

# Recollections of parental behaviour, adult attachment and mental health: mediating and moderating effects

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## ABSTRACT

**Background.** Attachment theory posits links between early experiences with parents, adult relationships and adult mental health, but does not specify whether these are independent, mediating, or moderating effects.

**Methods.** Associations of parent's behaviour on the Parental Bonding Instrument, adult attachment styles and three dimensions of mental health were investigated in a large sample of women and men.

**Results.** Men and women with secure styles recalled higher levels of care from both parents than those with fearful styles. Maternal and paternal control were more consistent predictors of increased distress for men than for women. Fearful and preoccupied adult styles were associated with higher levels of distress in both men and women. While adult styles had few mediating effects on the association of parental behaviour and mental health, interactions between the fearful style and parental variables suggested that this form of insecurity sometimes accentuated the impact of high parental care or low paternal control on mental health in both men and women; among women, however, the secure style seemed to buffer somewhat the negative effect of high parental control.

**Conclusion.** Although the amount of variance explained by either parental behaviour or adult styles was modest, patterns of moderating effects of adult styles on associations between parental behaviour and mental health suggested that both continuity and discontinuity principles can be applied to understanding these links.

## INTRODUCTION

Bowlby's attachment theory (1969, 1973, 1980) has stimulated research on the links between early experiences with parents, the development of adult attachment styles, and ultimately the extent to which each contributes to individual differences in well-being and mental health. The purpose of this study was to examine these associations in a large sample of adult women and men.

### **Continuity versus discontinuity of early attachment and adult relationships**

According to Bowlby (1973, 1988) and others (e.g. Belsky & Nezworski, 1988) development is

continuous; that is, early experiences with parents provide the template for future relationships. The means by which these early influences are transmitted across the life span has been described by a variety of concepts such as 'internal working models' (Bowlby, 1973, 1980), mental representations of parents (Levy *et al.* 1998) or expectations concerning the self and others (Belsky & Nezworski, 1988; Sroufe, 1988). The assumption is that the attachment 'model' is gradually incorporated into the individual's psychological organization and significantly influences the course of other relationships (Sroufe & Waters, 1977). In a stable environment, early attachment styles will prevail in future relationships (Fox, 1995), so that early attachment experiences influence mental health indirectly through their effects on the development of adult relationships. Thus,

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adult relationships may mediate the influences of early attachment experiences on later mental health outcomes.

At the same time, Bowlby (1988) and others (Belsky, 1984; Fox, 1995) recognized that individual differences and contextual factors present throughout life are at play in the development of attachment. Described by Belsky & Nezworski (1988) as the 'conditions of continuity', factors such as the availability of supportive social relationships, especially intimate relationships may act as moderators; that is, they may amplify or attenuate the effects of early attachment experiences (e.g. Spieker & Booth, 1997). Belsky & Nezworski (1988) suggested the term 'lawful discontinuity' to encompass the contextual factors and or personal changes that moderate the effects of early relationships. For example, Main *et al.* (1985) found that some adults who had insecure attachments as children were able cognitively to process their negative feelings and became sufficiently secure as parents to form secure attachments with their children, thus breaking the continuity of the problematical behaviour. Interventions targeted at insensitive maternal behaviour have been found to increase sensitivity; however, the impact of these changes on infant security has been much more modest (Van Ijzendoorn *et al.* 1995). Both sides of the continuity/discontinuity debate are integrated in the statement that 'development is always a product of both current circumstances and developmental history', through the way that 'the developing child in part constructs his own environment [so that]... prior experience is not lost but is incorporated into the new pattern of adaptation' (Sroufe *et al.* 1990, p. 1364).

#### Early attachment and adult relationships

The concept of continuity has received limited support in the adult research literature. Studies that have used the original attachment categories (i.e. secure, anxious and avoidant attachment; Ainsworth *et al.* 1978) or a more recent extension (Bartholomew & Horowitz, 1991) to examine the relationships between adults' reports of their early attachments to parents and their attachment styles as adults have found associations between the two in a variety of relationship contexts, including romantic relationships (Hazan & Shaver, 1987; Bartholomew &

Horowitz, 1991), friendships (Bartholomew & Horowitz, 1991) and even more diffuse peer networks (e.g. Bartholomew & Horowitz, 1991). Even more compelling is a recent report of associations between attachment styles assessed in late adulthood and the relationship patterns and attitudes of women over the previous 31 years (Klohn & Bera, 1998). Studies that have used dimensional measures of parental behaviour such as the Parental Bonding Instrument (PBI; Parker *et al.* 1979) have also found associations between reports of parental behaviour and various measures of social network quality or social support, but have generally not found early parental behaviour to be related to the quality of more intimate relationships (Rodgers, 1996*a* and studies reviewed by Parker, 1989; Parker *et al.* 1992). An exception is the study by Carnelley *et al.* (1994) in which positive experiences with either parent were negatively correlated with avoidant and preoccupied styles. Maternal control, but not paternal control, was positively correlated with both insecure styles. Truant *et al.* (reviewed by Parker, 1989; Parker *et al.* 1992) found associations between PBI ratings and marital quality only for selected subgroups of subjects; women who reported low care from the 'least caring parent' reported lower marital quality (Parker, 1989, p. 880). Thus, there is also evidence for a certain amount of discontinuity between early and later close relationships.

#### Attachment and mental health

Numerous investigations of relationships between recollections of early parenting and adult mental health variables have found associations that are consistent with attachment theory for variables such as parental care and low depression (Parker, 1981, 1983) or low affective symptoms (Rodgers, 1996*b*), parental warmth and high self-esteem and sociability (Collins & Read, 1990) and secure attachments and low depression and high self-esteem (Salzman, 1996). Parental coldness and control have also been associated with poorer mental health in studies by Collins & Read (1990), Rodgers (1996*b*), and Parker (1981, 1983). Similarly, consistent associations of adult attachment and mental health have also been found. Depression, for example, has been positively associated with insecure attachment styles (e.g. Hazan & Shaver,

1987, 1990; Mikulincer *et al.* 1993; Carnelley *et al.* 1994; Hammen *et al.* 1994; Roberts *et al.* 1996), as has anxiety (Hazan & Shaver, 1990; Shaver & Brennan, 1992; Mikulincer *et al.* 1993; Mikulincer & Orbach, 1995; Roberts *et al.* 1996) and low self-esteem (Collins & Read, 1990; Hazan & Shaver, 1990; Roberts *et al.* 1996; Brennan & Morris, 1997).

### **Early attachment, adult styles and adult mental health**

Fewer studies have examined relationships among early attachment, adult attachment and adult mental health variables at the same time. Carnelley *et al.* (1994) reported two studies that addressed these relationships only indirectly. In a sample of college women, reports of childhood experiences with parents predicted adult attachment styles and depression, each of which independently predicted relationship functioning. In the second study, where married women recovering from an episode of major depression were compared with non-depressed controls, negative childhood experiences with parents did not predict insecure adult attachment styles, but did predict depression status, and depression status was associated with insecure adult attachment. However, the regression models in these studies employed depression and adult attachment status as independent predictors of relationship functioning; depression was never used as a dependent variable in models with both early parental behaviour and adult styles as predictors.

### **Mediating and moderating effects**

Three studies have more directly explored the degree to which adult relationships either mediate or moderate the effect of early relationships on adult mental health. Rodgers (1996*a*), used the PBI to assess the quality of early relationships, measures of social support to assess adult attachment and a composite measure of psychological symptoms to assess overall mental health. While parental behaviour was directly related to adult mental health, it made no additional contribution to the prediction of the overall mental health scores beyond that provided by adult interpersonal factors such as emotional support and social network quality, among women; or emotional support and availability of help, among men. This led Rodgers to

conclude that adult social experiences are important mediators of early developmental influences. Bartholomew & Horowitz (1991) came to a similar conclusion for one aspect of interpersonal problems, based on regression analyses of ratings of early family and current peer relationships on measures of problems with warmth and dominance. The presence of these mediating effects does not necessarily contradict the continuity hypothesis; rather it suggests that the more proximal relationships may be more salient for adult mental health.

Moderation models speak more directly than mediation models to the continuity-discontinuity question. The greatest differentiation in mental health should occur when both early and later relationships are similar in style, that is, when they are continuous. When early and later relationship styles are different, that is discontinuous, the impact of the earlier relationships on mental health will be buffered in concert with the later style. Andersson & Stevens (1993) tested such a moderation model in a sample of elderly adults. They used the PBI care scale to characterize parental relationships and an index that combined marital status, the availability of a close confidant, and the lack of tension in a partner relationship to assess current attachment status. Interactions of recalled maternal and paternal care with current attachment status were significant predictors of anxiety. Maternal care also interacted with current attachment status to predict loneliness. In each case, the quality of current attachments buffered the negative impact of low parental care on mental health.

While only one of these tests of mediation or moderation models used the original attachment categories to characterize adult relationships (Bartholomew & Horowitz, 1991), all have supported the view that the quality of adult relationships are important links in the associations between early family relationships and mental health.

### **Hypotheses**

The present study tested the following hypotheses.

1 Following from Bowlby's (1973) conception of continuity between early parental behaviour and adult attachments, we predicted that adults with secure attachments would recall higher

levels of parental care and lower levels of parental control than those with any of the insecure styles.

2 We predicted that a secure adult attachment would be associated with better mental health than either the preoccupied or fearful styles. As the Bartholomew & Horowitz' (1991) model characterizes the fearful style by a negative view of self and others, we also predicted that this style would be associated with the highest levels of psychological distress. Considering that the dismissive style shares a positive view of self with the secure style, we predicted that there would be fewer differences in mental health variables between secure and dismissive groups.

3 With regard to recollections of parental behaviour as assessed by the PBI, we predicted that high parental care and low parental control would be associated with better adult mental health.

4 With respect to the relative contribution of parental behaviour and adult relationships to mental health, two alternatives were examined. Based on prior research showing some mediating effects of adult attachment, we predicted that the quality of the adult attachment would mediate relationships between early parental behaviour and mental health. As an alternative, we explored the possibility that adult styles would moderate these associations.

## METHOD

### Participants

Participants were women and their spouses/partners who took part in a large-scale longitudinal study of parenting and work (Hyde *et al.* 1996). Participants were recruited from obstetrics or family practice clinics in two mid-western cities. All patients in the second trimester were screened to ensure that they met the following inclusion criteria: (a) over age 18; (b) between weeks 12 and 21 of a non-high-risk pregnancy (second trimester); (c) not disabled in a way that would significantly affect functioning as a parent; (d) living with the father, although not necessarily married; (e) at least one member of the couple was working for pay or profit; and (f) the woman was either clearly employed or a full-time homemaker, i.e. not self-reported as 'unemployed' or a student. Seventy-five per cent of the women who met these criteria agreed to

participate. Those who refused had fewer years of education, but reported higher family incomes. There were no differences between participants and non-participants in age, minority status, employment status, or city of residence. Sample selection and assessment procedures are described in greater detail elsewhere (Hyde *et al.* 1995). Procedures for the study were approved by the human subjects committees of the University and each of the participating clinics.

The women and their partners were interviewed and completed paper-and-pencil questionnaires, starting when first recruited in the fifth month of pregnancy and continuing over the next year. The data reported in the present paper were collected during the fourth assessment which took place 1 year after the women had given birth. This assessment was completed by 530 women and 492 of their partners (93% of the women and 86% of the men who initially entered the study). There were no differences in age, education, family income, employment status or minority status between women or men who were still enrolled in the study at this point, compared with those who did not continue, except that men who had dropped out of the study by the time of the fourth assessment had fewer years of education than those who continued. The sample of women consisted of 7% ethnic minorities; ages ranged from 20 to 43, median 30; number of children from 1 to 7, median 2. Two per cent of the women had not completed high school, 25% were high school or technical school graduates; 20% had attended some college; 35% were college graduates; and 19% had some postgraduate education. Seventy-two per cent of the women were employed at the 1-year assessment. The sample of men was composed of 6% ethnic minorities. Their ages ranged from 21 to 52, median 31. Two per cent of the men had not completed high school, 28% were high school or technical school graduates; 20% had attended some college; 28% were college graduates; and 22% had some postgraduate education. Ninety-eight per cent of the men were employed. Family income ranged from \$4800 to \$200000, median \$45000. This level of income is close to the median of \$48169 reported for dual-earner couples in the United States (US Department of Labor, 1993).

## Measures

### *Recollections of parental behaviour*

Retrospective assessments of the participants' relationships with parents during their first 16 years were gathered using the Parental Bonding Instrument (PBI; Parker, 1989) which taps two dimensions of parenting style, care and control. Extensive evidence exists for the reliability and validity of the PBI (Parker, 1989; Wilhelm & Parker, 1990). Respondents were given the PBI twice, once asking about their mothers and once about their fathers (or whatever parental figures were present during the majority of their first 16 years, i.e. step-parents). The reliabilities (Cronbach's alpha) for the PBI were 0.95 for the women's ratings of maternal care and 0.94 for paternal care; 0.86 and 0.87 for their ratings of maternal and paternal control, respectively. For men, alphas were 0.90 for maternal care and 0.93 for paternal care; 0.86 and 0.87 for their ratings of maternal and paternal control.

### *Adult attachment style*

Adult attachment style was measured using a self-report measure developed by Bartholomew & Horowitz (BHAS; Bartholomew & Horowitz, 1991). In addition to the 'secure' style and two insecure styles, 'preoccupied' which corresponds to anxious/ambivalent and 'fearful' which corresponds to avoidant (Ainsworth *et al.* 1978; Main *et al.* 1985; Hazan & Shaver, 1987), the BHAS includes a 'dismissive' style in which individuals view themselves as positive and others as negative. This method has been used in prior work on adult attachment styles (e.g. Bartholomew & Horowitz, 1991; Brennan & Morris, 1997), and it shows reasonable correspondence to the more in-depth Adult Attachment Interview (Bartholomew & Horowitz, 1991) and to ratings by friends and romantic partners (Griffin & Bartholomew, 1994). In the present study, respondents were instructed to rate their feelings and behaviour in their close relationships on each of four descriptive paragraphs corresponding to different attachment styles and each respondent was classified according to the style they endorsed most strongly. If any two styles were endorsed at the same level, that person was considered unclassifiable.

This method resulted in a distribution of

styles similar to those reported for low-risk groups (Belsky & Isabella, 1988; Spieker & Booth, 1997) and to other studies using the BHAS (Bartholomew & Horowitz, 1991). Of the 524 women who responded to the four attachment questions, 82% gave classifiable responses: 59% described secure attachment styles, 11% dismissive, 7% fearful and 5% preoccupied. Of the 492 men who responded, 74% could be classified as either secure (43%), dismissive (23%), fearful (5%), or preoccupied (4%).

### *Mental health*

Three aspects of mental health were assessed, using measures in wide use: Rosenberg's (1965) Self-Esteem Scale was used to assess this positive aspect of well-being. State anxiety was measured by the state form of the Spielberger State-Trait Anxiety Inventory (Spielberger, 1983). The Center for Epidemiologic Studies Depression Scale (CES-D) was used to assess depression (Radloff, 1977). Alphas for the current study for self-esteem were 0.86 for women and men; for anxiety, 0.85 for women and 0.88 for men; and for depression were 0.88 for women and 0.89 for men. In each case, participants were instructed to rate their feelings in the past week (see Hyde *et al.* 1995 for further details).

## RESULTS

### **Parental behaviour and adult attachment styles**

Our first hypothesis was that recollections of parental behaviour would be associated with the adult attachment styles represented by the BHAS categories. To test this hypotheses MANOVAs with the four attachment categories as independent variables and the four PBI scales as dependent variables were carried out. Separate analyses were done for women and men because the subjects were living together. Overall group differences were significant for women,  $F(12,1208) = 2.15$ ,  $P = 0.012$ , and for men,  $F(12,1010) = 4.01$ ,  $P < 0.001$ . Univariate ANOVAs were significant for the dimensions of maternal care ( $P < 0.001$ , for women and men) and paternal care ( $P < 0.05$  for women and men). The most consistent differences among specific attachment groups were between the secure and fearful categories (four out of eight possible comparisons). Men and women with



Table 1. Regression (betas) of PBI scores on mental health variables for women (N = 403)

PBI variable	Mental health variable								
	Depression			Anxiety			Self-esteem		
Model	1	2	3	1	2	3	1	2	3
Maternal care	-0.12*		-0.08	0.00		0.02	0.19**		0.17**
Maternal control	0.08		0.07	0.12*		0.11	-0.11		-0.10
Paternal care	-0.17**		-0.14**	-0.14*		-0.13*	0.20***		0.18***
Paternal control	0.00		-0.00	0.03		0.03	0.04		0.05
Secure v. insecure		-0.34***	-0.30***		-0.21***	-0.20***		0.25***	0.19***
R	0.28***	0.34***	0.41***	0.29***	0.22***	0.29***	0.36***	0.25**	0.40***
R <sup>2</sup>	0.08***	0.12***	0.16***	0.05***	0.05***	0.08***	0.13***	0.06***	0.16***

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$ .

secure attachments recalled higher levels of maternal care than did those with fearful attachments (secure women mean = 28.4, s.d. = 7.4; fearful women mean = 22.8, s.d. = 9.5; secure men mean = 30.1, s.d. = 5.4; fearful men mean = 25.7, s.d. = 6.3). Men with secure attachments also recalled higher levels of paternal care than did men with fearful styles (secure men mean = 24.6, s.d. = 7.3; fearful men mean = 20.3, s.d. = 8.2). In addition, men with dismissive styles recalled higher levels of maternal care than did men with fearful styles (dismissive men mean = 28.8, s.d. = 5.1). Only one dimension of control, maternal control as recalled by men, yielded a significant difference between groups ( $P < 0.001$ ). Men classified as secure or dismissive recalled lower levels of maternal control than those classified as either fearful or preoccupied (secure men, mean = 11.1, s.d. = 5.7; dismissive men, mean = 11.6, s.d. = 5.7; fearful men, mean = 16.1, s.d. = 8.7; preoccupied men, mean = 18.1, s.d. = 8.4).<sup>1</sup>

#### Adult attachment styles and mental health

Comparisons of the four BHAS adult attachment style groups on measures of mental health yielded significant overall differences: for women MANOVA  $F(9,1232) = 10.41$ ,  $P < 0.001$ ; for men MANOVA  $F(9,977) = 3.47$ ,  $P < 0.001$ . Univariate ANOVAS were significant for each of the mental health variables examined (for women, all  $P$ s  $< 0.001$ ; for men, depression and anxiety  $P$ s  $< 0.001$ , self-esteem  $P < 0.01$ ).<sup>1</sup> Significant differences between specific attach-

ment groups occurred between the secure and fearful groups (five out of six possible comparisons) and the secure and preoccupied groups (five of six). In each instance, the secure group enjoyed the better mental health. The dismissive group also reported better mental health than the fearful group in five out of six possible comparisons. The only difference between secure and dismissive groups was for depression in women.

#### Parental behaviour and adult styles as predictors of adult mental health

In the following paragraphs we describe the analyses of mediating effects of adult attachment style and the unique contributions of early parenting and adult attachment styles in relation to adult mental health. Finally, we consider the extent to which adult attachment style moderates the effect of early parenting on adult mental health.<sup>2</sup>

##### Mediating effects of the secure adult style

An hierarchical regression was conducted to ascertain whether adult attachment style mediated the relationship between the recollection of how one was parented early in life and current mental health. Three conditions must be met if adult attachment style is to be considered as a mediator: first, the relationship between early parenting and current mental health must be significant when adult attachment style is not in the equation; secondly, when adult attach-

<sup>1</sup> Tables of means and standard deviations for all groups are available upon request from the authors.

<sup>2</sup> The zero-order correlations between the PBI and mental health variables were all significant and ranged from -0.08,  $P < 0.05$  (maternal care with anxiety for women) to 0.32,  $P < 0.001$  (maternal care with self-esteem for men).

Table 2. Regression (betas) of PBI scores on mental health variables for men (N = 317)

PBI variable	Mental health variable								
	Depression			Anxiety			Self-esteem		
Model	1	2	3	1	2	3	1	2	3
Maternal care	-0.06		-0.05	0.01		-0.01	0.11		0.11
Maternal control	0.30***		0.29***	0.22**		0.21**	-0.19**		-0.19**
Paternal care	-0.12*		-0.12	-0.07		-0.06	0.14*		0.14*
Paternal control	0.04		-0.03	0.05		0.05	-0.14*		-0.14*
Secure v. insecure		-0.15**	-0.08		-0.12*	-0.07		0.09	0.01
R	0.37***	0.15**	0.38***	0.28***	0.12*	0.29***	0.44***	0.09	0.44***
R <sup>2</sup>	0.14***	0.02**	0.14***	0.08***	0.02*	0.09***	0.20***	0.01	0.20***

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$ .

ment style is added to the regression equation, it must be significantly related to mental health; and thirdly, when adult attachment style is added, the direct relationship between early parenting and mental health is reduced to non-significance.

In order to examine the mediating effect of adult attachment style a dummy variable was constructed in which a secure adult attachment style was coded as '1' and all three insecure styles were coded as '0'. Table 1 shows the results of these regression analyses among women for each of the three mental health outcomes. Model 1 shows the effect of each of the four PBI scales on current mental health, controlling for all of the others. Model 2 shows the effect of adult attachment style. Considered alone, both recalled parenting, especially maternal and paternal care, and the secure adult style independently predicted better mental health outcomes for women. When both parental and adult styles were entered simultaneously in Model 3 only the relationship between maternal care and depression was mediated by adult attachment; that is while there was no significant direct effect of maternal care on depression, the effect of adult attachment remained significant, suggesting that the more secure women were less depressed, independent of the amount of maternal care recalled.

Table 2 summarizes the three regression models for men. Again, recalled parental styles, especially maternal control, were directly related to the three mental health measures (Model 1), so that higher levels of control predicted higher levels of depression and anxiety and lower levels of self-esteem. Secure adult styles, as tested by Model 2 predicted reduced depression and

anxiety, but did not affect self-esteem. Finally, the adult styles had no mediational effects. In contrast to the results for women, when Model 3 was tested among men, the associations of their adult styles with depression and anxiety became non-significant when the parental variables (especially maternal control) were included.

Comparison of Tables 1 and 2 also suggests that men and women may differ in some patterns of relationships between early or adult attachment and mental health. For men, maternal control appeared to be the aspect of parental behaviour most closely associated with mental health, while paternal care seemed to be somewhat more important for women. Also for men, paternal control seemed to be more predictive of low self-esteem. In addition, the secure *versus* insecure adult styles seemed to be more predictive of mental health for women than for men. Separate regression analyses including both women and men and dummy variables for gender and gender by attachment interactions were performed to assess the strength of these gender differences. The interaction between gender and the secure versus insecure adult style was significant for depression (beta = -0.33,  $P < 0.01$ ) and self-esteem (beta = 0.32,  $P < 0.01$ ), suggesting that adult relationships were more important predictors of these aspects of mental health for women than for men. The interactions between gender and maternal control were also significant for depression (beta = -0.41;  $P < 0.001$ ) and self-esteem (beta = 0.31;  $P < 0.01$ ), and the interaction of gender with paternal control was also significant for self-esteem (beta = 0.45,  $P < 0.01$ ). This suggests that this aspect of parental behaviour

had a stronger impact on mental health for men than for women. None of the interactions of gender and parental care was significant.

#### Unique effects

Examination of the change in  $R^2$  when adult attachment style was entered subsequent to parenting styles provides an estimate of the unique variance that can be attributed to adult style above and beyond the variance shared with parenting style. Reversing the order of entry estimates the unique effect of parenting styles on adult mental health above and beyond that shared with adult attachment style. The estimates of the unique effects of these two factors on mental health are summarized in Table 3. For women, the security of the current relationship contributed somewhat more to the explanation of depression, whereas early parenting contributed more to general self-

esteem. For men, early parenting accounted for substantially more of the variance in mental health than did adult attachment style across all three mental health variables.

#### Moderating effects of adult styles

Another set of multiple regression analyses explored the moderating effects of adult attachment styles on the relationships between parental behaviour and mental health. In each analysis, one of the three mental health variables was the dependent variable. Independent variables were one of the PBI scores and one of the 'insecure' BHAS attachment styles dummy coded to contrast with the secure style, for example, fearful coded as '1' and secure coded as '0'. In addition to these first-order effects, the interaction between one dimension of parental behaviour and an adult attachment category was included in each analysis. The most consistent pattern of significant interactions was obtained for interactions of the fearful (*versus* secure) styles with parental behaviour. These results are summarized in Table 4. Two different patterns were found.

Fig. 1 illustrates the pattern that was obtained in six of the nine significant interactions. Paternal care interacted with the fearful (*versus* secure) style to predict depression among women and anxiety among men. Maternal care also interacted with the fearful style to predict depression among men. In addition, for men, the fearful style interacted with paternal control to predict depression and anxiety and with maternal control to predict depression. In each case, the relationship between parental behaviour and distress was different for the secure and fearful

Table 3. Summary of unique effects of parental and adult variables on mental health

Attachment variable	Mental health variable		
	Depression	Anxiety	Self-esteem
<b>Women</b>			
Parental variables*	0.04	0.03	0.10
Adult attachment†	0.08	0.03	0.03
<b>Men</b>			
Parental variables*	0.12	0.07	0.19
Adult attachment†	0.00	0.01	0.00

\* Change in  $R^2$  when PBI variables were entered second in a two-step hierarchical regression analysis in which secure *versus* insecure adult attachment style was entered in the first step.

† Change in  $R^2$  when adult attachment style was entered second in a two-step hierarchical regression analysis in which PBI variables were entered in the first step.

Table 4. Summary of significant interactions (betas) of PBI variables with fearful (1) v. secure (0) adult attachment styles

PBI variable	Women			Men		
	Depression	Anxiety	Self-esteem	Depression	Anxiety	Self-esteem
Maternal care	NS	NS	NS	-0.26**	NS	NS
Maternal control	-0.15**	-0.15*	NS	0.20*	NS	NS
Paternal care	-0.12*	NS	NS	NS	-0.23**	NS
Paternal control	-0.14**	NS	NS	0.30***	0.18**	NS

$N$  for women ranged from 336 to 343; and from 207 to 213 for men. First-order components of interaction terms were centred prior to analyses. Main effects of the PBI variables remained significant when their interactions with adult styles were significant except for the main effects of parental care among men when predicting depression and anxiety. Among women, the main effect for the adult style remained significant when its interactions with PBI variables were significant. For men, the main effect for the fearful *versus* secure style remained significant only for the two interactions involving paternal control.

\*  $P < 0.05$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$ .



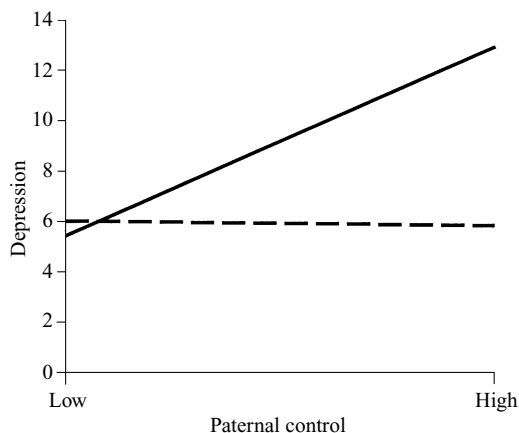


FIG. 1. Interaction of recollections of paternal control and the fearful (—) versus secure (---) adult styles on depression among men.

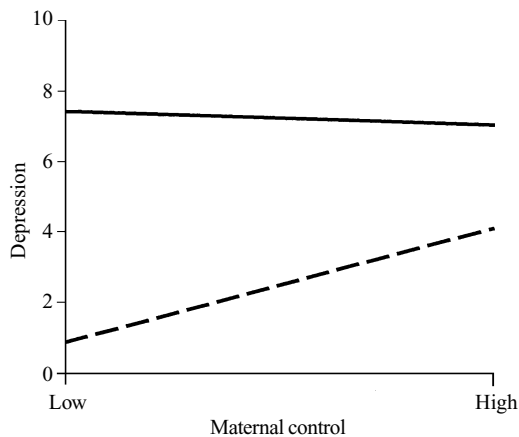


FIG. 2. Interaction of recollections of maternal control and the fearful (—) versus secure (---) adult styles on depression among women.

groups. When men or women reported a fearful adult style, their distress was related to higher levels of parental control or to lower levels of parental care,  $t(340)$  values for simple slopes ranged from 3.27 to 6.14, all significant at  $P < 0.001$ . However, there was no relationship between parental behaviour and mental health among the more secure men and women, ( $t(340)$  values for simple slopes ranged from 0.17 to 1.92, NS (Aiken & West, 1991)).

Fig. 2 shows a pattern that was found only among women for interactions of the fearful (versus secure) style with maternal control to

predict depression and anxiety and with paternal control to predict depression. Among the fearful women, distress was uniformly high regardless of the level of control,  $t(340)$  values for simple slopes ranged from 0.20 to 0.46, NS. Among women with secure styles, distress was positively related to the magnitude of parental control, i.e.  $t(340)$  values for simple slopes ranged from 3.34 to 4.28, all significant at  $P < 0.001$ .

## DISCUSSION

The main findings were as follows.

1 The most consistent pattern of associations between parental behaviour and adult attachment was for the dimension of care; men and women with secure styles reported higher levels of care from both parents than those with fearful styles. Only among men was higher maternal control associated with preoccupied and fearful adult styles.

2 As predicted, both perceived parental behaviour and adult attachment styles were associated with adult mental health. Fearful and preoccupied adult styles were associated with higher levels of depression and anxiety, and with lower self-esteem. Maternal and paternal control were more important predictors of increased distress for men than for women. Furthermore, the unique effects of parental styles on mental health were greater among men, while adult styles were relatively more important predictors among women. However, the amount of variance predicted by either aspect of attachment was quite modest.

3 Adult styles had few mediating effects on the association of parental behaviour and mental health, but interactions between the fearful style and some of the parental variables suggested that the combination of this form of insecurity with low parental care or high control was associated with the poorest mental health, while the secure style seemed to buffer somewhat the impact of parental behaviour.

### Parental behaviour and adult relationships

Consistent with the concept of continuity of working models and with Bowlby's (1973) emphasis on the role of parental warmth and nurture in his theory of attachment, care from both parents showed the strongest associations with secure adult attachments, and figured

especially in the distinction between the secure and fearful (avoidant) styles. This result is consistent with other studies that have also used either the original three-category (Collins & Read, 1990; Hazan & Shaver, 1987) or the more recent four-category (e.g. Bartholomew & Horowitz, 1991; Carnelley *et al.* 1994) attachment models to assess the adult relationships. The few studies that have not found consistent associations between intimate adult relationship styles and early parental behaviour have used other methods to assess the adult styles, such as the Locke–Wallace Scale for marital relationships or the Intimate Bond Inventory (Parker *et al.* 1992). It may be that the concepts captured by the original attachment categories (Ainsworth *et al.* 1978; Main *et al.* 1985) tap different aspects of relationships from those captured by other measures of relationship quality and thus the measures more faithful to attachment theory are more likely to support hypotheses arising from that orientation. It is also important to bear in mind that the PBI assesses dimensions of parental behaviour that are presumed to influence the development of the child's attachment style, but the child's attachment behaviour, which is the crucial link in the chain, was not directly assessed in any of these studies, including our own.

Parental control does not seem to be as strong a predictor of adult style as does parental care. In the present study only maternal control among men was associated with fearful and preoccupied styles. While Hazan & Shaver (1987) reported significant negative correlations between the function that discriminated secure from avoidant and anxious styles and their measure of maternal control, neither Carnelley *et al.* (1994) nor Bartholomew & Horowitz (1991) found similar relationships. In their discussion, Bartholomew & Horowitz (1991) speculated that the dimension of control or dominance 'is more complex and subject to greater variation over time and across relationships' (p. 240) than is parental warmth and affection. Parker and colleagues (1992) also noted that the dimension of control has been less consistently linked to patterns of adult social behaviour than has the dimension of care. Nonetheless, the regression analyses that included gender as a factor indicated that the impact of maternal control on depression and

self-esteem was stronger among men than among women; and paternal control had a negative impact on self-esteem only among men. It is possible that this particular aspect of parental behaviour may pose more of a threat to men.

### Parental behaviour, adult relationships and mental health

Associations between parental behaviour and mental health found in the present study were modest but consistent with studies reviewed by Parker who reported positive relationships of low parental care and high parental control with increased psychological distress (Parker, 1989). Rodgers (1996*b*) also reported low but significant correlations between PBI scales and two overall measures of psychiatric symptoms in a very large longitudinal study of adults. Thus, while parental behaviour as recalled by adults does contribute to the prediction of adult mental health, there is clearly room for other influences.

The associations observed between increased depression, anxiety, or self-esteem and the less secure adult attachment styles are consistent with all of the previous studies that have examined these relationships (Hazan & Shaver, 1990; Shaver & Brennan, 1992; Mikulincer *et al.* 1993; Carnelley *et al.* 1994; Mikulincer & Orbach, 1995; Salzman, 1996). With respect to distinctions among specific styles, the most consistent pattern of differences was between the secure style and both the fearful (avoidant) and preoccupied (anxious–ambivalent) styles; and there were no significant differences between the latter. This pattern is the same as reported for most of the other studies that have employed either the three-category model (Hazan & Shaver, 1990; Shaver & Brennan, 1992; Mikulincer *et al.* 1993; Carnelley *et al.* 1994; Mikulincer & Orbach, 1995) or the four-category model (Bartholomew & Horowitz, 1991; Brennan & Morris, 1997). The dismissive category introduced by Bartholomew & Horowitz was hypothesized to resemble the secure style in that the self is viewed positively, while both the preoccupied and fearful styles are characterized by a negative view of self. This hypothesis was supported in the present study for the measure of self-esteem, as it was in both of the previous studies that employed the four-category model (Bartholomew & Horowitz, 1991; Brennan & Morris, 1997).

### Mediating and moderating effects

The most important focus of our study was on the possibility that the quality of adult attachment would either mediate or moderate the effects of early parenting on adult mental health. Only one mediating effect was found, however; the effect of maternal care on depression among women was mediated by the security of their closest relationships. In addition, the regression analyses that included gender as a factor indicated that the quality of the adult relationship had a greater effect on the mental health of women than on men. This gender difference is consistent with the Rodgers' (1996*a*) report that the effects of parental care and control on psychiatric symptoms were mediated by social support and social network variables only among women. Parker *et al.* (1992) also reviewed a study in which perceptions of the current partner as dysfunctional predicted depression among women while PBI ratings of early parental behaviour did not. They also reviewed the argument that women may be more likely to base mate selection on interpersonal qualities while men may focus more on external attributes and thus be less likely to select mates who will compensate for the long-range influences of parents; this argument may apply equally to the broader range of close relationships characterized in the present study.

Moderating effects were more frequent than mediating effects in the present study. The two patterns found illustrate different aspects of the continuity–discontinuity debate. The most general pattern of moderation suggested that security in adult relationships may buffer the effects of poor early experiences with parents. Recall that as shown in Fig. 1, men and women with secure adult styles were low in distress regardless of levels of parental control or care. Only when combined with the fearful style were maternal and paternal control (in men) or low care from either parent (in men and women) associated with increased psychological distress. The second interaction pattern found among women provides an exception. While the fearful style was associated with high levels of distress independent of early parental control, high levels of control, especially maternal control, were associated with increased depression and anxiety among the women with secure styles, although

this never rose to the levels observed among those with fearful styles (see Fig. 2).

Thus, both continuity and discontinuity principles can be applied to the understanding of these moderating effects: instances where poor parenting seemed to act in concert with the fearful style to predict the most distress, or when the combination of good parenting and the secure style predicted the least distress are examples of the extended continuity principle at work. Instances where the secure style buffered the impact of poor parenting, as in the case of high parental control among women, or when the fearful style overrode the effect of good parenting, are examples of discontinuity. Rather than considering continuity and discontinuity as opposing hypotheses, it seems more fruitful to consider the circumstances in which each may apply.

### Strengths and limitations

A strength of this study is that it replicated findings in the literature on a diverse sample of community-dwelling adults who were enrolled in research concerned with employment patterns and childrearing. Thus, this study expanded the scope of this research beyond college-student samples or samples of adults solicited specifically for study of their intimate relationships.

The present study shares limitations common to much of attachment research. First, parental behaviour was assessed retrospectively so that it is not possible to verify the validity of the reports. Nonetheless, evidence from a number of studies supports the general validity of the PBI, including high test–retest reliability over intervals as long as 10 years, high correlations between siblings and twins, correlations between PBI ratings and the results of detailed interviews with respondents and parents, and correlations between PBI reports by adult subjects and their mothers' own PBI scores (Parker, 1989). In addition Parker argues that it is the perception or internal psychological model of parental behaviour that the individual carries into other relationships, rather than the actual parental behaviour, that figures in the course of adult development. A second possible limitation that this study shares with all other research in this area is that all measures of parental behaviour, adult attachment, and mental health were completed at the same time making it impossible

to rule out contamination across them from an underlying common variable such as current mood, distress-proneness, or temperament. Arguments against these possible biases in cross-sectional or longitudinal studies are supported by evidence that PBI ratings were independent of short-term changes in depression (Parker, 1989) and evidence of high correspondence between that adult attachment ratings made by respondents and close friends (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994).

We also note that the three mental health measures used in the present analyses had high test-retest reliability suggesting the chronic mental health outcomes were tapped; the correlations between the 1-year assessments of depression, anxiety, and self-esteem and assessments taken 8 months earlier ranged from 0.71 (for self-esteem in women) to 0.57 (anxiety in women and men), all significant at  $P < 0.001$ . Nonetheless, we agree that future research employing multiple measures and multiple perspectives is essential to assess the magnitude of effects of mood state, personality, or temperament on reports of either parental behaviour or adult attachment, as well as on their relationships with mental health. These caveats are as important for longitudinal studies as they are for cross-sectional studies.

### Conclusion

Recollections of care from both parents were associated with more secure adult attachment styles. This is consistent with the emphasis in Bowlby's theory on the importance of parental warmth and nurture in the development of attachment and with the concept of continuity between early and adult attachments. When examined separately, both recalled parental behaviour and adult attachment styles were associated with mental health, but the effects were modest and differed in magnitude for women and men. When all parental behaviour dimensions and adult styles were combined in hierarchical regression analyses, the picture became more complex. Patterns of moderating effects of adult styles on associations between parental behaviour and mental health suggested that both continuity and discontinuity principles are applicable to the understanding of these relationships.

The Wisconsin Maternity Leave and Health Project was supported by National Institute of Mental Health Grant RO1-MH44340 to Janet S. Hyde and Marilyn J. Essex, with Roseanne Clark and Marjorie H. Klein. Janis Byrd provided important consultation on physical health and medical issues. Consultation on interview content was contributed by Rosalind Barnett and Lee Robins; additional consultation was provided by H. Hill Goldsmith, Michael O'Hara and Joseph Pleck. Additional funding was provided by the John D. and Catherine T. MacArthur Foundation Research Network on Depression (David J. Kupfer, Chair), the Wisconsin Center for Affective Science (NIMH P50-MH53254, Richard J. Davidson, Director), the University of Wisconsin Graduate School and the Wisconsin Psychiatric Research Institute.

Special thanks are extended to project staff, Jeffrey Armstrong, Laura Haugen, Francine Horton, Will Shattuck and Tim Welnetz; to the Wisconsin Survey Research Laboratory and its staff; and to the many independent study students who coded interviews.

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