growling and sudden movements (all P s < 0.05). There were no significant differences, however, between high- and low-fear children in the numbers reporting fear of biting, barking and of a dog jumping up. Furthermore low-fear children were significantly more likely than low-fear adults to report fear of these categories of dog behaviour ($P < 0.05$). Among the adults, no-one reported fear of a dog's furry/hairy body.

Table 2. Numbers of *Ss* reporting specified behaviour and reactions toward dogs

	Adults		Children	
	High-fear <i>n</i> = 25	Low-fear <i>n</i> = 75	High-fear <i>n</i> = 11	Low-fear <i>n</i> = 10
Watching for dogs outside	7	2*		
Worrying about meeting dogs			8	2*
Making detours to avoid dogs	16	1*		
Avoiding dogs			4	0
Afraid of being bitten	19	14*	11	7*
Afraid of being infected	3	6		
Afraid of dog jumping up	17	6*	7	3
Afraid of barking	7	2*	2	0
Afraid of dog making sudden movements	15	6*	10	2*
Afraid of dog snapping	22	9*	10	4*
Afraid of dog snarling/growling	20	12*	9	2*
Afraid of dog's furry/hairy body	0	0		
Happy to approach friendly dog	10	68*	11	10†
Happy to stroke friendly dog	5	65*	10	9‡

*Difference between high- and low-fear *Ss* significant at $P < 0.05$.

†Difference between low-fear adults and low-fear children significant at $P < 0.05$.

‡Difference between high-fear adults and high-fear children significant at $P < 0.05$.

When asked about their willingness to approach and stroke a friendly dog, there were no significant differences between high- and low-fear children, nor between low-fear adults and low-fear children. High-fear adults, however, were significantly less likely to be willing to approach a friendly dog than were either low-fear adults [$\chi^2(1) = 28.05$, $P < 0.01$] or high-fear children ($P < 0.01$). High-fear adults were also significantly less likely to be willing to stroke a friendly dog than were low-fear adults [$\chi^2(1) = 39.68$, $P < 0.01$] or high-fear children ($P < 0.01$).

History of dog fear in adults. Questions on the history of their fear were put only to the 25 high-fear adults and the four currently low-fear adults who reported having had a fear of dogs in the past. Out of this total of 29 *Ss*, 23 (79%) considered that their fear was 'not particularly irrational'; and only six *Ss* (20%) considered their fear to be 'definitely irrational'.

Fifteen of the 29 *Ss* reported that their fear of dogs commenced before they reached school age, and ten more reported that their fear started when they were still attending primary school (i.e. aged under 8 yr). Only four *Ss* reported that their fear commenced when in their teens or older. As noted above, only four of the 29 *Ss* reported that their fear had now completely subsided. Of these four people, one stated that the fear disappeared of its own accord and three said it disappeared when they got a dog of their own.

Twelve of the 29 *Ss* could not recall the circumstances in which their fear of dogs first arose. Of the 17 who could recall the details, four recalled being bitten, and seven reported incidents in which a dog either jumped up at them or chased them. A further five *Ss* traced their fear of dogs to the influence of their parents, and one *S* reported that news coverage of a dog attack had initiated her fear.

DISCUSSION

In this discussion we will address three issues, (1) methodological considerations which will constrain our interpretations of the questionnaire replies, (2) the implications of the results for our understanding of the etiology of fear of dogs, and (3) similarities and differences between adults and children in relation to fear of dogs.

Methodological considerations

Answers to questions about events long in the past are vulnerable to failures and distortions of recall. The child sample was included in the present study partly to meet this difficulty, but may itself have produced a different set of problems of interpretation. It is possible, for example, that the children and adults may have perceived questions differently; and the adult *Ss*—with their greater experience and self-knowledge—may have been more able than the children to judge accurately how they would actually behave in real life.

A further constraint on interpretation concerns the representativeness of the samples. In the child sample, the unclassifiable children who responded inconsistently to the two questions asking about

fear of strange dogs were excluded from the study, and this selection may conceivably have introduced a bias. From inspection of their replies to the rest of the questionnaire, however, it was not readily apparent what that bias might be.

In the adult sample, the preponderance of social science and humanities students reflects the campus locations from which *Ss* were recruited. The sex ratio in the sample was similar to that for the student population in those disciplines. While the sample is biased by the inclusion only of students who were willing to give up their time to answer the questions, it is not obvious how willingness to help with the study might bias the sample with regard to fear of dogs.

Aetiology of fear of dogs

Consistent with previous findings (McNally & Steketee, 1985; Merckelbach *et al.*, 1989), almost all the dog-fearful adults reported that they acquired their fear during childhood, but only half the dog-fearful adults were able to recall the onset of their fear. The evidence of those who could recall implicated conditioning experiences in the majority of cases, with social learning or information transmission playing a major role in the remainder. This pattern of results, implicating conditioning processes in the origins of fear in approx. 50% of fearful *Ss* is also broadly consistent with results obtained in other studies, including those by Di Nardo *et al.* (1988) of dog-phobics, and by Ost and Hugdahl (1981) of a mixed sample of social-, animal- and claustrophobics. Despite this wide agreement, however, it would be unwise to assume that *Ss* have accurately identified the actual cause of their fear. It is possible, for example, that individuals may have wrongly attributed their fear to a conditioning event because it was salient and provided a plausible explanation of their fear. The true causes may have been overlooked because they were not accessible to consciousness, or simply less obvious or less memorable (see Nisbett & Wilson, 1977).

A clearer picture of the likely origins of fear can potentially be obtained by comparing the frequencies with which fearful and non-fearful *Ss* reported different dog-related experiences. As in the study by Di Nardo *et al.* (1988), the present survey found no significant difference in the numbers of high- and low-fear *Ss* who reported having at least one aversive encounter with a dog.

Aversive encounters involving only extreme fear but no physical pain (S-R conditioning) were significantly more frequently reported by high- than low-fear *Ss* in the present study. Nevertheless, given that almost any encounter with a dog is potentially distressing for a dog-phobic person, it would be surprising if the dog-fearful *Ss* were not more likely than non-fearful individuals not only to have frightening experiences with dogs but also to remember and report them. Indeed, it is more likely that frightening but non-painful encounters with dogs are a consequence of the development of fear of dogs rather than its primary cause. While such S-R conditioning events may be important in maintaining fear (see, for example, Eysenck, 1979) they cannot account for its origins.

In contrast, S-S conditioning events—aversive encounters that involved pain (S-S conditioning) which could plausibly account for the development of fear of dogs—were not reported significantly more frequently by high- than by low-fear *Ss* in the present study nor in that by Di Nardo *et al.* (1988). Consequently, consideration of S-S conditioning events alone also cannot provide an adequate account of acquisition of fear of dogs. Either conditioning processes in fact play no causal role, or some co-factor determines whether or not a conditioning event will produce lasting fear.

Our search for such co-factors began with a test of whether familiarity with dogs prior to an aversive encounter with one might prevent the conditioning of enduring fear. In support of this hypothesis we found that significantly more dog-fearful than non-fearful adults, but not children, reported that they had had little contact with dogs prior to their first aversive experience with one. There is an interesting parallel here with fear of snakes; Murray and Foote (1979) found that the more experience people have with snakes, the less they fear them.

With survey data only it is impossible to prove that exposure prevents or reduces fear of dogs; there could plausibly be some other unknown factor, such as personality, that both reduces the likelihood of an individual having contact with dogs and predisposes him/her to develop fear of dogs. Nevertheless, there is now substantial evidence from laboratory experiments and from clinical research that prior exposure to a stimulus retards subsequent fear conditioning to that stimulus (see Lubow, 1973), and that non-eventful exposure (extinction) is also often effective at reducing already established fear (Rachman, 1990).

The second possible co-factor investigated was the suggestion that conditioning events produce enduring fear only in certain susceptible individuals. In support of this hypothesis, we found that dog-fearful adults were more likely than the dog-fearless to report fear of a variety of other situations and things. It must count against this notion, however, that there was no evidence at all that dog-fearful children had more fears of other animals than did dog-fearless children.

The data from the adult sample gave little indication that vicarious learning and imitation play a major role in the origins of dog fears. There were some indications, however, that information transmission might be important in creating or sustaining fear of dogs in adults, an impression which was confirmed by the responses of the children. Dog-fearful children were significantly more likely than either dog-fearful adults or non-fearful children to report having received warnings. This latter result is consistent with such warnings playing an important role in the establishment of fear of dogs, but being forgotten by most dog-fearful adults. An alternative hypothesis, that the higher frequency of reported warnings by children than the adults simply reflects recent heightened mass media coverage of dog attacks, fails to account for the low frequency of warnings reported by the non-fearful children. The possible role of warnings about dangerous dogs in creating general fear of dogs perhaps deserves further investigation.

Only a fifth of the adult phobics considered their fear irrational, which suggests that they are concentrating mainly on the dangers that dogs present to the exclusion of their affectionate and playful characteristics. In contrast, McNally and Steketee (1985) found that most animal-phobics (other than dog-phobics) recognized their fear as irrational. The present results support the conclusion drawn by Di Nardo *et al.* (1988), that a strong expectation of harm appears to be a significant factor in adult's fear of dogs.

A comparison of fear of dogs in adults and children

We found several major differences between dog-fearful adults and children. Dog-fearful children were as likely as the non-fearful to recognize the attractiveness of a friendly dog (even if their questionnaire response overestimated their willingness to play with a dog in reality). In contrast, dog-fearful adults expressed little willingness to approach or stroke a friendly dog. The fearful children seemed to discriminate between threatening and friendly dogs much more than did the fearful adults.

Dog fears seem to be more frequent amongst children than amongst the adults in our samples; and the child sample seemed much less clearly differentiated than was the adult sample, even though many of the children were dropped from consideration because their responses did not clearly identify them as low- or high-fear Ss. In their response to many of the questions the low- and high-fear children were much more similar to each other than were the low- and high-fear adults. If this analysis is correct, then our original aim of using data from dog-fearful children to substitute for information forgotten by dog-fearful adults cannot be fulfilled, because dog-fearful adults and dog-fearful children in the aggregate may be quite different with respect to fear of dogs and its antecedents.

Given that dog fears almost always originate in childhood, the differences between dog-fearful children and adults seem most readily explained if we assume that dog-fearful adults originate as a sub-group of the population of dog-fearful children who for some reason do not lose their fear of dogs. The persistence of fear of dogs in some individuals may be part of a more general and habitual pattern of responding (such as avoidance) which tends to preserve fear. It is consistent with this supposition that in our survey dog-fearful adults reported fear of other animals and of other things more frequently than did dog-fearless adults.

CONCLUSION

The role of conditioning events in producing fear of dogs must be considered as non-proven. If such conditioning events do play a causal role then it is only in conjunction with some other factor such as lack of prior uneventful exposure to dogs or in especially susceptible individuals. The present results from children suggest that information transmission may be more important in engendering fear of dogs than studies of adults might suggest. Although most fearful adults report that their fear of dogs began in childhood, it is clear that not all dog-fearful children grow

up to become dog-fearful adults, which raises the question of why some children, but not others, eventually lose their fear of dogs. Uneventful exposure to dogs would seem to be important in at least some cases, but other factors cannot be excluded. In the aggregate dog-fearful adults and children differ in several other important respects. Consequently, rather less than we had hoped can be learned about the development of fear of dogs in adults from a cross-sectional study of fear of dogs in children.

REFERENCES

- Di Nardo, P. A., Guzy, L. T., Jenkins, J. A., Bak, R. M., Tomasi, S. F. & Copland, M. (1988). Etiology and maintenance of dog fears. *Behaviour Research and Therapy*, 26, 241-244.
- Eysenck, H. J. (1979). The conditioning model of neurosis. *The Behavioral and Brain Sciences*, 2, 155-199.
- Eysenck, H. J. & Rachman, S. (1965). *The causes and cures of neurosis*. London: Routledge & Kegan Paul.
- Geer, J. H. (1965). The development of a scale to measure fear. *Behaviour Research and Therapy*, 3, 45-53.
- Lubow, R. E. (1973). Latent inhibition. *Psychological Bulletin*, 79, 398-407.
- Martin, B. (1973). *Abnormal psychology*. Glenview, Ill.: Scott, Foresman.
- McNally, R. J. & Steketee, G. S. (1985). The etiology and maintenance of severe animal phobias. *Behaviour Research and Therapy*, 4, 431-435.
- Merckelbach, H., De Ruiter, C., Van den Hout, M. A. & Hoekstra, R. (1989). Conditioning experiences and phobias. *Behaviour Research and Therapy*, 27, 657-662.
- Murray, E. J. & Foote, F. (1979). The origins of fears of snakes. *Behaviour Research and Therapy*, 17, 489-493.
- Nisbett, R. E. & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, 84, 231-259.
- Ost, L.-G. (1985). Ways of acquiring phobias and outcome of behavioral treatments. *Behaviour Research and Therapy*, 6, 683-689.
- Ost, L.-G. & Hugdahl, K. (1981). Acquisition of phobias and anxiety response patterns in clinical patients. *Behaviour Research and Therapy*, 19, 439-443.
- Ost, L.-G. & Hugdahl, K. (1983). Acquisition of agoraphobia, mode of onset and anxiety response patterns. *Behaviour Research and Therapy*, 21, 623-631.
- Rachman, S. (1977). The conditioning theory of fear-acquisition: A critical examination. *Behaviour Research and Therapy*, 15, 375-387.
- Rachman, S. (1990). The determinants and treatment of simple phobias. *Advances in Behaviour Research and Therapy*, 12, 1-30.
- Seligman, M. E. P. (1971). Phobias and preparedness. *Behavior Therapy*, 2, 307-320.
- Wagner, A. R. (1978). Expectancies and the priming of STM. In Hulse, S. H., Fowler, H. & Honig, W. K. (Eds), *Cognitive processes in animal behavior*. Hillsdale, N.J.: Erlbaum.