

**Childhood Anxiety/Withdrawal, Adolescent Parent-Child Attachment and Later Risk of
Depression and Anxiety Disorder**

Brief running head:

Childhood anxiety/depression and adolescent parent-child attachment

Abstract

Previous research has shown that children with high levels of early anxiety/withdrawal are at increased risk of later anxiety and depression. It has also been found that positive parent-child attachment reduces the risk of these disorders. The aim of this paper was to examine the extent to which positive parent-child attachment acted to mitigate the risk of later internalising disorders amongst children with high levels of early anxiety/withdrawal using data from a 30 year longitudinal study of a New Zealand birth cohort. The findings of this study showed that: a) increasing rates of early anxiety/withdrawal were associated with an increased risk of later anxiety and depression; b) positive parent-child attachment in adolescence was associated with a decline in the risk of later anxiety and depression; and c) these associations persisted even after controlling for confounding factors. The implications of these findings for the role of parent-child attachment in mitigating the adverse effects of early anxiety/withdrawal are discussed. It is concluded that positive parent-child attachment in adolescence may act as a compensatory factor which buffers the adverse effects of childhood anxiety/withdrawal on risks of developing later anxiety and depression.

Keywords: Early anxiety/withdrawal; parent-child attachment; protection; risk; depression; anxiety disorder.

Introduction

There has been long-standing interest in understanding early risk factors of later internalising problems including major depression and anxiety disorder (Bittner et al., 2004; Caspi, Moffitt, Newman, & Silva, 1996; Clark, Caldwell, Power, & Stansfeld, 2010; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). One such factor has been the onset of anxiety/withdrawal in early and middle childhood. Specifically, a number of studies of child behavior inventories have identified a general dimension of anxiety/ withdrawal (Achenbach & Edelbrock, 1978; Quay, 1986). Children scoring high on this dimension are characterised by anxious, fearful, shy, sad or withdrawn behaviors. This dimension is similar to the concept of behavioral inhibition described by Kagan who defines behavioral inhibition as a temperamental trait characterized by withdrawal reactions and shyness when the child is entering novel or unfamiliar situations (Kagan, Reznick, & Snidman, 1987). Various studies have shown children with high levels of anxiety or behavioral inhibition are at greater risk for depression or anxiety disorders (Bittner et al., 2007; Goodwin, Fergusson, & Horwood, 2004; Muris, Meesters, & Spinder, 2003; Pine, Cohen, Gurley, Brook, & Ma, 1998; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003; Roza, Hofstra, van der Ende, & Verhulst, 2003).

However, by no means all children with early onset of anxiety/withdrawal will go on to develop later depression or anxiety disorder. These observations suggest the presence of intervening factors and processes that may act to decrease the long term risk of later internalising disorders for some children with early onset anxiety/withdrawal. One such factor may be parent-child attachment. Specifically, there is substantial evidence that suggests that secure parent-child attachment in childhood and adolescence may be a factor which reduces the risk for later internalising disorders (Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Buist, Dekovi, Meeus, & van Aken, 2004; Muris, Meesters, & van den Berg, 2003). For example, in a review of 19 different studies Brumariu and Kerns (2010) found that insecure parent-child attachment was a risk factor for internalising problems. A further review by DeKlyen and Greenberg (2008) also concluded that insecure parent-child attachment played an important role in the development of psychopathology. Given these findings it may be hypothesised that the development of secure parent-child attachment is a factor that may

buffer or mitigate the risks of later internalising disorders in children with early anxiety/withdrawal.

Against this background, this paper presents an analysis of the linkages between anxiety/withdrawal in middle childhood, parent-child attachment in adolescence and rates of depression and anxiety in adulthood using data from a 30 year longitudinal study of a New Zealand birth cohort. The aims of this research were as follows:

1. To document the associations between childhood anxiety/withdrawal (7-9 years) and later risks of depression and anxiety disorder in adulthood (16-30 years).
2. To examine the extent to which parent-child attachment in adolescence was related to major depression and anxiety disorders.
3. To explore the effects of early anxiety/withdrawal and adolescent parent-child attachment on later internalising disorders taking into account other covariate factors such as childhood sexual or physical abuse, adverse family life events and parental history of depression/anxiety.

Method

Participants

The data described in this report were gathered during the course of the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal study of a birth cohort of 1,265 children born in the Christchurch, New Zealand, urban region in mid-1977. This cohort has now been studied at birth, annual intervals to age 16 years, and again at ages 18, 21, 25 and 30 years. Information has been obtained from a combination of sources, including: parental interview; teacher report; self-report; cognitive testing; medical and other official records. All forms of data collection have been subject to the signed consent of research participants and all phases of the study have received ethical approval from the Canterbury regional Health and Disability Ethics Committee. The present analysis is based on the sample of 948 participants for whom information was available on anxiety/withdrawal at age 7-9 years, parent-child attachment at age 15 and one or more assessments of major depression and anxiety disorder from age 16-30 years. This sample represented 77% of the surviving cohort at age 30.

Measures

Childhood anxiety/withdrawal (7-9 years)

At ages 7, 8 and 9 years, information on child behavior problems was obtained from parental and teacher report. Parental reports were obtained from an interview with the child's mother using a behavior questionnaire that combined items from the Rutter et al. (1970) and Conners (1970) parental questionnaires. Teacher reports were obtained from a combined version of the Rutter et al. (1970) and Conners (1969) teacher questionnaires. For each reporting source a series of 10 items was selected to construct a scale measure of the child's tendencies to anxiety/withdrawal (Fergusson & Horwood, 1993). Confirmatory factor analysis of the selected items from each source showed that in each case a single factor model was adequate to represent the variability in the data. On the basis of this analysis, the items for each source were combined to form unidimensional scale measures reflecting the extent of the child's tendencies to anxiety/withdrawal as reported by parents or teachers at each age. For the purposes of the present analysis the parent and teacher reports were summed for each year and then averaged over the period from 7-9 years to provide a robust estimate of the child's overall tendencies to anxiety/withdrawal in middle childhood. The reliability of the combined scale was $\alpha=.87$

Parent-child attachment (15 years)

At age 15, the Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987) was used to assess adolescents' perceived attachment to their parents. This instrument comprised three subscales measuring parental communication, trust, and alienation. The items were all rated on a three-point Likert scale (*doesn't apply, applies somewhat, definitely applies*). A total parent-child attachment score was computed by first reverse scoring the alienation items and then summing the total item set. The coefficient alpha for the parent-child attachment scale was $\alpha=.87$. The IPPA has good test-retest reliability and predictive validity, with the perceived quality of attachment to parents being positively correlated with more problem-solving coping strategies relative to emotion managing effort in stress full situations (Armsden et al., 1990). Peer attachment was also

assessed, but is not included in this study.

Major depression and anxiety disorder (16-30 years)

At ages 18, 21, 25 and 30 years, participants were interviewed by means of a structured mental health interview designed to assess aspects of mental health and psychosocial adjustment since the previous assessment. As part of this assessment participants were questioned on DSM-IV symptom criteria for a range of internalising disorders including major depression, generalised anxiety disorder (GAD), panic disorder, agoraphobia, social phobia and specific phobia. Questioning was based on the relevant components of the Composite International Diagnostic Interview (CIDI) (WHO, 1993). Participants were classified according to whether they met DSM-IV diagnostic criteria for major depression and any anxiety disorder for each of the four assessment periods (age 16-18, 18-21, 21-25 and 25-30 years). Rates of disorder ranged between 21.2%-23.6% for major depression and between 12.7% -18.9% for any anxiety disorder over the four assessment periods.

Covariates

A range of measures were selected from the database of the study to control for factors known from previous research to be associated with risks of later depression or anxiety disorder.

Childhood sexual abuse (< 16 years). At age 18 and 21 years s participants were questioned about their experience of childhood sexual abuse (CSA) prior to age 16 years (Fergusson, Horwood, & Woodward, 2000). Using these data participants were classified into four groups, reflecting the most severe form of abuse reported at either age ranging from those who reported no CSA to those who reported CSA involving attempted or completed sexual penetration.

Childhood physical abuse (<16 years). At ages 18, 21 years participants were questioned about parental use of physical punishment during their childhood (Fergusson et al., 2000). Participants were classified into four groups reflecting the most severe form of physical punishment reported for either parent at either age, ranging from those whose

parents never used physical punishment to those who reported that at least one parent used frequent/severe/harsh physical punishment.

Inter parental violence (<16 years). At age 18 participants were questioned using items from the Conflict Tactics Scale (Straus, 1979), to assess the extent to which they had witnessed incidents of physical violence between their parents during childhood. This information was used to construct an overall scale of the severity of inter- parental violence during childhood (Fergusson & Horwood, 1998).

Adverse family life events (1-15 years). At each assessment from age 1 to age 15 years parents were questioned concerning their experience of adverse or stressful family life events since the previous assessment using an instrument based on the Holmes and Rahe Social Readjustment Rating Scale (Holmes & Rahe, 1967). Life event reports were averaged over the 15 year period to provide a measure of the average per annum exposure to adverse life events.

Parental history of depression/anxiety (15 years). When participants were aged 15 years, parents were questioned about their experience of mental health problems. Participants were classified as having parents with a history of depression or anxiety if any parent was reported to have had these problems.

Cognitive ability (8-9 years). At ages 8 and 9 years child IQ was assessed using the revised Wechsler Intelligence Scale for Children (Wechsler, 1974). The measure used in the present analysis was based on the average of the full scale IQ scores from the two assessments.

Statistical Methods

The first stage of the analysis examined the bivariate associations between (a) childhood anxiety/withdrawal (classified in four groups) and later internalising disorders and (b) adolescent parent-child attachment (classified in four groups) and later internalising disorders were examined. For the measure of childhood anxiety/withdrawal the sample was classified into four groups ranging from those who fell into the lowest 30% on the distribution of childhood anxiety/withdrawal scores (Group 1), to those whose scores placed them in the

highest decile of childhood anxiety/withdrawal (Group 4). Similarly, for the measure of parent-child attachment at age 15 the sample was classified into four groups ranging from those with whose scores placed them in the lowest 10% of the sample on parent-child attachment (Group 1) to those who fell into the highest 30% on the distribution of parent-child attachment (Group 4). In each case the data were analysed using generalised estimation equation methods (Liang & Zeger, 1986) to fit a population averaged logistic regression model for each outcome in which the log odds of the outcome (depression, anxiety disorder) in each assessment period was modelled as a linear function of childhood anxiety/withdrawal or parent-child attachment. In each case testing for non-linearity showed that a linear model was adequate to describe the variations in the observed data.

In the second stage of the analysis the regression models were expanded to examine the joint effects of both early anxiety/withdrawal and adolescent parent-child attachment on later risks of disorder. Two models were fitted for each outcome: (a) an initial model in which the log odds of the outcome was modelled as a linear function of the main effects of childhood anxiety/withdrawal and adolescent parent-child attachment; (b) a second model in which the main effects of childhood anxiety/withdrawal and parent-child attachment were adjusted for the effects of covariate factors.

To illustrate the mitigating effects of parent-child attachment on the associations between childhood anxiety/withdrawal and later outcomes implied by the fitted main effects models in, the parameters of the fitted models were used to estimate the covariate adjusted rates of major depression and any anxiety disorder for each level of childhood anxiety/withdrawal problems and each level of parental attachment pooled over observation periods.

Results

Associations Between Early Anxiety/Withdrawal, Adolescent Parent-Child Attachment and Later Disorder

Table 1 shows associations of childhood anxiety/withdrawal at age 7-9 and parent-child attachment at age 15 with rates of major depression and anxiety disorder from age 16-30

years. For each measure the table reports the percentages of the sample who met criteria for major depression or anxiety disorder pooled over the four assessment periods (16-18, 18-21, 21-25 and 25-30 years). The pooled data represent the average incidence of disorder reported over all occasions on which data were available for any assessment interval. The association between the extent of anxiety/withdrawal or parent-child attachment and each outcome has been tested for statistical significance by fitting a population averaged logistic regression model to the pooled data in which the log odds of each outcome was modelled as a linear function of the level of childhood anxiety/withdrawal or the level of parent-child attachment (see Statistical methods). In all cases a linear model was found to be adequate to describe the observed data.

The Table shows the presence of strong and highly significant ($p < .001$) tendencies for (a) increasing levels of childhood anxiety/withdrawal to be associated with increasing risks of later internalising disorders and (b) more positive parent-child attachment in adolescence to be associated with decreasing risks of later internalising disorders. The net effect of these trends is illustrated by the fact that those who fell in the highest decile of anxiety/withdrawal scores at 7-9 years (Group 4) had rates of depression that were 1.7 times higher and rates of any anxiety disorder were 2.2 times higher than the rates for those who fell into the lowest 30 % of the sample (Group 1). Conversely, the group with the highest parent-child attachment scores at 15 years (Group 4) had rates of later internalising disorder that were less than half the rates of those with the lowest parent-child attachment scores (Group 1).

INSERT TABLE 1 ABOUT HERE

Multivariate models of the effects of early anxiety/withdrawal and adolescent parent-child attachment

The Pearson correlation between childhood anxiety/withdrawal and adolescent parent-child attachment was $r = -.06$ ($p = .06$) suggesting a weak tendency for higher anxiety/withdrawal in childhood to be associated with reductions in the reported quality of parent-child attachment at age 15. Nevertheless, the strong associations observed in Table 1 between parent-child attachment and later internalising disorders suggests that the quality of parent-child

attachment could act to mitigate the associations between childhood anxiety/withdrawal and later disorder.

To examine this issue a series of logistic regression models was fitted to the repeated measures data for each outcome. In the first instance, a simple main effects model was fitted for each outcome in which the log odds of depression or anxiety disorder was modelled as a linear function of both childhood anxiety/withdrawal and adolescent parent-child attachment. These models were then extended to incorporate a series of covariate factors including: gender, childhood sexual abuse, physical abuse, inter-parental violence, adverse family life events in childhood, parental history of depression/anxiety, and child IQ. In all cases the covariates reflected aspects of childhood experience and family functioning prior to or concurrent with the assessment of parent-child attachment.

The results of these analyses are summarised in Table 2 which shows the estimated regression parameters and corresponding measures of effect size (odds ratios and 95% CIs) for the two fitted models for each outcome. For major depression, before covariate adjustment, the effects for both childhood anxiety/withdrawal and adolescent parent-child attachment were statistically significant, and implied a moderate continuity from early anxiety/withdrawal to later depression (OR=1.18, $p<.01$) and a moderate reduction in risks of depression with increasing parent-child attachment (OR=0.75, $p<.001$). Both effects were reduced after covariate adjustment: for childhood anxiety/withdrawal the adjusted association was marginally significant (OR=1.12, $p=.08$); however, the adjusted effect of adolescent parent-child attachment remained significant (OR=0.83, $p<.01$). Significant covariates included: gender, childhood exposure to sexual abuse, physical abuse and inter-parental violence, adverse family life events and child IQ. The pseudo R^2 statistics from the fitted models suggested only modest prediction of risk of depression.

For anxiety disorder, the table shows strong and highly significant ($p<.001$) effects for both anxiety/withdrawal and parent-child attachment. Both effects were reduced to more moderate levels after adjustment for covariates, but remained significant. (For anxiety/withdrawal adjusted OR=1.23, $p<.01$; for parent-child attachment adjusted OR=0.84, $p<.01$). Significant covariates for anxiety disorder included: gender, childhood sexual abuse

and adverse family life events. Again, the pseudo R^2 statistics suggested only modest prediction of the risk of anxiety disorder.

INSERT TABLE 2 ABOUT HERE

To test for possible moderating effects of parent-child attachment on the associations between childhood anxiety/withdrawal and later mental health, the above models were extended to include a childhood anxiety/withdrawal by parent-child attachment interaction term. In all cases these interactions were statistically non-significant. Jointly, the absence of significant childhood anxiety/withdrawal by parent-child attachment interactions and the presence of persistent significant main effects for parent-child attachment are consistent with a compensatory process in which higher levels of parent-child attachment act to mitigate the effects of childhood anxiety/withdrawal on later outcomes.

To illustrate the implications of the above findings, the parameters of the fitted main effects models in Table 2 were used to generate estimates of the associations between childhood anxiety/withdrawal problems, parent-child attachment and later outcomes after adjustment for covariates. These associations are given in Table 3, which shows estimates of the pooled rates (%) of adult depression and anxiety disorder for varying levels of adolescent parent-child attachment and childhood anxiety/withdrawal after adjustment for other factors. These estimates can be interpreted as the hypothetical rates of disorder than would have been observed had the sample been exposed to varying levels of childhood anxiety/withdrawal and adolescent parent-child attachment while holding other factors constant (Lee, 1981). The Table shows that for both disorders, parent-child attachment acted as a mitigating factor such that higher attachment scores were associated with lower rates of internalising disorders at all levels of childhood anxiety/withdrawal problems. Even amongst those with the highest levels of childhood anxiety/withdrawal, high parent-child attachment scores were associated with approximately a 10% absolute reduction in the risk for adult depression or anxiety disorders compared to those with low parent-child attachment.

INSERT TABLE 3 ABOUT HERE

Discussion

This paper has used data gathered over the course of a 30 year longitudinal study to examine the linkages between anxiety/withdrawal in middle childhood, adolescent parent-child attachment and the risk of later adult major depression or anxiety disorder. The focus of this analysis was on identifying the extent to which adolescent parent-child attachment acted to mitigate the impact of childhood anxiety/withdrawal on later depression or anxiety when the correlated effects of other potential risk factors were taken into account. The key findings from this analysis and their implications are discussed below.

First, early anxiety/withdrawal was related to an increased risk for subsequent adult major depression and anxiety disorder. Analysis of the associations between the extent of childhood anxiety/withdrawal and measures of adult depression and anxiety disorder showed that in both cases there was evidence of a linear dose/response association between the level of childhood anxiety/withdrawal problems and later disorder. Children whose scores identified them as being in the group with the highest levels of anxiety/withdrawal had rates of later internalising disorder that were up 2.2 times higher than the rates for those with the lowest levels of childhood anxiety/withdrawal. These findings are consistent with existing research (Bittner et al., 2007; Caspi et al., 1996; Clark et al., 2010; Goodwin et al., 2004), and might reflect the fact that early anxiety disorder is relatively stable over time. They are also consistent with the existing research on behavioral inhibition, for example Muris et al. (2003), who found that self-reported inhibition was positively associated with symptoms of anxiety and depression in an adolescent sample.

Second, the analysis showed that positive parent-child attachment in adolescence, as measured by the Armsden and Greenberg scale, was related to a reduced risk of later internalising disorders. Young people with the highest reported attachment scores had rates of disorder that were less than half the rates for those with the lowest attachment scores. These findings are consistent with previous research showing that secure or positive parent-child attachment is associated with reduced risks of later internalising disorders (Muris,

Meesters, van Melick, & Zwambag, 2001; Roelofs, Meesters, Ter Huurne, Bamelis, & Muris, 2006; Warren, Huston, Egeland, & Sroufe, 1997)

The major finding of the analysis was that both early anxiety/withdrawal and adolescent parent-child attachment made unique additive contributions to the risks of later internalising disorder. A key implication of this finding is that parent-child attachment acted in the role of a compensatory factor which mitigated the adverse effects of early anxiety/withdrawal on later risks of depression or anxiety disorder. This conclusion is illustrated in Table 3 which shows that increasing attachment scores were associated with reductions in later risks of disorder at all levels of childhood anxiety/withdrawal. Thus, for example, amongst children with high levels of anxiety/withdrawal at 7-9 years the covariate adjusted risks of later major depression were 19% (approx) for children with the highest parent-child attachment scores at age 15. These risks increased to 29% for children in the lowest decile of parent-child attachment. More generally the table illustrates the ways in which the benefits of positive parent-child attachment in adolescence may compensate for the risks associated with early anxiety/withdrawal. These findings highlight a fact that has often been overlooked in the discussion of resiliency and protective factors: that given an additive linear model, other factors in the risk equation have the potential to modify the risks faced by those with exposure to a given risk factor even though these factors do not moderate or mediate the association between the risk factor of interest and the outcome.

A useful way to conceptualise the development of anxiety disorders is provided by the biopsychosocial model (Barlow, 2002; Muris, 2007). The model proposes that there are multiple, inter-related causes of pathological anxiety, which can be categorized into biological causes, psychological causes and social causes. The psychological causes refer to patterns of cognitive functioning that are related to the child's beliefs and self perception, and that affect the way the child perceives their environment. A positive attachment relationship between a child and its parents might help the child, even though being inhibited or anxious, to interpret events as less threatening than a child with an insecure attachment relationship. This in turn might lead to reductions in the risk of later disorder.

The clinical implications of these findings are that interventions which increase parent-child attachment may play a useful role in developing programs for children with early

anxiety/withdrawal. Examples of such programs include: Emotionally Focused Therapy (EFT) (Greenberg & Johnson, 1988), Attachment-Based Family Therapy (ABFT) (Diamond & Siqueland, 1995) and other programs based on attachment principles (Bettmann & Friedman, 2010).

The importance of the present findings reflects a feature that has not been present in many other studies of this topic. Specifically, the duration of the study makes it possible to trace associations between *childhood* anxiety/withdrawal and *adult* internalising disorders. In contrast, most previous studies in this area have been done within the age group of adolescence to adulthood, have not included the path from childhood to adolescence and have employed shorter follow-up periods. This has made it possible to trace the linkages between: a) early childhood anxiety/withdrawal; b) parent-child attachment in adolescence and c) internalising disorders in adulthood. This temporal sequencing enabled an examination of the extent to which parent-child attachment in adolescence may mitigate the effects of childhood anxiety/withdrawal on later internalising.

The rates of internalising disorders observed in the CHDS cohort may appear high in comparison to some reports. These rates are comparable to the rates observed in other similar prospective cohort studies such as the Dunedin Multidisciplinary Study (Fergusson, Poulton, Horwood, Milne, & Swain-Campbell, 2004), and reflect the fact that reports of psychiatric symptoms collected in the context of a longitudinal design with repeated assessments over time are less likely to be contaminated by errors of reminiscence than one-off retrospective or lifetime reports (Wells & Horwood, 2004).

Finally, while this study suggests that parent-child attachment may act as a compensatory factor which decreases the risk of later internalising disorders there are a number of limitations to this. First, the study is based on a specific cohort studied at a particular time in a single society. There are no guarantees that the findings of this study will generalise to other cohorts or other social contexts. Second, while this study has included a series of relevant covariate factors, it remains possible that the study may have omitted to control for other relevant factors that may have reduced or eliminated the compensatory effect of parent-child attachment. Within these limitations the present study suggests that the

development of strong, secure parent-child attachment may be a factor that buffers children against the effects of early anxiety/withdrawal on risks of later internalising disorders.

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Table 1 Rates (%) of major depression and anxiety disorder (pooled over ages 16-30) by level of (a) childhood anxiety/withdrawal (7-9 years) and (b) parent-child attachment (15 years).

(a) Childhood anxiety/withdrawal

Measure	Level of anxiety/withdrawal (7-9 years)				p
	1 (low) (1-30%)	2 (31-60%)	3 (61-90%)	4 (high) (91-100%)	
Major depression (%)	17.5	22.8	23.4	29.6	<.001
Anxiety disorder (%)	10.7	15.2	20.7	23.6	<.001

(b) Parent-child attachment

Measure	Level of parent-child attachment (15 years)				p
	1 (low) (1-10%)	2 (11-40%)	3 (41-70%)	4 (high) (71-100%)	
Major depression (%)	39.0	23.9	19.0	18.2	<.001
Anxiety disorder (%)	26.5	19.1	15.1	12.3	<.001

N=948

The fitted logistic regression parameters were:

Effect of anxiety/withdrawal on major depression B (SE) = .20 (.05), OR (95%CI) = 1.22 (1.10-1.36); on anxiety disorder B (SE) = .37 (.06), OR (95%CI) = 1.45 (1.30-1.63).

Effect of parent-child attachment on major depression B (SE) = -.30 (.05), OR (95%CI) = 0.74 (0.66-0.82); on anxiety disorder B (SE) = -.31 (.06), OR (95%CI) = 0.73 (0.65-0.82).

Table 2 Fitted logistic regression models for the effects of childhood anxiety/withdrawal (7-9 years) and adolescent parent-child attachment (15 years) on rates of major depression, anxiety disorder (16-30 years) before and after adjustment for covariates.

(a) Major depression

Measure	Unadjusted		Adjusted	
	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
Childhood anxiety/withdrawal (7-9 years)	.17 (.06)**	1.18 (1.06-1.32)	.11 (.06)	1.12 (0.99-1.26)
Parent-child attachment (15 years)	-.29 (.05)***	0.75 (0.67-0.83)	-.18 (.06)**	0.83 (0.75-0.93)
Gender (female)			.69 (.12)***	2.00 (1.58-2.53)
Childhood sexual abuse (< 16 years)			.37 (.06)***	1.45 (1.28-1.64)
Childhood physical abuse (<16 years)			.21 (.10)*	1.24 (1.02-1.50)
Inter-parental violence (<16 years)			.06 (.03)*	1.06 (1.01-1.12)
Adverse family life events (1-15 years)			.12 (.05)*	1.13 (1.02-1.25)
Parental history of depression/anxiety			.11 (.13)	1.12 (0.87-1.45)
Child IQ (8-9 years)			.013 (.004)***	1.013 (1.005-1.022)
	Pseudo R ² = .11		Pseudo R ² = .25	

(b) Anxiety disorder

Measure	Unadjusted		Adjusted	
	B (SE)	OR (95% CI)	B (SE)	OR (95% CI)
Childhood anxiety/withdrawal (7-9 years)	.34 (.06)***	1.41 (1.25-1.59)	.20 (.07)**	1.23 (1.08-1.40)
Parent-child attachment (15 years)	-.28 (.06)***	0.75 (0.66-0.85)	-.17 (.06)**	0.84 (0.72-0.95)
Gender (female)			.74 (.13)***	2.09 (1.62-2.70)
Childhood sexual abuse (< 16 years)			.26 (.07)***	1.30 (1.14-1.47)
Childhood physical abuse (<16 years)			.18 (.10)	1.20 (.98-1.46)
Inter-parental violence (<16 years)			-.00 (.03)	1.00 (.94-1.06)
Adverse family life events (1-15 years)			.15 (.05)**	1.16 (1.05-1.30)
Parental history of depression/anxiety			.06 (.14)	1.07 (0.81-1.41)
Child IQ (8-9 years)			-.007 (.004)	0.99 (0.98-1.00)
		Pseudo R ² = .13		Pseudo R ² = .25

*p<.05 **p<.01 ***p<.001

Table 3 Associations between childhood anxiety/withdrawal (7-9 years), parent-child attachment (15 years) and pooled rates (%) of major depression or anxiety disorder (16-30 years) after adjustment for covariates

a) Major depression (%)

Parent-child attachment (15 years)	Anxiety/withdrawal (7-9 Years)			
	1 (low)	2	3	4 (High)
1 (Low)	22.3	24.4	26.5	28.7
2	19.4	21.2	23.1	25.1
3	16.7	18.3	20.0	21.9
4 (High)	14.3	15.8	17.3	18.9

b) Anxiety disorder (%)

Parent-child attachment (15 years)	Anxiety/withdrawal (7-9 Years)			
	1 (low)	2	3	4 (High)
1 (Low)	14.9	17.7	20.9	24.5
2	12.9	15.3	18.2	21.4
3	11.0	13.2	15.7	18.6
4 (High)	9.4	11.3	13.6	16.2