



## They are afraid of the animal, so therefore I am too: Influence of peer modeling on fear beliefs and approach–avoidance behaviors towards animals in typically developing children

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### ABSTRACT

This study investigated the effect of filmed peer modeling on fear beliefs and approach–avoidance behaviors towards animals in 8- to 10-year-old typically developing children. Ninety-seven children randomly received either a positive or negative modeling film in which they saw peers interact with a novel animal. Before and after this film, children's fear beliefs and avoidance tendencies towards the modeled and non-modeled control animal were measured. A behavioral approach task was also administered post-modeling. Following positive peer modeling, children's fear beliefs and avoidance tendencies towards the modeled but also towards the non-modeled animal decreased significantly. After negative modeling, children's fear beliefs towards the modeled animal increased significantly, but did not change for the non-modeled animal. Negative modeling did not change avoidance tendencies for the modeled animal, while it decreased children's avoidance of the non-modeled animal. No significant effects were observed on the behavioral approach task. These results support Rachman's indirect pathway of modeling/vicarious learning as a plausible mechanism by which children can acquire fears of novel stimuli and stresses the important fear-reducing effects of positive peer modeling. Clinical implications and directions for future research are discussed.

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Phobias and anxiety disorders are among the most prevalent psychological problems in childhood (Bernstein, Borchardt, & Perwien, 1996; Cartwright-Hatton, McNicol, & Doubleday, 2006; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003) and are associated with a number of adverse outcomes in social, emotional, and school functioning (Strauss, Frame, & Forehand, 1987). If left untreated, childhood anxiety can pose a risk factor for the development of (other) internalizing and externalizing disorders in childhood (Last, Perrin, Hersen, & Kazdin, 1996), adolescence (Bittner et al., 2007), and adulthood (Pine, Cohen, Gurley, Brook, & Ma, 1998). The profound impact of anxiety on the lives of young children highlights the need to advance our understanding of the acquisition of this type of psychopathology.

Fear is characterized as being a reaction to a specific threatening stimulus, characterized by increasing avoidance as cue proximity

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increases, with the response being unreasonable and extensive to the extent that it can interfere with daily life. Lang (1968) described fear in terms of a three-system response model in which fear is reflected in physiological symptoms, subjective feelings of apprehension and avoidance behavior. Fears are known to be non-randomly distributed in the general population (Merckelbach, deJong, Muris, & vandenHout, 1996), with the most prevalent categories of fear being animal fears (e.g. spider phobia); natural environment fears (e.g. fear of heights); blood-injection-injury fears (e.g. dental phobia) and situational fears (e.g. claustrophobia). Fears and phobias often have an early age of onset with children experiencing general patterns of normative fear throughout their development (Field & Davey, 2001). Fear of ghosts and the supernatural are common in early childhood (Bauer, 1976), animal fears in middle childhood while fear of injury and social fears emerge in late childhood and early adolescence (see Muris & Field, in press). The majority of childhood fears remit spontaneously, however for a subgroup of children specific fears persist beyond childhood. Several factors are likely to contribute to the onset and persistence of childhood fears. First, it is known that fear and anxiety have a genetic component, with heritability estimates of between 30 and

40% (Eley et al., 2003). This leaves environmental factors to explain the largest proportion of unique variance in child fear and anxiety. Rachman's (1977) three pathways to fear model represents a useful framework for examining environmental factors involved in the acquisition of fears.

Rachman's (1977) model suggests that fears can be acquired via: 1) a direct route of aversive classical conditioning, and two indirect routes of 2) modeling/vicarious learning (i.e., learning by observing others), and 3) negative information transmission. Empirical research supports both direct as well as indirect pathways to fear acquisition (see reviews by Askew & Field, 2008; King, Eleonora, & Ollendick, 1998; Muris & Field, 2010). However, much of this evidence has relied on retrospective studies (e.g. Gruner, Muris, & Merckelbach, 1999; Muris, Steerneman, Merckelbach, & Meesters, 1996), and therefore the causal role of these pathways in the acquisition of fear cannot be established. Fortunately, recent studies have developed prospective paradigms to explore the role of indirect vicarious learning experiences for the development of childhood fear (Askew & Field, 2007; Gerull & Rapee, 2002).

This study will focus on the role of modeling, a specific form of vicarious learning in which learning occurs as a consequence of observing other people's responses to a situation or stimulus (Askew & Field, 2008). With regard to the role of modeling in fear, two complimentary literatures exist: 1) a *fear reduction* literature, which has investigated the positive modeling of non-fearful and adaptive behaviors in response to potentially fear-provoking situations and stimulus for the reduction of fear (Egliston & Rapee, 2007; Kelly, Barker, Field, Wilson, & Reynolds, 2010) and 2) a *fear acquisition* literature, which has investigated the negative modeling of fearful behaviors and less adaptive responses for the onset of fears (Askew & Field, 2007; Gerull & Rapee, 2002). Modeling can be either in vivo or symbolic (e.g. filmed). In the present study, we compare the effect of positive and negative filmed peer modeling on children's fear learning about novel animals, in particular exploring the effects on children's fear beliefs and avoidance behavior.

The role of modeling in fear acquisition and fear reduction has been examined experimentally in infants and toddlers, with mothers as live models (de Rosnay, Cooper, Tsigaras, & Murray, 2006; Dubi, Rapee, Emerton, & Schniering, 2008; Gerull & Rapee, 2002). Results of these studies showed that toddlers displayed greater fear expressions and avoidance towards novel, fear-relevant and fear-irrelevant stimuli, and strangers following negative maternal modeling. Further, next to the negative role of maternal modeling, past research has also identified a protective role for positive modeling (Egliston & Rapee, 2007; Kelly et al., 2010). Egliston and Rapee (2007) demonstrated that toddlers who observed their mother interact positively with a fear-relevant stimulus, showed more positive reactions and approach behaviors towards that stimulus compared to toddlers who did not observe their mother interact positively with the stimulus. Kelly et al. (2010) showed that in 6- to 8-year-olds, positive information and modeling about an animal led to lower fear beliefs and avoidance behavior than a control condition. Taken together, these results suggest that young children can acquire fear beliefs and avoidance behaviors towards fear-relevant and fear-irrelevant stimuli through (experimentally induced) negative maternal modeling, while positive maternal modeling may serve to reduce the risk for developing fear and avoidance behavior in young children.

Askew and Field (2007) used an experimental, prospective design to determine the effect of vicarious learning on fear cognitions and avoidance behavior of novel animals in children aged 7- to 9-year-olds. In this study, children were presented with images of novel animals, which were paired with images of either happy, scared, or neutral faces (control condition). Children's directly and

indirectly measured fear beliefs towards the animals changed in a direction congruent with the facial expressions with which they were paired during the vicarious learning phase. At a 3-month follow-up assessment, indirectly measured fear beliefs persisted. In a second study, Askew and Field (2007), observed that children were significantly slower to approach a touch box they believed to contain an animal they had previously seen paired with scared faces. Altogether, these results support Rachman's theory (Rachman, 1977), which assumes that vicarious learning represents a viable pathway through which cognitive and behavioral aspects of fear can be learned. However, previous studies on the role of modeling in fear learning and fear reduction have some limitations. First, Askew and Field's paradigm does not resemble vicarious learning in the real world: it is very artificial and used rather pure and unrealistic unconditioned stimuli (USs), which might explain the relatively weak effects (certainly compared to verbal information) they found. Therefore, this paradigm is likely to be (much) less potent than a real world vicarious learning event in establishing fear beliefs in children. However, those studies employing more naturalistic approaches (e.g. de Rosnay et al., 2006; Dubi et al., 2008; Egliston & Rapee, 2007; Gerull & Rapee, 2002) are also limited in that they only used mothers as models. Therefore, the paradigm used in the current study tried to improve on this by using more ecologically valid stimuli, namely videos in which children see unknown peers approach a box, which they believe contains a novel animal in either in a happy, confident manner (positive modeling) or in a hesitant, fearful manner (negative modeling).

To date, very few studies have examined the effect of peer modeling on young children's fear cognitions and behaviors, especially not using a prospective, experimental design. However, there is reason to believe that when children grow older, peers become an important source of information about the world and how to react in different situations, second only to their parents (e.g. Schunk, 1987; Schunk & Hanson, 1985). Previous studies have also mainly focused on the effects of positive peer modeling as a means by which to reduce pre-existing fears. Both Bandura and Menlove (1968) and Hill, Liebert, and Mott (1968) studied the effect of filmed modeling on young children's (pre-existing) fear of dogs. Both studies showed that following positive peer modeling, children achieved larger increases in approach behaviors towards the dogs relative to the no-modeling control condition. Children facing hospitalization, surgery, or dental sessions also report less fear and apprehension prior to their procedure if they have observed a film of a peer undergoing the same procedure compared to children who view an unrelated control film or a demonstration film without a peer model (Melamed & Siegel, 1975; Melamed, Yurcheson, Fleece, Hutcherson, & Hawes, 1978). Third, children fearful of water showed less fear of swimming after being exposed to a peer-coping or peer-mastery model during their swimming sessions than fearful children who had their swimming lessons without being matched with a peer model (Weiss, McCullagh, Smith, & Berlant, 1998). On balance, previous research evidence indicates that filmed and live modeling is an efficacious intervention in the treatment of childhood phobias and anxiety disorders (see for a review Ollendick & King, 1998).

Despite past research demonstrating a role for peer modeling in the reduction of childhood fears, the role of peer modeling in the acquisition of children's fear related beliefs and behaviors has not yet been studied. Therefore, the current study investigated the effect of filmed peer modeling on fear beliefs and approach-avoidance behaviors towards unknown animals in 8- to 10-year-old typically developing children. An experiment is reported in which children viewed peers modeling positive approach or negative avoidance behavior about one of two unknown animals

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