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Nonverbal and Verbal Transmission of Disgust From Mothers to Offspring: Effects on Children's Evaluation of a Novel Animal

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This study examined parent-offspring communication of disgust-related information and its effects on children's feelings of disgust and fear towards an animal. Mothers were instructed to provide information about a novel animal to their children ($N=60$) by studying in secrecy either disgusting or neutral attributes that were allegedly characteristic of this animal. First, mothers were instructed to do this in a nonverbal way; then they were also allowed to use verbal utterances. Results indicated that nonverbal communication of disgust by the mothers failed to produce any effects on offspring's subjective evaluations of the animal. However, verbal information transmission did have a differential impact on children's feelings of disgust and fear. That is, children to whom mothers had verbally communicated about a set of disgusting specimens not only displayed higher levels of disgust (Cohen's $d=1.02$) but also exhibited higher levels of fear (Cohen's $d=.62$) towards the novel animal as compared to children to whom mothers had verbally communicated about neutral specimens. The effect on fear was mainly due to the fact that children after the verbal neutral information exhibited a clear decline in fear, whereas children to whom mothers had provided verbal disgust information maintained a similar level of fear towards the animal. The implications of these results for the familial transmission of disgust and fear will be discussed.

Keywords: disgust; fear; mother-offspring communication; verbal communication; nonverbal communication

FEAR IS A COMMON EMOTION during childhood, which is not surprising as children are regularly confronted with novel stimuli and situations (Muris, 2007). It makes sense that novelty triggers the fear response as it is unknown to children what is going to happen in a variety of situations, making it highly adaptive to show some reticence (Muris, Merckelbach, De Jong, & Ollendick, 2002). Prolonged exposure to the dreaded stimulus or situation and positive feedback from the other people in their direct environment will help most children to quickly overcome such normal fear. However, in some cases, fear may persist and become so frequent and intense that it interferes with children's daily functioning. In these cases, a diagnosis of specific phobia should be considered (American Psychiatric Association, 2000). Research has demonstrated that up to 10% of boys and girls meet the diagnostic criteria for this type of anxiety disorder (Lichtenstein & Annas, 2000; Muris, Merckelbach, Mayer, & Prins, 2000).

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The most prevalent childhood fears and phobias are concerned with animals. For example, a systematic parent-based interview study indicated that animals (e.g., spiders, dogs, wasps, snakes, or mice) were the main topic of fear in 42.5% of nonclinical children aged 4 to 12 years (Muris & Merckelbach, 2000). Moreover, 10% of these children even displayed such a severe fear of animals (e.g., spiders, dogs) that a diagnosis of a specific phobia was warranted, which implied that animal phobias were clearly more frequent than situational-environmental (6.3%) and blood-injection-injury phobias (1.3%; see also Kim et al., 2010). Research on the origins of animal fears or phobias in children has shown that heritability plays a significant role. For example, Lichtenstein and Annas (2000) found that, respectively, 23% and 56% of the variation in animal fears of boys and girls can be attributed to genetic effects. At the same time these figures indicate that environmental influences also play a significant role in the pathogenesis of this type of childhood anxiety. This fits nicely with current developmental psychopathology models that assume that childhood phobias can best be conceptualized as developmentally appropriate fears that have radicalized as a result of complex interactions between genetic-based vulnerability and environmental factors, and a disbalance between risk and proneness on the one hand and protection and resilience on the other (e.g., Muris & Merckelbach, 2001; Vasey & Dadds, 2001).

With regard to environmental variables contributing to childhood fears and phobias, Fisak and Grills-Taquechel (2007) have proposed that the family environment as provided by the parents constitute a highly relevant contextual variable for understanding why some children do not outgrow their normative fears and eventually may develop a phobia. More precisely, when parents encourage their child to approach and actively deal with the dreaded stimulus or situation, it is likely that the fear will quickly dissipate. However, when parents model fearful behavior themselves or communicate threatening information about the stimulus or situation, it is plausible that fear will consolidate or even intensify, thereby posing a potential problem. In relation to the acquisition of animal fear, recent experimental work has indeed indicated that modelling (Egliston & Rapee, 2007; Gerull & Rapee, 2002) and threat information transmission (Muris, Van Zwol, Huijding, & Mayer, 2010; Remmerswaal, Muris, Mayer, & Smeets, 2010) by the parents both seem to play a significant role.

In the past decades, research has convincingly demonstrated that besides the perception of threat, the emotion of disgust also plays a crucial role in animal fear and phobia (Davey & Marzillier, 2009). Briefly, it has been argued that this type of anxiety pathology is not only concerned with harm avoidance, but also has to do with evading the contraction of an illness via the oral ingestion of contaminated food items (see Olatunji & McKay, 2009). While the evidence for the link between disgust and animal fear/phobia in children has gradually accumulated (e.g., De Jong, Andrea, & Muris, 1997; De Jong & Muris, 2002; Muris, Van der Heiden, & Rassin, 2008), still little is known about the development of disgust and contamination beliefs in young people. As the contribution of heredity on sensitivity to disgust has been shown to be fairly small (e.g., Rozin & Millman, 1987), it seems plausible to assume that learning via others is involved (e.g., Oaten, Stevenson, & Case, 2009). In Rozin and Fallon's (1987) words, "The most likely process is transmission of the disgust experience from one person to another, i.e., parent to child … [which] could be mediated by verbal and/or non-verbal expressions" (p. 36).

So far, a number of experimental studies have demonstrated that feelings of disgust towards a novel animal can be induced in children by providing them with verbal (Muris, Mayer, Huijding, & Konings, 2008; Muris et al., 2009) or nonverbal (Muris, Huijding, Mayer, & De Vries, 2012) disgust-related information. It is of interest to note that such experimental inductions of disgust also increased children's fear towards the novel animal, a finding that could be mediated by the process of evaluative conditioning. That is, the overall liking of the novel animal (conditioned stimulus or CS) decreases as a result of its pairing with negatively tinted information (unconditioned stimulus or US; Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010). While the above described research clearly supports Rozin and Fallon's (1987) notion that disgust can be transferred from one person to another via verbal and nonverbal expressions, no study can be found that examined parent-offspring communication of disgust-related information and its effects on children's evaluation of animals.

The present investigation was conducted to fill this gap. Mothers of 60 nonclinical children had to provide their children with information about a novel animal (the cuscus) by studying a number of attributes that were characteristic of this animal. First, mothers were instructed to do this in a nonverbal way; subsequently, they were also allowed to use verbal utterances. As an experimental manipulation, half of the mothers were given a set of disgust-eliciting products in relation to the animal, whereas the other half received a set of neutral materials. Children could not see the specimens that were inspected in secrecy by the mothers, but had to form for themselves an impression of the animal on the basis of nonverbal