PERGAMON

Behaviour Research and Therapy 39 (2001) 1395–1410

BEHAVIOUR RESEARCH AND THERAPY

www.elsevier.com/locate/brat

A longitudinal study of the etiology of separation anxiety

Richie Poulton [a,*], Barry J. Milne [a], Michelle G. Craske [b], Ross G. Menzies [c]

[a] *Dunedin Multidisciplinary Health and Development Research Unit, Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago, P.O. Box 913, Dunedin, New Zealand*

[b] *Department of Psychology, University of California, 405 Hilgard Avenue, Los Angeles, CA 90095-1563, USA*

[c] *Department of Behavioural Sciences, University of Sydney, P.O. Box 170, Lidcombe, New South Wales, 2141, Australia*

Accepted 18 October 2000

Abstract

A longitudinal examination of the relation between separation experiences and the development of separation anxiety at age 3, 11 and 18 years was conducted. Three associative pathways (Rachman, S.J. (1978). *Fear and courage*. San Francisco: W.H. Freeman) were assessed. Conditioning events were not related to separation anxiety at age 3. Vicarious learning (modelling) in middle childhood (age 9 years) was the conditioning variable most strongly related to separation anxiety at age 11, accounting for 1.8% of the variance in symptoms. Separation experiences (hospitalisations) before the age of 9 were inversely correlated with separation anxiety at age 18. That is, more overnight hospital stays in childhood were related to *less* separation anxiety in late adolescence. However, none of these conditioning correlates remained significant predictors of separation anxiety in adjusted regression models. In contrast, certain "planned" separations in early–mid childhood were associated with lower levels of separation anxiety at later ages. Generally, the findings were consistent with predictions from the non-associative theory of fear acquisition. That vicarious learning processes appeared to modulate, albeit to a minor degree, the expression of separation anxiety during mid–late childhood suggests that there may be critical periods during which some individuals are susceptible to the interactive effects of both associative and non-associative processes. These findings serve to illustrate the complexity of fear acquisition, the relevance of developmental factors and the likely interplay between associative and non-associative processes in the etiology of fear and anxiety.

* Corresponding author. Fax: +64-3-479-5487.
E-mail address: richiep@gandalf.otago.ac.nz (R. Poulton).

0005-7967/01/$ - see front matter
PII: S0005-7967(00)00105-4

1. Introduction

Fear of separation is common to many species (Kraemer 1985, 1992; McKinney, 1985; Mineka, 1982). Human infants may cry at their guardians departure from 8 to 24 months, with likelihood peaking around 13 months (Kagan, Kearsley & Zelazo, 1978) and decreasing from 30 months onward (Cox & Campbell, 1968; Gershaw & Schwartz, 1971). The anxiety is greater if the child is in an unfamiliar setting. This occurs despite differences in child-rearing practices across a variety of settings, including the United States, Guatemala and Israel (Kagan et al., 1978). Separation anxiety is seen in children with Down's syndrome, in the blind (who recognise the absence of their caretaker by sound) and is the same if the caretaker is male or female, or if the child was reared at home or in day care (Marks, 1987). It is easy to speculate on the adaptive value of this response (Marks & Nesse, 1994), and Bowlby (1973) and Marks (1987) have argued persuasively that separation from a caretaker increases the likelihood of negative outcomes for many species.

Retrospective reports suggest that separation anxiety is unrelated to the amount of previous time spent with the caretaker, and more importantly, appears to be unrelated to past aversive experiences during separation (Bowlby, 1973; Clarke & Jackson, 1983; Marks, 1987). This is consistent with a non-associative account of fear acquisition (Menzies & Clarke, 1995) that predicts that aversive associative learning is not a prerequisite for evolutionary-relevant fears. Consistent with this hypothesis, recent prospective data have demonstrated that evolutionary-relevant fears such as fear of height and water are largely unrelated to a history of direct aversive conditioning events (Poulton, Davies, Menzies, Langley & Silva, 1998; Poulton, Menzies, Craske, Langley and Silva, 1999). However, the primary focus of both of these prospective studies was on the role of direct conditioning events in fear development, and two other major associative pathways for fear acquisition were not systematically assessed. Specifically, the role of vicarious learning/modelling and the transmission of information has yet to be compared against a non-associative account of the development of evolutionary-relevant fear in a prospective study. A comprehensive test of the non-associative model requires that all three of the associative pathways described by Rachman (1977) (i.e. direct conditioning, vicarious learning and transmission of information) be evaluated against the non-associative account.

We were also interested in identifying experiential factors associated with decreases in levels of separation anxiety. It was hypothesised that learning not to fear separation would be associated with planned, safe and non-painful separations (e.g. pre-school attendance), whereas unpredictable, and potentially more aversive experiences (e.g. acute hospitalisations) would be associated with higher levels of separation anxiety (see Rachman, 1978: 254 for a discussion of "Learning not to fear").

Separation anxiety should be studied beyond the age at which it is normative, that is, after the age of 30 months (Marks, 1987). Presumably high levels beyond this age reflect a more extreme form of separation anxiety, one that may be qualitatively different and of clinical relevance. Accordingly, this study assessed a variety of separation experiences from birth through to age 18 years in a relatively large, unselected birth cohort and related these to measures of separation anxiety at ages 3, 11 and 18 years. Because low socio-economic status (SES) has been suggested to be a risk factor for separation anxiety (Bird, Gould, Yager, Staghezza & Canino, 1989), we also controlled for SES in analyses.