Parent Influences on Early Childhood Internalizing Difficulties

Jordana K. Bayer, Ann V. Sanson, and Sheryl A. Hemphill

University of Melbourne
Abstract

Children's internalizing problems are a concerning mental health issue, due to significant prevalence and continuity over time. This study tested a multivariate model predicting young children’s internalizing behaviors from parenting practices, parents' anxiety-depression and family stressors. A community sample of 2 year old children ($N = 112$) was followed longitudinally to 4 years. Parents completed questionnaires and playroom observations provided independent measures of parenting and child variables. Predictors of early childhood internalizing difficulties were over-involved/protective parenting, low warm-engaged parenting, and parental anxiety-depression. Family life-stress and parental anxiety-depression also predicted problematic parenting practices. These findings were discussed within the context of the design of early childhood parenting programs to prevent anxiety and depression in children.

*Key words:* Anxiety; Depression; Internalizing problems; Parenting; Prevention
Parent Influences on Early Childhood Internalizing Difficulties

1. Introduction

This study focused on parenting and family stress predictors of early childhood internalizing difficulties. Internalizing problems in childhood consist primarily of anxiety and depression. They have high prevalence in modern communities affecting up to 20% of children and adolescents (Sawyer et al., 2001). Internalizing problems demonstrate continuity over time, with nearly half of children retaining clinical diagnoses over several years without intervention (Spence, 2001). These ongoing emotional disorders result in significant distress for young people and families. Prevention programs for children’s internalizing problems are therefore an area of increasing interest in public health (Bayer & Oberklaid, 2004).

Most literature on preventing internalizing problems has focused on the school years, with less attention to problems beginning earlier in childhood. However, by preschool age problem prevalence is estimated at 10-15% (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004) and early problems demonstrate stability into middle childhood and adolescence (Warren, Huston, Egeland, & Sroufe, 1997). In contrast to most previous studies (Bayer & Sanson, 2003), the present study examined a number of potential parent risks (parenting practices, parent anxiety and depression, family stressors) to identify characteristics that most strongly predicted early childhood internalizing difficulties.

1.1. Parenting and childhood internalizing problems
Research on children's anxiety, depression, internalizing syndromes, temperamental inhibition, peer withdrawal, and insecure attachment reveal several common themes regarding links of such behaviors to parenting (Rapee, 1997). ‘Positive’ parenting associated with children's emotional development includes warm-engaged practices that are nurturing and receptive to children’s communications and autonomy-encouraging practices that help children master tasks in achievable steps and to explore, reason and make their own choices. Such parenting practices encourage children’s internal beliefs that they are valued and that caregivers are a safe haven in times of distress and a secure base from which to explore (Cicchetti & Toth, 1998).

In contrast, several parenting practices are believed to contribute to children developing internalizing problems. Low warmth can present as a lack of involvement and caring towards children, or as overt rejection that portrays children as inadequate (Cytryn & McKnew, 1996). Power-assertive and punitive parenting controls children forcefully with yelling, hitting, and demands for obedience (Rubin & Mills, 1991). Over-involved/protective parenting shields children from natural life challenges and opportunities to develop skills for managing difficulties. This can include intrusion, encouragement of dependence, and exclusion of outside influences (Parker, 1983). These parenting practices can lead children to develop aversive cognitions about themselves and the world. Unpleasant interactions with parents may evoke emotional distress in children, who learn that primary relationships do not provide support and safety. Such parenting teaches children that the world includes many dangers and prevents them from learning how to cope successfully with stress.
Empirical studies have linked parent behaviors to a variety of internalizing problems. For example, Colder, Lochman, and Wells (1997) present evidence that parent behaviors are predictive of child depression; Barrett, Rapee, Dadds, and Ryan (1996) found associations of parenting with children's anxiety; Mills and Rubin (1998) reported that internalizing problems were predicted by parenting practices; Vondra and Barnett (1999) noted that parenting was related to children's insecure attachments. The overarching term of 'affectionless control' has been employed to describe parenting practices that contribute to child emotional problems (Parker, 1983). However, studies have not clearly indicated whether the co-occurrence of lack of affection and over-control is important, or whether each aspect of parenting is uniquely influential. Several authors have called for increased attention to the role of family environments in developing internalizing problems, particularly in the early years of life (e.g., Rapee, 1997; Seligman, Reivich, Jaycox, & Gillham, 1995).

The present research evaluated a model based on prior literature and theory that considers potential parenting risks that are hypothesized to predict early childhood internalizing difficulties. We argue that attachment theory and social learning theory are both important for understanding and predicting how parenting might impact children's emotional development. For example, recommendations of attachment theory for sensitive, responsive parenting may align with warm-engaged parenting. Warm-engaged parenting offers young children sensitive responsivity to age-appropriate requests, as well as teaching, praise and affection, all delivered in a calm, non-intrusive manner. Social learning theory cautions against reinforcing children’s displays of anxiety and distress. This may align with over-involved/protective parenting. Over-
involved/protective parenting is anxious and intrusive in manner, giving children too much instruction and support relative to their age capabilities.

Drawing a clear qualitative distinction between warm-engaged and over-involved/protective parenting may be essential to understand children’s emotional development. Failure to make this distinction could explain the apparently inconsistent findings on the effects of parenting on inhibited young children (Arcus, 2001; Belsky, Hsieh, & Crnic, 1998; Rubin, Burgess, & Hastings, 2002). It can be easy to confuse over-involved/protective parenting with warmth. For example, a parent who is anxious and intrusive in style when teaching a young child how to build blocks could be interpreted as providing warm-engaged teaching, rather than as over-involved. A parent who quickly and anxiously gathers up a young child in their arms when a stranger enters the room could be interpreted as providing warm physical affection, rather than as over-protective. Similarly, a parent who instructs a child to explore a new environment in a power-assertive manner could be viewed as providing encouragement of autonomy. Making such qualitative distinctions between aspects of parenting practices could be crucial for understanding how parenting contributes to children developing internalizing problems.

1.2. Parental anxiety and depression

In addition to parenting behaviors, parent characteristics have been associated with children's internalizing behaviors. For example, parental depression is well known to be a risk for children’s emotional development (Beardslee et al., 1997). Around 8% of mothers are clinically depressed, increasing to 12% for mothers who recently gave birth. Studies also document
connections between parents' anxiety disorders and children's inhibition and anxiety (Kovacs & Devlin, 1998).

Parents' anxiety and depression can affect children in two manners. First, parent anxiety/depression can \textit{directly} affect children by exposing them to emotional distress. When parents have emotional problems there is frequently a home environment characterized by anger, irritability, sadness, guilt, and hopelessness. Children have natural empathy for their loved ones and exposure to parent distress can be dysregulating (Denham, 1998). Children also model their distressed parents’ responses to stress, attributional styles, and self-cognitions (Cicchetti & Toth, 1998).

Parent anxiety and depression can also \textit{indirectly} affect children by impacting parenting practices. Although some parents who are emotionally distressed are able to maintain positive parenting with their children, many studies have documented connections between parents' anxiety, depression and problematic parenting practices (Beardslee & Wheelock, 1994; Cicchetti & Toth, 1995; Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997). Parenting is more likely to be low in warmth and sensitivity because anxiety and depression involve preoccupation about negative happenings, negative affectivity, stress intolerance, and/or low energy. These parents may be over-involved and protective because they worry about negative events. If distressed parents lack energy or patience they are more likely to use power-assertion and punishment and less likely to use inductive reasoning. Some distressed parents present with low energy, some show anxious over-involvement, and some show combinations of problematic parenting.
Observed relationships between parents' emotional problems and children's internalizing difficulties cannot simply be regarded as consequences of a common genetic influence. Twin and adoption studies show evidence for both genetic and environmental accounts (Cicchetti & Toth, 1998). Research with adoptive parents (Parker, 1983), simulated depression (Cicchetti & Toth, 1998), and child treatment interventions to help parents manage personal distress and alter parenting practices (Beardslee et al., 1997; Cobham, Dadds, & Spence, 1998) suggest that parenting practices predict children's behaviors independent of shared parent-child variance.

1.3. Family stressors

Parents' anxiety/depression and family stressors are mutually related. Family stressors linked to children's internalizing problems include traumatic events (i.e., death of a loved one), conflict between parents, low social support, daily hassles with parenting, and low socio-economic status (Cicchetti & Toth, 1998; Spence, 2001). Such life stressors can directly impact on children by eliciting perceptions of low control, negative expectations, self-blame, and hopelessness (Denham, 1998). Parenting practices also have the potential to mediate negative effects of life stress on children. Rubin and Mills (1991) argue that family stress can interfere with parents’ responsiveness to children’s needs, and may lead to over-controlling, punitive, or neglectful childrearing. Evidence shows that when parents respond with anxiety and overprotection to stressful events their children tend to have negative emotional responses (Spence, 2001). On the other hand, if parents adaptively manage adversities, avoid anxiety and depression themselves, and maintain positive parenting, their children’s emotional well-being may be protected.
1.4. The ‘FEEDs’ model for early internalizing difficulties

Little is known about the relative importance of parenting and family stress variables for internalizing difficulties developing early in childhood. It is vital to include multiple risks and explore direct and indirect effects in a single model (Conger, Patterson, & Ge, 1995). Such a multivariate conceptual model, Family influences on Early Emotional Difficulties (FEEDs), is illustrated in Figure 1. As Figure 1 shows, parents’ anxiety-depression and family stressors could contribute directly to both problematic parenting practices and early childhood internalizing difficulties. Parents’ anxiety-depression and family stressors (e.g., marital conflict) are mutually influential (see double-headed arrows). Parents’ anxiety-depression and family stressors could each contribute to young children’s internalizing difficulties, both by directly distressing children and indirectly by adversely affecting parenting practices (mediation). The FEEDs model is innovative in that it allows assessment of specific, theoretically derived, individual and combined parent stress and parenting variables that are implicated in early childhood internalizing difficulties.

INSERT FIGURE 1 ABOUT HERE

1.5. Hypotheses

Predictors of 2 and 4 year old child internalizing difficulties were hypothesized to be parenting practices (low warmth, low autonomy-encouraging, high power-assertive/punitive, high over-
involved/protective), parental anxiety-depression, and family stress. Parent anxiety-depression and family stress were also hypothesized to predict each of the problematic parenting practices. Longitudinally, parent and family variables were hypothesized to predict 4 year old children's internalizing difficulties over and above stability from age 2 years.

2. Method

2.1. Participants

Participants were 112 toddlers ($M = 2.2$ years, range 2.0 to 2.5; 58 boys, 54 girls) and their primary caregiving parents (110 mothers, 2 fathers). Parents of 2 year old children in metropolitan Melbourne, Australia were invited to participate in a longitudinal study of young children’s social development via posters in inner city and suburban Maternal and Child Health Centers and childcare centers, as well as advertisements in local newspapers. Interested parents telephoned the study team at the university or deposited contact details in a confidential box at children’s centers. Interested parents were informed that: a) 2 year old children and their parents would be followed until the children were 4 years; b) parents would be asked to complete questionnaires about their family and visit a university playroom on four occasions; c) knowledge gained had implications for preventing behavioral and emotional problems in children. Parents were offered reimbursement of AUD $20 for each university visit, as well as childcare for siblings during data collection and a video copy of their playroom sessions.
Sociodemographic characteristics of the families are presented in Table 1. Families spanned a range of cultural backgrounds, educational histories and levels of employment (Daniel, 1983). This sample compared reasonably to metropolitan Melbourne census data on cultural background (Australian Bureau of Statistics: ABS, 2001: 66% Australian/English/Irish ancestry; 8% spoke Italian or Greek and 2% Chinese at home). However, university educated parents were overrepresented (ABS, 2001: 10% bachelor degree, 3% postgraduate degree). While this study was based on a convenience sample from the community, several families faced significant risks. Around 10% of parents in this sample reported having “many stresses and problems” in their lives, including loss of employment, death of a loved one, long-term illness or disability, and drug or alcohol problems. A 99% retention rate (returned questionnaires) was achieved over the two year assessment period.

INSERT TABLE 1 ABOUT HERE

2.2. Procedures

To assess children’s internalizing behaviors and parenting practices in this study, both parents’ reports and independent observation in a university playroom were included. Questionnaires were mailed to parents prior to their playroom visits and completed during visits (three parents could not attend visits at age 4 and returned questionnaires by mail). Parents’ reports were regarded as the assessment source of primary importance, because they sample a wide domain of young children’s behaviors across time and contexts and have a fair degree of objective validity (Achenbach & McConaughy, 1992). Observation in the university playroom yielded more
restricted time- and situation-specific behaviors, but with greater independence (Rothbart & Bates, 1998). Composite variables for child internalizing difficulties and for parenting dimensions were created by summing standardized parent report and observed scores for each variable. These composite variables covered children's and parents' behaviors across a broad range of situations with the perspective of different observers. Analyses were also conducted with separate data sources and any differing findings are reported in footnotes.

2.3. Measures

2.3.1. Parent report of child internalizing difficulties

In a previous study with the present sample the Children’s Moods Fears and Worries Questionnaire, a developmentally sensitive parent report questionnaire, was constructed to assess internalizing difficulties at toddler and preschool ages (see Bayer, Sanson, & Hemphill, 2006 for a description of instrument development). This questionnaire began with 74 items for 2 year old children (e.g., 'clings to adults', 'gets upset over little things') and 87 items at 4 years (13 items were considered appropriate only at 4 years, e.g., ‘is self-conscious’, ‘worries about making mistakes’). Parents responded to each item using a five-point frequency rating (‘almost never’ = 1, ‘rarely’ = 2, ‘sometimes’ = 3, ‘often’ = 4, ‘almost always’ = 5) and a ‘don’t know’ category. Four items were reverse scored (e.g., 'shows interest in his/her surroundings').

Content validity was initially assessed through administration of the potential items to 10 university psychology staff familiar with preschool children and 17 parents of toddlers at childcare centers. This pilot sample provided qualitative comments on item clarity, age-
appropriateness, and item ratings to ensure response variation. Items that were unclear or had response variation less than two scale points were improved by rewording. Then principal components analysis (PCA) was applied to these potential early childhood internalizing indicators rated by the present sample ($N = 112$) to identify the underlying grouping of items at each age. PCA was applied for this scale construction to reduce the large number of items to those grouping most closely in early childhood. The first unrotated PCA component is the weighted collection of items explaining most variance in the set and these items formed the Children’s Moods Fears and Worries Questionnaire at ages 2 and 4 years. For 2 year children, component 1 consisted of 35 items with loadings of .40-.60 and accounted for 15% of total item variance; the first component of the measure for 4 year old children's behaviors consisted of 38 items with loadings of .40-.69 and accounted for 16% of item variance (Bayer et al., 2006 present the PCA tables). For both ages component 1 included items that referred to anxious (e.g., worries), depressive (e.g., looks sad, miserable, unhappy), inhibited (e.g., fears strangers), peer withdrawn (e.g., withdrawn with other young children), separation insecurity (e.g., fears separation from parents), and somatic (e.g., significant changes in appetite for food) behaviors, representing a broad coverage of internalizing symptoms. Fifty five percent of items were in common at 2 and 4 years. Cronbach’s alpha was .91 for the scale for 2 year olds' behaviors and was .92 for the scale for 4 year olds in the present sample.

The mean of parent ratings across these items was scored for each age. Scores were normally distributed at both child ages. On average children displayed internalizing indicators ‘rarely’ as expected for a community sample. Nevertheless, there was dispersion of scores around the mean and children at the upper range displayed the set of internalizing indicators ‘sometimes’ to
‘often’ in frequency. Internalizing difficulties showed substantial stability from 2 to 4 years \(r = .56, p < .001\). Correlations between scores on the Children’s Moods Fears and Worries Questionnaire and withdrawal scores on the Short Temperament Scales (Prior, Sanson & Oberklaid, 1989) provided evidence of construct validity \((rs = .42 \text{ and } .50, ps < .001\), for 2 and 4 year olds, respectively).

PCA component 2, at 2 and 4 years, explained 7% of item variance and described young children’s solitary play in the company of peers (e.g., ‘Prefers to play alone when with other young children’). Early childhood solitary play was only weakly to moderately correlated with internalizing difficulties (component 1) at both 2 and 4 years \((rs = .36 \text{ and } .26, ps < .01)\). Solitary play did not longitudinally forecast 4 year internalizing difficulties \((r = .18, ns)\). Thus component 2 was not included in the final Children's Moods Fears and Worries Questionnaire.

2.3.2. Parenting practices

Items from Paterson and Sanson’s (1999) Child Rearing Questionnaire (CRQ: 31 items) were administered to assess warmth (e.g., ‘I tell my child how happy he/she makes me’), inductive reasoning (e.g., ‘I give my child reasons why rules should be obeyed’), and punishment (e.g., ‘I spank when my child is disobedient’). Parents rate each item on a five-point scale (‘never’ = 1, ‘rarely’ = 2, ‘sometimes’ = 3, ‘often’ = 4, ‘always’ = 5). With parents of 5-6 year old children, Paterson and Sanson reported subscale internal consistencies of .81 for warmth, .84 for punishment, and .60 for inductive reasoning.
For the present study, an additional 50 five-point items consistent with the CRQ were developed to assess over-involved/protective parenting and ways of encouraging autonomy that desensitize children to fear and frustration. As was the case with the CRQ, these items refer to specific behaviors rather than to broad parenting statements in order to minimize response social desirability (Rapee, 1997). Three items were reverse scored (e.g., for overinvolved/protective parenting 'I feel comfortable when my child stays over-night away from home with family members or friends'). Items were pilot tested as for the Children’s Moods Fears and Worries Questionnaire. Ten university psychology staff familiar with preschool children and 17 parents of toddlers at childcare centers provided qualitative comments on item clarity, age-appropriateness, and item ratings to ensure response variation. Items that were unclear or had response variation less than two scale points were improved by rewording.

Principal components analyses were applied to scores for the 81 total items, which were completed by parents in the present sample when children were aged 2 and 4. Four components were extracted at each age (specific loadings for items are available from the authors). One component described over-involved/protective parenting (e.g., ‘I try to protect my child from all difficulties in life’; ‘I set rules for my child to prevent him/her from making any mistakes’), explaining 11% of variance at 2 years (17 items, loadings .40-.65; $\alpha = .82$) and 10% of variance at 4 years (8 items, loadings .40-.76; $\alpha = .81$). A second component indicated autonomy-encouraging parenting (e.g., ‘I emphasize the reasons for rules’; ‘I let my child choose what she wears so long as it is suitable for the weather’) accounting for 9% of variance at 2 years (with 11 items loading .40-69; $\alpha = .83$) and 4% of variance at 4 years (with 13 items loading .34-.55; $\alpha = .81$). A third component was labelled power-assertive/punitive parenting, accounting for 5% of
variance at 2 years with 7 items loading .50-.82 (e.g., ‘I spank when my child is disobedient’; $\alpha = .87$) and 5% of variance at 4 years with 5 items loading .64-.85 (e.g., ‘I slap or hit my child to control his/her behavior’; $\alpha = .88$). Warm-engaged parenting formed a fourth component, accounting for 5% of variance at 2 years with 8 items loading .50-.65 (e.g., ‘I often hug or hold my child for no particular reason’; $\alpha = .81$), and 12% of variance at 4 years with 9 items loading .51-.73 (e.g., ‘I tell my child how happy he/she makes me’; $\alpha = .88$). Parenting scores were calculated as the average of parents’ ratings across items comprising each component.

2.3.3. Parent anxiety-depression

Parents’ anxiety and depression were measured on a continuous dimension encompassing both present-state and enduring-trait aspects. The Anxiety and Insomnia (7 items) and Severe Depression (7 items) sub-scales of the General Health Questionnaire (GHQ: Goldberg & Williams, 1988) assess current emotional states. These items ask how parents felt recently using four response points (e.g., 'not at all' = 0, 'no more than usual' = 1, 'rather more than usual' = 2, 'much more than usual' = 3). The GHQ is widely used to screen for non-psychotic psychiatric disorders in community settings and is considered a well-established measure of psychological health for community samples (Solantaus-Simula, Punamaki, & Beardslee, 2002). Lobello (1995) reviewed psychometric properties of the GHQ accumulated across research studies and concluded it demonstrated temporal stability, internal consistency ($\alpha$ .84 to .93) and concurrent validity. Internal consistency was .87 with the present sample.

The State-Trait Anxiety Inventory's trait form (STAI-T: Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) taps enduring emotional problems by asking parents to report, ‘How you generally
feel’. Twenty items cover symptoms common to anxiety and depression, with response options of ‘almost never’ = 1, ‘sometimes’ = 2, ‘often’ = 3, and ‘almost always’ = 4. The STAI is a widely used measure of adult emotional problems. Its psychometric properties include good temporal stability (.77 over six months), internal consistency (αs .92 to .96), concurrent validity, and norms based on large samples (Anastasi, 1998). Internal consistency was .91 with the present sample and parents’ scores (M = 38, SD = 9) were comparable to the New Zealand normative sample for women aged 30-39.

Parents’ anxiety and depression scale scores were combined together in this study because a) clinical and community samples show high comorbidity between anxiety and depression (Anderson, 1994), b) depression tends to be preceded by anxiety (Chorpita & Barlow, 1998), and c) children are at risk for internalizing problems if parents have either anxiety or depression (Beidel & Turner, 1997). The mean of each parent’s standardized GHQ and STAI-T dimensional scores formed their composite anxiety-depression score.

2.3.4. Family life stress

To assess specific stressful events, Smith and Prior’s (1995) Life Events Questionnaire was employed. This scale has 20 items that assess ‘Have there been any of the following for family members in the last 12 months?’ (e.g., illness, accident, death, theft, divorce). Parents circle yes/no for each item to indicate which events have happened. For each item circled ‘yes’ parents rate its effect on the family (‘good’ = 1, ‘none’ = 2, ‘bad’ = 3). Smith and Prior demonstrated predictive validity for this measure to child behaviour and social competence.
To assess conflict between parents, the Dyadic Adjustment Scale (Sharpley & Rogers, 1984) taps relationship satisfaction with seven items. Adults with a marital or live-in partner rate their relationship on six-point scales in terms of satisfaction (5) / dissatisfaction (0) on important issues (e.g., ‘amount of time spent together’, ‘degree of happiness in your relationship’). This measure evidenced internal consistency ($\alpha = .76$) and validity differentiating between adults who were living together, divorced, or separated. With the present sample, internal consistency was .85. The Parent Problem Checklist (Dadds & Powell, 1991) was also included for conflicts specifically over parenting (16 items). Parents put a cross in the box for any item that was a problem over the last month (e.g., ‘fighting in front of the children’). Dadds and Powell reported that this measure has adequate internal consistency ($\alpha .70$), very good temporal stability over eight weeks ($r = .90$), concurrent validity with the Dyadic Adjustment Scale, and predictive validity to children’s aggression. With the present sample internal consistency was .97.

The Index of Perceived Social Support (Henderson, Duncan-Jones, McAuley, & Ritchie, 1978) assesses parents’ social isolation based on 15 items. Each item (e.g., ‘the person who means the most to me takes an interest in my affairs’) is rated on a five-point scale ranging from 'strongly agree' = 1 to 'strongly disagree' = 5. Henderson et al. demonstrated internal consistency ($\alpha = .83$) as well as construct validity for this questionnaire. Internal consistency with the present sample was .84.

Daily hassles with parenting were measured using Crnic and Greenberg’s (1990) Daily Hassles Questionnaire (20 items). For each item (e.g., ‘children resist or struggle over bedtime with you’) parents rate the frequency of the hassle’s occurrence ('rarely' = 1, 'sometimes' = 2, 'a lot' = 3,
'constantly' = 4) and its intensity on a five-point scale ('no hassle' = 1 to 'big hassle' = 5). Crnic and Greenberg reported internal consistency ($\alpha = .81$ to $.90$) and predictive validity to child behaviour. Internal consistency with the present sample was $.89$.

Socioeconomic level was a composite of parent education (seven points from 'not completed high school' = 1 to 'completed higher university degree' = 7), occupational status (Daniel’s 1983 prestige scale for Australian occupations), and family income (six points, AUD < $15,000 to > $55,000).

A composite family stress score was created through principal components analysis of the above measures of life stress to determine which scores clustered together in early childhood. For the clustering measures, the mean of each parent’s standardized scores formed their composite family stress score when children were aged 2 and 4 years.

2.3.5. Observed behavior during playroom visits

The playroom visits were part of a wider study of children’s social development using internationally replicated protocols developed by Rubin and associates (Rubin, Hastings, Stewart, Henderson, & Chen, 1997). Children visited the university playroom with their primary caregiving parent (110 mothers, 2 fathers) twice at age 2 years (Visit 1 and Visit 2, an average of 26 weeks apart) and twice again at age 4 years (Visit 3 and Visit 4, an average of 19 weeks apart). These visits ranged from 45 to 70 minutes in duration and were designed to challenge children socially and emotionally with episodes of novelty, frustration and contact with peers. Visits were video- and audio-taped from an adjacent control room.
At 2 years, Visit 1 involved the parent-child dyad. Visit 1 novelty episodes were the toddler playing with toys in the unfamiliar room, then a stranger presenting toys (a tip-truck with blocks, an electronic robot, a tunnel to crawl through) and then a stranger dressed as a clown. Frustration episodes involved asking the toddler to tidy up the toys, to remove a toy from inside a box with a lid, and asking the toddler to wait one minute after drawing materials were provided before commencing drawing. Visit 1 also included a separation episode where the parent left the playroom for a few minutes. Visit 2 was a peer play session including two unfamiliar parent-toddler dyads. It included the toddlers and parents playing together (novelty) and requests to tidy up the toys (frustration). At 4 years, Visit 3 again involved a parent-child dyad. Novelty episodes included the child playing with toys in the unfamiliar room, then a stranger presenting a toy (remote controlled car). Frustration episodes involved requests to tidy up the toys and scattered papers, an attractive toy castle left out of reach, and a challenging paper folding game. Visit 3 also included an episode of brief separation from the parent. Visit 4 was a peer play session of four children. This visit began with parent separation. Episodes of novelty included play with unfamiliar peers and requesting each child to give a ‘speech’ about their last birthday. Frustration episodes were providing a single ‘special toy’ to share (a music player with headphones), a cooperation task sorting coloured paper into envelopes, and requests to tidy up the toys.

Research staff and graduate students working on the wider study of children’s social development completed the observational coding of Visits 1 to 4. While some coders were aware of the present study hypotheses, potential expectancy bias was minimized by using a number of
different coders, coding child and parent behaviours separately, assigning tapes to coders in no
specific order, and using low-inference items to assess specific behaviors (Hartmann & Wood,
1982). For training, all coders participated in group-meetings and calculated reliability estimates
with a ‘gold standard’ that was coded by the most experienced research staff. This process of
intrarater agreement was continued throughout the coding process for 10-20% of visits.

Watching a video replay of each visit, coders recorded their observations during episodes likely
to evoke stress in young children (i.e., novelty, parent separation, frustration). For each episode,
coders first recorded their observations using detailed time sample records of specific child or
parent behaviors in each 30-second interval. Such time sampling procedures alone can
misrepresent results by providing distorted estimates of response frequency and duration
(Hartmann & Wood, 1982). Therefore, at the end of each episode coders marked a five-point
global rating scale ('none' = 1, 'a little' = 2, 'a moderate amount' = 3, 'a lot' = 4, 'very high' = 5) for
the variable measured (e.g., level of child internalizing difficulties, warm-engaged parenting),
which was informed by their detailed time sample records. The global rating scales had the
advantage of allowing coders to reflect on the meaning of the set of specific observed behaviors
recorded. Over the four playroom visits, the total observed time coded was approximately two
hours per child and parent.

2.3.5.1. Child internalizing difficulties. The observation protocol for child internalizing
difficulties was designed to be consistent conceptually with the parent report questionnaire, but
included behaviours that could be seen in a playroom context. Observation items therefore
included anxiety (expresses fear, worry), depression (distress/sadness), inhibition (no response to
stranger’s invitation to interact), peer withdrawal (refuses peer invitation to play, ignores, moves away), separation insecurity (crying, fussing in separation episode) and somatic complaints (head/stomach ache). The coder observed each episode on videotape (e.g., parent separation-reunion, six minutes) and ticked specific instances of internalizing behavior seen in each 30-second interval. There were six possible behavior codes that represented child affect (e.g., crying, whining, looks tense), nine codes for language (e.g., says others don't like me, makes excuses to leave), nine codes for play (e.g., unoccupied or onlooking, passive to peer aggression) and six 'other non-verbal' codes (e.g., sucks fingers, perfectionist).

These items were used as a reference for coders to provide a global internalizing rating. At the end of each episode, the coder reviewed any ticked internalizing indicators and recorded their global internalizing rating from 'none' (1) to 'high' (5). Coders provided global internalizing ratings for eight episodes in Visit 1, four in Visit 2, seven in Visit 3 and eight in Visit 4 ($\alpha$ = .78 - .86 across visits). The coder’s global internalizing ratings across episodes of a playroom visit were averaged. The intraclass correlations between independent coders for internalizing global ratings (calculated for each visit) were .95 or above.

2.3.5.2. Parenting practices. The observation protocol for parenting was similarly designed to be consistent conceptually with the parent report questionnaire (Bayer, 2003). Observation items therefore focused on the dimensions of warm-engaged, autonomy encouraging, power-assertive/punitive, and over-involved/protective. The observation protocol also included a rejecting parenting dimension. The coder observed each episode on videotape (e.g., stranger invites toddler to play with an electronic robot, two minutes) and ticked specific instances of the
above parenting dimensions seen in each 30-second interval. Specific parenting behaviors included eight codes to assess warm-engaged behaviors (e.g., praises child, listens to child and responds in pleasant tone), five codes for rejecting (e.g., fails to respond to appropriate child initiation, annoyed affect, criticizes, insults), eight codes that tapped autonomy-encouraging (e.g., explains calmly to child why task/rule is necessary, encourages child to approach feared/uncertain situation), four codes pertaining to power-assertive/punitive behaviors (e.g., physically punishes child, directive/bossy instructions to child) and 16 codes for over-involved/protective behaviors (e.g., immediately seeks to soothe upset child, describes challenging situation to child as scary/too hard).

As noted above, these detailed items were used only as a reference when coders provided their global parenting dimension ratings. At the end of each episode, the coder reviewed any ticked parenting items and recorded their global rating for each parenting dimension (e.g., warm-engaged rating 'none' (1) to 'high' (5). Coders provided global ratings for each parenting dimension for nine episodes in Visit 1, six in Visit 2, and seven in Visit 3 (α range .57 - .87 across visits). The coder’s global parenting ratings for each dimension made across episodes of a playroom visit were averaged. Intraclass correlations between independent coders (calculated for each visit) ranged from .72 (Visit 1) to .92 (Visit 2).

3. Results

3.1. Descriptive analyses
3.1.1. Child internalizing difficulties

In this community sample, on average parents reported that their young children displayed internalizing behaviors ‘rarely’ ($M = 2.18$, $SD = .41$, range = 1.11 to 2.92 for 2 year olds; $M = 2.08$, $SD = .45$, range = 1.11 to 3.42 for 4 year olds). Nevertheless, the upper range at age 2 and 4 showed that some children were experiencing internalizing difficulties, displaying multiple indicators ‘sometimes’. Similarly in the playroom, on average toddlers in Visit 1 displayed internalizing difficulties ‘a little’ ($M = 2.08$, $SD = .71$, range = 1.00 to 4.00). At preschool age on average children displayed ‘none’ to ‘a little’ internalizing difficulties (Visit 3: $M = 1.36$, $SD = .42$, range = 1.00 to 4.14; Visit 4: $M = 1.59$, $SD = .65$, range = 1.00 to 4.14). Again, the upper range showed that some children were observed as displaying ‘a lot’ of internalizing difficulties.

3.1.2. Parenting practices

Parents’ (110 mothers, 2 fathers) self-reported parenting practices at each age are presented in the upper part of Table 2. On average, parents' reported interactions with their children at both 2 and 4 years were warm-engaged, autonomy-encouraging, and were infrequently power-assertive/punitive or over-involved/protective. Similarly observers of the playroom interactions (lower part of Table 2) rated parents on average as 'moderately' warm-engaged and autonomy-encouraging, 'a little' over-involved/protective, and hardly ever power-assertive/punitive. As expected for a community sample, these mean scores showed positive parenting practices. Nevertheless, the upper ranges revealed some problematic parenting practices occurred. To illustrate, some parents reported engaging in power-assertive/punitive interactions with their young children ‘often’ to ‘always’ in frequency (upper range 4-5) and in the playroom
observations, some parents displayed only ‘a little’ warmth towards their young child (lower range 1-2).

INSERT TABLE 2 ABOUT HERE

The means presented in Table 2 suggest that overall parent interactional styles did not vary at child age 2 and 4 years. Average levels of warm-engaged, autonomy-encouraging, power-assertive/punitive and rejecting practices were similar at 2 and 4 years, although parents tended to become less over-involved/protective as children moved from toddler to preschool age ($p < .001$ for parent self-report and observational sources). To examine stability of parenting behaviors over this period (see left column of Table 3), correlations between the 2 and 4 year self-reported behavior ratings (reported in bold) and between the parent observations (reported in plain font) were computed. These correlations are generally medium to large effect sizes (Cohen’s criteria: Newton & Rudestam, 1999). They indicate that parents who were less warm-engaged, less autonomy-encouraging, more power-assertive/punitive, more over-involved/protective, or more rejecting than average when they child was 2 years old tended to continue with this parenting style over time (and likewise for positive parenting).

INSERT TABLE 3 ABOUT HERE

In addition, Table 3 presents the intercorrelations among the five parenting dimensions at child age 2 (above the diagonal) and at child age 4 (below the diagonal). Relations among the parenting dimensions were consistent with expectations and provide some evidence of construct
validity for these new scales. For both observed behavior and self-reported behavior at child age 2 and 4 years, warm-engaged parenting showed positive correlations with autonomy-encouraging parenting (medium to large effect sizes depending on data source), and for parent observation showed negative relations with power-assertive/punitive parenting (medium effect sizes). Over-involved/protective parenting was related to the other parenting dimensions largely in expected directions, with small to medium effect sizes.

3.1.3. Parent anxiety-depression

Parents’ average STAI-T score was 38 when children were aged 2 ($SD = 9.05$) and 4 years ($SD = 8.41$). This was equivalent to normative data (Spielberger et al., 1983) and represented that emotional distress was experienced ‘sometimes’ (with a range ‘almost never’ to ‘often’). Some parents in this sample had significant enduring distress. When children were toddlers, 5% of parents scored two standard deviations or more above the STAI-T normative mean.

The measures of current state (GHQ) and persistent trait (STAI-T) anxiety-depression were intercorrelated significantly with medium to large effect sizes (at child age 2: $rs = .33$ to $.53$, $ps < .001$; at child age 4: $rs = .44$ to $.56$, $ps < .001$). Each parent’s GHQ and STAI-T scores were combined (taking the mean of standardized scores) to form their anxiety-depression score. Parents' anxiety-depression showed substantial longitudinal stability across two years ($r = .46$, $p < .001$).

3.1.4. Family stress
Principal components analysis was applied to the various family life stress measures and the first orthogonal component (at 2 and 4 years, accounting for 41% and 37% of variance respectively) included conflicts over parenting, relationship dissatisfaction, daily parenting hassles, and negative life events. A family stress composite was created at 2 and 4 years based on these variables (taking the mean of standardized scores). Cronbach’s alpha was .62 at child age 2 and .58 at child age 4. The family stress composite showed significant longitudinal stability across 2 years ($r = .49, p < .001$) and family stress was related to parental anxiety-depression scores ($rs = .53$ and $.48$ at child age 2 and 4, respectively; $ps < .001$).

3.2. Predicting child internalizing difficulties from parenting and family stress

Multiple regression was used to predict child internalizing difficulties from parenting practices, parent anxiety-depression and family stress. The first set of regression analyses were cross-sectional, conducted on data collected concurrently when the child was 2 years old and on data collected concurrently when the child was 4 years old. These analyses reflect the mutually responsive and immediate interactions between parents and their young children. These cross-sectional analyses also explored mediation by parenting practices of any associations between family stress and child internalizing difficulties. Baron and Kenny's (1986) widely used and accepted mediation approach was followed (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). In addition, structural equation modelling (SEM) was used to evaluate adequacy of model fit for the regression findings. SEM included assessment of interrelations between predictor variables in the analysis that can affect which paths predict the outcome variable (Ullman, 1996).
A second set of longitudinal regression analyses were then employed to determine cumulative effects over time of parenting, over and above stability of child behavior. This approach was taken because longitudinal structural equation modelling is inappropriate to test fit with only two waves of data collection (MacCallum & Austin, 2000). All model testing was based on composite scores (scores comprised of both parent report and observation ratings). Consistent with multi-source assessment in the literature (Grietens et al., 2004), low correspondence was found between parent report and playroom observation scores for child internalizing difficulties and parenting practices (lower range $r = -.03$ for warm-engaged parenting at 2 years; upper range $r = .29$ for power-assertive/punitive parenting at 2 years). Footnotes in the tables and in the text present any differences between this analysis and model testing based on separate data sources.

3.2.1. Predicting child internalizing difficulties at age 2 and at age 4 from concurrent parent and family measures (cross-sectional analyses)

The results of three regression analyses of data collected when the child was 2 years old are presented in the upper portion of Table 4; findings from similar analyses conducted on data collected concurrently when the child was 4 years old are presented in the lower portion of Table 4.

First, a regression analysis predicting child internalizing scores from parenting practices was conducted on the age 2 cross-sectional data. The results, presented as Analysis 1 in the upper portion of Table 4, showed young children’s internalizing difficulties at 2 years were predicted by higher over-involved/protective parenting. Parenting explained up to 6% of variance in age 2 child internalizing difficulties.
Results of a standard regression examining the relationship of the 2 year olds' internalizing scores and family stress at age 2 are presented in the second section of Table 4 (Analysis 2: predicting from parent stress) and explained 13% of variance in child internalizing difficulties. Specifically, parents’ anxiety-depression scores uniquely predicted 10% of the variance in 2 year olds' internalizing behaviors.

\textbf{INSERT TABLE 4 ABOUT HERE}\n
The third regression analysis conducted on the 2 year old data was a hierarchical regression in which parenting practices were stepped in first, followed by family stress, with children's internalizing behaviors at age 2 as the dependent measure. Parenting scores were entered on step 1 and the two family stress indices on step 2. As can be seen in the middle section of Table 4 (Analysis 3: predicting from parenting followed by stress), parenting and family stress together explained 15% of the variance in children's internalizing behaviors at age 2. Partial mediation was suggested, with the 13% of variance in child internalizing difficulties predicted by family stress in the standard regression analysis reduced to 11% once parenting practices were added to the equation.

The relationship between family stress and parenting practices for child age 2 was also analyzed. Again, using only data collected when the children were 2 years, family stress was predictive of lower use of warm-engaged parenting practices ($R = .26$, $F(2, 108) = 3.94, p < .05$), and higher use of power-assertive/punitive parenting ($R = .37$, $F(2, 104) = 8.46, p < .001$). The age 2 cross-
sectional regression findings demonstrated good SEM model fit (see Figure 2 for standardized path coefficients and fit statistics) (Arbuckle & Wothke, 1999).²

At age 4 (see lower portion of Table 4), first a regression analysis predicting child internalizing scores from parenting practices was conducted (Analysis 1). This showed child internalizing difficulties at 4 years were predicted by higher over-involved/protective parenting. Parenting explained 22% of variance in age 4 child internalizing difficulties.

Results of a standard regression examining the relationship of the 4 year olds' internalizing scores and family stress at age 4 (Analysis 2) showed no significant prediction of child internalizing difficulties. The third regression analysis conducted on the 4 year data (Analysis 3) was a hierarchical regression (parenting scores entered on step 1 and the two family stress indices on step 2) with children's internalizing behaviours at age 4 as the dependent measure. There was no additional prediction from family stress to child internalizing behaviours after parenting was first entered in the equation.

At age 4 the relationship between family stress and parenting practices was also analysed. Family stress was predictive of higher use of over-involved/protective parenting ($R = .26, F(2, 105) = 3.95, p< .05$). The cross-sectional regression findings at 4 years demonstrated good SEM model fit (see Figure 3 for standardized path coefficients and fit statistics).²

3.2.2. Predicting child internalizing difficulties at age 4 from longitudinal data
Hierarchical regression analyses assessed the relationship of parenting behaviors and family stress assessed over time on internalizing difficulties reported for the child at 4 years old. This analysis first controlled for stability in internalizing difficulties by initially introducing children's scores from age 2 (step 1), then assessed variance in internalizing behavior scores attributable to parenting practices assessed at age 2, and then current parenting practices at age 4.

In total, 45% of variance in preschool children's internalizing difficulties was explained ($R = .68$, $F(3, 102) = 29.36, p < .01$). Specifically, age 4 internalizing behavior problems were predicted by lower warm-engaged parenting at 2 years ($r = -.27, B = -.11, \beta = -.22, sr^2 = .07, p < .05, \Delta R^2 = .05, p < .001$) and higher over-involved/protective parenting at 4 years ($r = .42, B = .10, \beta = .20, sr^2 = .06, p < .05; \Delta R^2 = .04, p < .05$), after accounting for age 2 internalizing difficulties.$^3$

4. Discussion

4.1. Support for hypotheses

Overall the FEEDs model received empirical support with this ‘low risk’ community sample of families, showing both parenting practices and parent stress predicted early childhood internalizing difficulties. In more detail, the hypothesis that internalizing difficulties would be predicted from family stress, parent anxiety-depression, and four parenting dimensions was partially supported. Over-involved/protective and low warm-engaged parenting were significant predictors, while power-assertive/punitive and autonomy-encouraging parenting were not. Parent anxiety-depression was predictive of child internalizing problems at child age 2 but not 4 years.
Family stress was not predictive independently of its association with parents' anxiety-depression. That over-involved/protective parenting predicted early internalizing difficulties independently of all other variables was impressive and increases confidence in this result. Analyses based on separate data sources provided results consistent with the composite data source, as well as highlighting some additional predictors.

Parenting practices may serve as mediators for some effects of parents' distress on young children's internalizing difficulties. Family stress was associated with lower warm-engaged, higher over-involved/protective and higher power-assertive/punitive parenting. The prediction of toddler internalizing difficulties from parent stress was slightly reduced when parenting practices were added to the equation. Finally, the longitudinal hypothesis was supported, with parenting predicting child internalising difficulties cumulatively over time.

4.2. Consistency with previous research

The effect sizes for parenting obtained with this low-risk sample were comparable to prior parenting studies (reviewed by Vandell, 2000) and amount to meaningful predictions for children's development. Practically, correlations of .20 to .30 for parenting should not be considered trivial, since even small effect sizes for parenting are likely to affect children's development when consistently experienced over time. Literature on children's externalizing behavior problems has detailed how coercive parent-child interactions become entrenched over time (Sanders, Gooley, & Nicholson, 2000). The same is likely to be true for over-involved/protective and low warm-engaged parenting interactions. As children develop more
anxiety and distress, parents are likely to respond with more over-involvement/protection in attempts to reduce this distress, and less warm interaction if the child is perceived as being ‘difficult’. Statistically, according to Cohen’s criteria, the $R^2$ from 15% to 22% found in this study for parent variables predicting child internalizing difficulties represent medium to large effects (Newton & Rudestam, 1999). Expectations for the amount of variance explained by parenting must be reasonable. Ahadi and Diener's (1989) simulation study had multiple predictors specified to completely determine behavior outcome scores and still obtained correlations typically in the .30s with an upper bound of .50.

The present findings on parenting extend knowledge in the field of the early etiology of internalizing problems. The multivariate analytic approach employed in this study may provide a useful model for future research, and failure to use such an approach may help to explain discrepancies between prior studies of parental predictors of internalizing behavior. The results suggest that the overarching term ‘affectionless control’ (Parker, 1983) masks important differential patterns of parenting (warm-engaged, autonomy-encouraging, power-assertive/punitive, over-involved/protective). Distinguishing between warm-engaged and over-involved/protective parenting appears critical. Offering parents practical examples of warm-engaged parenting to increase and over-involved/protective parenting to reduce is likely to be more helpful in prevention programs than using the term ‘affectionless control’. The results also help resolve the apparent inconsistency between social learning and attachment theories regarding parents' optimal responses to young children’s emotional distress: social learning theory implying a discouraging response, and attachment theory implying a nurturing response. Consistent with social learning theory, present findings highlighted over-involved/protective
parenting as the central aspect of 'control' reinforcing early internalizing difficulties. This supported Arcus’ (2001) finding that mothers who selectively attend to their infant’s emotional distress increase their fearfulness as toddlers. Consistent with attachment theory, the findings showed low warm-engaged parenting was the aspect of 'nurturing affection' that predicted early internalizing difficulties.

The present findings for family stress were consistent with prior literature predicting older children's internalizing problems in higher risk populations (Beardslee & Wheelock, 1994) and literature documenting connections between adults' emotional problems and aversive parenting practices (Cicchetti & Toth, 1995). Our findings extend this literature to early childhood, to the general community, and further indicated some mediation effects for parenting practices. Given that Baron and Kenny's (1986) approach to mediation has relatively low power (MacKinnon et al., 2002), these findings for parenting are likely to be under- rather than over-estimated. It makes sense that parents’ interactions with their young children may be able to attenuate negative impacts of their own emotional distress.

4.3. Implications for prevention programs

Preventive programs for early childhood internalizing problems could be offered through primary health care services to all parents of young children (i.e., universally), or to parents of young children showing early signs of difficulty (e.g., targeted to children with inhibition to novelty and separation anxiety). Based on the present findings, prevention programs could teach parents how to interact with toddler and preschool children in ways that develop coping skills to
dealing with stressful situations. The FEEDs model acronym was created for use in such programs, to explain how parents can either 'feed' their young children's emotional distress, or 'feed' their courageous behaviour. Parents could be encouraged to play with, hug and compliment their young child as part of their daily routine, and to pay attention to when their young child shows courageous behaviour, rewarding this (e.g., with praise) to increase its frequency. Parents could also be taught that exposing young children to a reasonable level of challenge that is not overwhelming (e.g., new children, separation from parents for child-minding, frustrating tasks) will assist development of children's stress management skills. For example, a parent could take a nervous toddler over to a couple of other young children in a park, then sit calmly and quietly alongside the children until their toddler relaxes, becomes curious and engages in play. In a prevention program, parents could also be taught that exposure to adults' anxious and depressed emotions can be distressing for children, and that their own anxiety and depression can lead them to engage in anxious intrusion on their child, short-tempered punishment, and/or providing insufficient warmth. It is therefore important for parents to care for themselves and reduce their own emotional distress.

Controlled trials of parenting programs to reduce child externalizing behavior problems have demonstrated positive results as early as the preschool years (Barlow & Stewart-Brown, 2000). At school age, family-focused treatment for childhood anxiety and depression also shows effectiveness (Barrett, 2001; Beardslee et al., 1997). Innovative public health trials beginning early in childhood are needed now, to develop and evaluate parenting programs aiming to prevent internalizing problems broadly in the population.
4.4. Limitations and future directions

Methodological strengths of this study were multi-source assessment and longitudinal as well as cross-sectional analyses with a community sample. A limitation is that it employed a relatively small, self-selected and generally low-risk sample. Generalization of these findings to all families in the community may therefore be limited. Research is required to replicate these initial FEEDs model findings with higher risk and larger samples of families. Including a sizeable group of parents selected with anxiety and depression will be important, since their children are known to show higher rates of internalizing problems (Beardslee & Wheelock, 1994; Hirshfeld et al., 1997).

Currently few parent-report measures are available for early childhood internalizing difficulties and parenting practices. Some questionnaires used in this study are newly developed and have promising initial psychometric data. Adopting Robinson, Shaver and Wrightsman’s (1991) psychometric criteria, these new questionnaires were based on ‘extensive’ theoretical development, showed ‘exemplary’ internal consistency and test-retest stability, demonstrated construct validity, and predictive validity in the FEEDs model. These questionnaires are relatively brief, yet more comprehensive and developmentally sensitive than most existing instruments. Further psychometric work on these measures with a large representative community sample tracked across several years of childhood will be critical to provide normative data and prediction of clinical-level problems.
Likewise, the FEEDs theoretical model requires further validation with a large representative community sample that is suitable for powerful statistical modelling techniques to evaluate direct and indirect mediation paths. Only a portion of the variance in early childhood internalizing difficulties was explained by the FEEDs model in the present study. As might be expected, the relationship between parent variables and early internalizing difficulties is imperfect - some emotionally distressed parents are able to maintain positive parenting with their children, while some non-distressed parents engage in problematic parenting practices. Additional influences in the early childhood environment (such as fathers, childcare staff, and siblings) could be considered in an extension of the FEEDs model. Parent influences in this model could also be more predictive of internalizing difficulties for subgroups of children. Research is needed to evaluate if child temperament (particularly infant emotional reactivity and toddler inhibition) is a moderating variable (Belsky et al., 1998).

4.5. Conclusion

Internalizing problems can emerge and remain stable from the early childhood years. This etiological study was based on a community sample of young children, combining parent report and independent observations, and cross-sectional and longitudinal analyses. Findings provided evidence of important family predictors of early childhood internalizing difficulties. Primarily, early internalizing difficulties were predicted by over-involved/protective parenting, but also by low warm-engaged parenting and parents’ anxiety-depression. These findings can inform early childhood parenting programs aiming to prevent anxiety and depression.
References


Bayer, J. K., & Sanson, A. V. (2003). Preventing the development of emotional mental health problems from early childhood: Recent advances in the field. *International Journal of Mental Health Promotion, 5*, 4-16.


Author notes

Jordana K. Bayer, Centre for Community Child Health, Murdoch Children's Research Institute, Royal Children’s Hospital; Department of Paediatrics, University of Melbourne; Ann V. Sanson, Department of Paediatrics, University of Melbourne; Sheryl A. Hemphill, Centre For Adolescent Health, Murdoch Children's Research Institute, Royal Children’s Hospital; Department of Paediatrics, University of Melbourne.

This research was supported by a Melbourne Research Scholarship to Dr. Bayer and an Australian Research Council grant to Dr. Sanson. We thank parents and children who participated in this study, and graduate students who were involved in the observational coding.

Address correspondence to Dr. Jordana Bayer, Centre for Community Child Health, Royal Children’s Hospital, Flemington Road, Parkville VICTORIA 3052, AUSTRALIA; Telephone: (0061) 3 9345 7952; Email: jbayer@unimelb.edu.au.
Footnotes

1 Findings based on skewed variables were checked by using transformed variables and inspecting multivariate outlier plots. Findings based on original scores were then reported for ease of interpretation.

2 SEM (composite data source) showed additional paths to regression findings from parent distress to over-involved/protective parenting (2 years) and lower warm-engaged parenting (4 years).

3 Parent anxiety-depression at 2 years was also a significant predictor in parent report data.
Table 1
Sociodemographic characteristics of families when children were 2 years old

<table>
<thead>
<tr>
<th></th>
<th>Mothers</th>
<th>Fathers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent age (years)</td>
<td>$M=35; SD = 4.48$</td>
<td>$M=38; SD = 5.61$</td>
</tr>
<tr>
<td>Cultural background (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anglo-Australian</td>
<td>78</td>
<td>68</td>
</tr>
<tr>
<td>European</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Education (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not completed high school</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Completed trade school</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Completed certificate/diploma</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Bachelors university degree</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Higher university degree</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Occupational prestige</td>
<td>$M=3.79; SD = 1.01$</td>
<td>$M=3.49; SD = 1.07$</td>
</tr>
<tr>
<td>Low</td>
<td>32%</td>
<td>15%</td>
</tr>
<tr>
<td>High</td>
<td>8%</td>
<td>14%</td>
</tr>
<tr>
<td>Parent Work Hours (per week)</td>
<td>$M=14; SD = 14$</td>
<td>$M=41; SD = 16$</td>
</tr>
<tr>
<td>Marital status</td>
<td>81% married</td>
<td></td>
</tr>
<tr>
<td>(primary caregiver)</td>
<td>12% defacto partner</td>
<td></td>
</tr>
<tr>
<td>Child birth order (range 1st- 5th)</td>
<td>35% only child</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15% firstborn of siblings</td>
<td></td>
</tr>
</tbody>
</table>
29% second born

Childcare

47% attend childcare center

(hours/week)

$M = 9; SD = 12$

---

*Note.* High occupational prestige = 1. Low prestige = 6.
Table 2

Mean (SD) and range of scores of self-reported and observed parenting behaviors at child age 2 years and 4 years

<table>
<thead>
<tr>
<th>Data source and child age</th>
<th>Parent Behavior</th>
<th>Parent report</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Warm-engaged</td>
<td>Rejecting</td>
<td>Autonomy</td>
</tr>
<tr>
<td></td>
<td>encouraging</td>
<td>assertive</td>
<td>/protective</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 years</td>
<td>4.43 (.38)</td>
<td>----</td>
<td>3.83 (.47)</td>
</tr>
<tr>
<td></td>
<td>3.14-5.00</td>
<td>----</td>
<td>2.30-4.70</td>
</tr>
<tr>
<td>4 years</td>
<td>4.38 (.49)</td>
<td>----</td>
<td>3.81 (.44)</td>
</tr>
<tr>
<td></td>
<td>3.00-5.00</td>
<td>----</td>
<td>2.54-5.00</td>
</tr>
<tr>
<td>Observations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 years</td>
<td>2.81 (.45)</td>
<td>1.14 (.24)</td>
<td>2.99 (.36)</td>
</tr>
<tr>
<td></td>
<td>1.44-4.08</td>
<td>1.00-2.25</td>
<td>2.11-3.92</td>
</tr>
<tr>
<td>4 years</td>
<td>3.31 (.59)</td>
<td>1.12 (.21)</td>
<td>2.95 (.51)</td>
</tr>
<tr>
<td></td>
<td>2.00-4.43</td>
<td>1.00-2.43</td>
<td>1.86-4.14</td>
</tr>
</tbody>
</table>

*Note.* Rejecting parenting was not measured by parent self-report.
Table 3

Temporal stability and intercorrelations among self-reported (bold) and observed (plain font) parenting scores at child age 2 (above diagonal) and 4 (below diagonal) years

<table>
<thead>
<tr>
<th>Parenting</th>
<th>Two year stability</th>
<th>Warm-engaged</th>
<th>Rejecting</th>
<th>Autonomy-encouraging</th>
<th>Power-assertive /punitive</th>
<th>Power-assertive /protective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-engaged</td>
<td>.66* .45*</td>
<td>----</td>
<td>-.47*</td>
<td>.27* .54*</td>
<td>.04 -.35*</td>
<td>.22* -.23*</td>
</tr>
<tr>
<td>Rejecting</td>
<td>.41*</td>
<td>-.29*</td>
<td>----</td>
<td>-.39*</td>
<td>.76*</td>
<td>.36*</td>
</tr>
<tr>
<td>Autonomy-encouraging</td>
<td>.55* .18</td>
<td>.39* .64*</td>
<td>-.18</td>
<td>----</td>
<td>-.21* -.34*</td>
<td>.08 -.33*</td>
</tr>
<tr>
<td>Power-assertive</td>
<td>.65* .46*</td>
<td>-.09 -.29*</td>
<td>.43*</td>
<td>-.17 -.02</td>
<td>----</td>
<td>.23* .44*</td>
</tr>
<tr>
<td>Overinvolved</td>
<td>.48* .34*</td>
<td>-.03 -.32*</td>
<td>.31*</td>
<td>-.21* -.34*</td>
<td>.10 .20*</td>
<td>----</td>
</tr>
</tbody>
</table>

*Note. Rejecting parenting was not measured by parent self-report.

*p < .05.
Table 4

Summary of concurrent regression analyses predicting child internalizing problems at 2 years old and 4 years old from parenting behaviors and family stress (composite data)

<table>
<thead>
<tr>
<th>A. Prediction of child internalizing behaviors at 2 years</th>
<th>r</th>
<th>B</th>
<th>β</th>
<th>$sr^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Analysis 1: Predicting from parenting practices (standard regression)**a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2 = .06; R = .31; F(4, 106) = 2.88; p &lt; .05$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm-engaged</td>
<td>-.09</td>
<td>-.13</td>
<td>-.11</td>
<td>.01</td>
<td>.28</td>
</tr>
<tr>
<td>Autonomy-encouraging</td>
<td>-.02</td>
<td>.09</td>
<td>.08</td>
<td>.01</td>
<td>.43</td>
</tr>
<tr>
<td>Power-assertive/punitive</td>
<td>.06</td>
<td>-.07</td>
<td>-.07</td>
<td>.00</td>
<td>.50</td>
</tr>
<tr>
<td>Over-involved/protective</td>
<td>.29</td>
<td>.34</td>
<td>.33</td>
<td>.09</td>
<td>&lt; .005</td>
</tr>
<tr>
<td><strong>Analysis 2: Predicting from parent stress (standard regression)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2 = .13; R = .38; F(2, 108) = 9.24; p &lt; .001$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety-depression</td>
<td>.38</td>
<td>.79</td>
<td>.36</td>
<td>.10</td>
<td>&lt; .005</td>
</tr>
<tr>
<td>Life stressors</td>
<td>.22</td>
<td>.11</td>
<td>.05</td>
<td>.00</td>
<td>.65</td>
</tr>
</tbody>
</table>

**Analysis 3: Predicting from parenting practices followed by stress;**
(hierarchical regression; Step 1 as for Analysis 1 above)\(^b\)

\[ \Delta R^2 = .11; \ p < .01; \ R^2 = .15; \ R = .45; \ F(6, 103) = 4.31; \ p < .01 \]

<table>
<thead>
<tr>
<th></th>
<th>( r )</th>
<th>( B )</th>
<th>( \beta )</th>
<th>( sr^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety-depression</td>
<td>.38</td>
<td>.66</td>
<td>.30</td>
<td>.07</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Life stressors</td>
<td>.22</td>
<td>.20</td>
<td>.09</td>
<td>.01</td>
<td>.41</td>
</tr>
</tbody>
</table>

B. Prediction of child internalizing behaviors at 4 years

Analysis 1: Predicting from parenting practices (standard regression)\(^a\)

\[ R^2 = .22; \ R = .50; \ F(4, 102) = 8.43; \ p < .01 \]

<table>
<thead>
<tr>
<th></th>
<th>( r )</th>
<th>( B )</th>
<th>( \beta )</th>
<th>( sr^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-engaged</td>
<td>-.11</td>
<td>.09</td>
<td>-.19</td>
<td>.03</td>
<td>.08</td>
</tr>
<tr>
<td>Autonomy-encouraging</td>
<td>.01</td>
<td>.10</td>
<td>.19</td>
<td>.03</td>
<td>.09</td>
</tr>
<tr>
<td>Power-assertive/punitive</td>
<td>.05</td>
<td>-.04</td>
<td>-.07</td>
<td>.01</td>
<td>.42</td>
</tr>
<tr>
<td>Over-involved/protective</td>
<td>.47</td>
<td>.24</td>
<td>.49</td>
<td>.23</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Analysis 2: Predicting from parent stress (standard regression)

\[ R^2 = .00; \ R = .14; \ F(2, 107) = 1.09; \ p = .34 \]

<table>
<thead>
<tr>
<th></th>
<th>( r )</th>
<th>( B )</th>
<th>( \beta )</th>
<th>( sr^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety-depression</td>
<td>.12</td>
<td>.07</td>
<td>.08</td>
<td>.00</td>
<td>.49</td>
</tr>
<tr>
<td>Life stressors</td>
<td>.13</td>
<td>.10</td>
<td>.09</td>
<td>.01</td>
<td>.42</td>
</tr>
</tbody>
</table>
Analysis 3: Predicting from parenting practices followed by stress;

(hierarchical regression; Step 1 as for Analysis 1 above)

$\Delta R^2 = .00; \ p = .77; \ R^2 = .21; \ R = .50; \ F(6, 100) = 5.63; \ p < .01$

<table>
<thead>
<tr>
<th></th>
<th>.12</th>
<th>.06</th>
<th>.07</th>
<th>.01</th>
<th>.47</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety-depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life stressors</td>
<td>.13</td>
<td>-.04</td>
<td>-.04</td>
<td>.00</td>
<td>.70</td>
</tr>
</tbody>
</table>

\(^a\)Low warm-engaged parenting was also a significant predictor of child internalizing difficulties when analyzed separately.

\(^b\)Family stress predicted rejecting parenting only in analyses of parent observations. Family stress did not predict scores for parenting from observational data and predicted lower warm-engaged parenting in parent self-report data.
**Figure captions**

*Figure 1.* Family influences on Early Emotional Difficulties (FEEDs) model of relationships between ‘distal’ parent stress, ‘proximal’ parenting practices, and early childhood internalizing difficulties.

*Figure 2.* Predicting 2 year old child internalizing difficulties from parent influences: Model fit statistics (composite data source).

*Figure 3.* Predicting 4 year old child internalizing difficulties from parent influences: Model fit statistics (composite data source).
Parent anxiety-depression 

Family life stress 

Parent anxiety-depression 

Early childhood internalizing difficulties 

Warm-engaged parenting 

Autonomy-encouraging parenting 

Power-assertive/punitive parenting 

Over-involved/protective parenting 

(+)ve 

(-)ve 

(+)ve 

(+)ve
Warm-engaged parenting

Autonomy-encouraging parenting

Power-assertive/punitive parenting

Over-involved/protective parenting

Toddler internalizing difficulties

Structural Equation Model Fit
RMSEA = .02 (90% CI = .00 - .10)
CFI = .99 TLI = .99 RMR = .11
CMIN/DF = 1.03

Family life stress

Parent anxiety-depression

- .23

.27

.31

.23

.22
Warm-engaged parenting

Over-involved/protective parenting

Power-assertive/punitive parenting

Autonomy-encouraging parenting

Parent anxiety-depression

Family life stress

Preschool internalizing difficulties

Structural Equation Model Fit
RMSEA = .00 (90% CI = .00 - .07)
CFI = 1.00 TLI = 1.04 RMR = .09
CMIN/DF = .78