

Relationships among Parenting Practices, Parental Stress, Child Behaviour, and Children's Social-Cognitive Development

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The present study included observational and self-report measures to examine associations among parental stress, parental behaviour, child behaviour, and children's theory of mind and emotion understanding. Eighty-three parents and their 3- to 5-year-old children participated. Parents completed measures of parental stress, parenting (laxness, overreactivity), and child behaviour (internalizing, externalizing); children completed language, theory of mind, and emotion understanding measures. Parent-child interactions also were observed ($N = 47$). Laxness and parenting stress predicted children's theory of mind performance and parental usage of imitative gestures and vocalizations accounted for unique variance in emotion understanding. Associations also were found between child behaviour and emotion understanding. Results provide support for direct and indirect associations between parent-child interactions and early social-cognitive development. Copyright © 2008 John Wiley & Sons, Ltd.

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INTRODUCTION

Two important aspects of early social-cognitive development are theory of mind and emotion understanding. By 4–5 years of age children typically understand the representational nature of thoughts and beliefs (Wellman, Cross, & Watson,

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2001) and the causes of different emotions (Denham & Couchoud, 1990), yet there is variability among children. Consistent with Vygotsky's (1978) theory, one factor that can influence when and how well children understand such concepts is the nature of interactions with others, particularly parents (see Astington, 1996; Hughes, Deater-Deckard, & Cutting, 1999; Ruffman, Perner, & Parkin, 1999). Indeed, attachment (e.g. Arranz, Artamendi, Olabarrieta, & Martin, 2002; Fonagy, Redfern, & Charman, 1997; Symons & Clark, 2000), parent-child conversations (e.g. Brown, Donelan-McCall, & Dunn, 1996; Dunn, Brown, & Beardsall, 1991; Meins & Fernyhough, 1999), parenting style (Vinden, 2001), and parental approaches to discipline (Hughes *et al.*, 1999; Ruffman *et al.*, 1999) all have been found to relate to children's theory of mind and/or emotion understanding.

Variables outside the immediate parent-child relationship also might account for individual differences in early social-cognitive performance. According to family systems theory (Minuchin & Fishman, 1981), broader factors that influence the parent also can affect the dynamics between parents and children. Working within these theoretical frameworks, the present study integrated clinical and developmental methods to assess relationships among parental stress, parental behaviours, and children's outcomes. More specifically, we examined whether parental stress relates to parental responsiveness and discipline styles, and whether these in turn predict children's theory of mind and emotion understanding. We also examined whether theory of mind and emotion understanding then relate to children's internalizing and externalizing behaviours. Each of these factors is discussed in turn.

Parental Stress

Family systems theories as well as Bronfenbrenner's (1979, 2006) ecological systems approach emphasize family functioning as a major force contributing to adaptive, and maladaptive, child development. Parenting stress is one of many factors, related to parents' parenting approaches and effectiveness. Parents experiencing high levels of stress, particularly from economic difficulties, typically are less responsive and affectionate with their children and more likely to use power-assertive techniques, as compared with parents without such stress (see McLoyd, 1990). It follows that excessive parental stress, through its effect on parenting, could negatively affect a child's social-cognitive development; however, two studies have yielded mixed results. Cole and Mitchell (1998) observed an inverse relationship between parental stress and children's performances on false belief tasks. In contrast, Symons and Clark (2002) observed that mothers' self-reported emotional distress when their child was 2 years old positively predicted their child's performance on a caregiver location task at 5 years of age. Differing methods likely played a role in the contradictory results; however, both studies have begun to explore systematically these complex family relationships.

Parenting, Theory of Mind, and Emotion

Parenting is directly related to theory of mind and emotion understanding. In particular, research related to theory of mind has examined the importance of such variables as attachment, parenting style, and discipline. Bowlby (1982) suggested that secure attachments enable children to learn about their caretaker's perspective, which then allows a child to recognize differences between his/her

own and his/her caretaker's perspectives. During the fourth stage of attachment children become able to attribute different thoughts and feelings to themselves and others (see Humfress, O'Connor, Slaughter, Target, & Fonagy, 2002). Recent theory of mind and emotion research has supported Bowlby's theory about links between attachment and children's mentalizing (e.g. Arranz *et al.*, 2002; Fonagy *et al.*, 1997; Laible & Thompson, 1998; Meins, Fernyhough, Russel, & Clark-Carter, 1998; Symons & Clark, 2000). In fact, attachment classification in infancy predicts false belief performance in the preschool years (Meins *et al.*, 1998; Symons & Clark, 2000).

A central characteristic of secure parent-child attachments is responsive parenting. Mothers with secure attachments are sensitive tutors, meaning they modify their instructions appropriately in reaction to their children's behaviour (Meins, 1997; Meins *et al.*, 1998). Responsive parenting also involves reflecting on a child's motives and mental states (Symons & Clark, 2002). Indeed, parents' tendencies to treat their children as having intentions and mental states at 6 months positively predicts theory of mind scores at 4 years (Meins *et al.*, 1998). Such findings suggest that sensitive parents attend to their children's mental states and reflect them appropriately. Such reflection, in turn, provides opportunities for children to learn about mental perspectives.

Parental control and discipline style also are related to theory of mind and emotion development. In particular, parental control in general (Vinden, 2001), parents' negative control during discipline (e.g. criticism or physical control of child; Hughes *et al.*, 1999), and power assertion (spanking, yelling; Pears & Moses, 2003) are inversely related to children's theory of mind performance. These findings fit with Vinden's (2001) explanation that parents who use controlling techniques do not provide opportunities for children to learn about others' perspectives. Interestingly, Pears and Moses found that children whose parents reported use of power assertion performed better on measures of emotion understanding. It is possible that the strong affect associated with power assertion leads to an emphasis on others' emotions and the fact that people can have different feelings about the same situation (Pears & Moses, 2003). The finding that the same parental behaviour can have differential effects on various aspects of social cognition is consistent with previous work that indicated that theory of mind and emotion understanding are overlapping, yet unique constructs (see Cutting & Dunn, 1999; Weimer & Guajardo, 2005).

One relevant moderator for the effect of parenting on theory of mind development is sex. Hughes *et al.* (1999) found that associations between parenting and theory of mind differ for boys and girls. Boys' theory of mind performance related positively to severity of parental discipline, while girls' performance related positively to general parental warmth. These findings could reflect meaningful differences in how girls and boys use their theory of mind knowledge, such that girls use their understanding of mind to foster relationships with an emphasis on emotional support, empathy, and cooperation, while boys use their knowledge in less prosocial ways, leading to reasons for severe discipline (Hughes *et al.*, 1999). The present study examined relationships among responsive parenting, theory of mind, and emotion understanding and whether such relationships differed for boys and girls.

Social Competence and Peer Interactions

In addition to factors that predict children's social-cognitive skills, research also has shown links between these skills and children's outcomes, particularly social

competence (e.g. Capage & Watson, 2001; Lalonde & Chandler, 1995). Typically, children rated by teachers and/or parents as socially skilled perform well on theory of mind tasks (Capage & Watson, 2001; Lalonde & Chandler, 1995; Watson, Nixon, Wilson, & Capage, 1999). Such children are more likely to demonstrate intentional behaviours (e.g. commenting on differences between one's own and another's wishes) during social interactions (Lalonde & Chandler, 1995), possess positive social skills, and vocalize more frequently with peers during play (Watson *et al.*, 1999). They also are less likely to be socially withdrawn (Badenes, Estevan, & Bacete, 2000). Similarly, children's theory of mind and emotion understanding predict their peer likeability (Cassidy, Werner, Rourke, Zubernis, & Balaraman, 2003), and emotion regulation is linked with peer acceptance (Raver, Blackburn, Bancroft, & Torp, 1999). Children's understanding of others' thoughts, beliefs, and feelings might increase the likelihood of them solving social problems in appropriate ways rather than being aggressive (Capage & Watson, 2001).

Children perceived as lacking social competence perform less well on social-cognitive measures. For example, hard-to-manage children perform less well on theory of mind and emotion understanding tasks than do children without behaviour management issues (Hughes, Dunn, & White, 1998). Similarly, Happe and Frith (1996) found that though 6–12 year olds with conduct disorder passed standard first-order tasks, they performed less well than controls on a set of everyday behaviours thought to involve mentalizing skills (e.g. responding to hints/indirect cues in conversation, initiating conversation of interest to others).

The previously mentioned study suggests that children with a better understanding of others' thoughts and feelings will be more socially competent than other children. Sutton, Smith, and Swettenham (1999a), in contrast, suggested that bullies actually might have high theory of mind understanding. Indeed, social intelligence is related to multiple types of aggression (Bjorkqvist, Osterman, & Kaukiainen, 2000). In particular, those who use indirect methods of bullying (e.g. spreading rumours) need to be quite skilled at manipulating the thoughts of others (Sutton *et al.*, 1999a). Such findings suggest that theory of mind performance is not always linked with desirable behaviours (see also Sutton, Reeves, & Keogh, 2000; Sutton, Smith, & Swettenham, 1999b). Thus, the present study explored whether theory of mind and emotion understanding are related to maladaptive child outcomes, specifically externalizing and internalizing behaviours.

Purpose

The purpose of the present study was to examine associations between parental stress and parental behaviours (i.e. responsiveness, discipline) and then how those variables predicted theory of mind and emotion understanding. Finally, we also examined associations between these variables and children's behavioural outcomes, internalizing and externalizing. Previous studies have explored several of these associations, but not within a single study. Moreover, this study brought together developmental and clinical approaches to the study of parenting and child outcomes.

Three sets of hypotheses were tested. First, the present study examined associations between parental stress and parental behaviours as well as parental stress and children's theory of mind and emotion understanding. Given past findings, we hypothesized that increases in parental stress would be negatively associated with aspects of parental responsiveness and positively associated with negative aspects of parental behaviour (i.e. intrusiveness). Thus, parenting

responsivity and intrusiveness would mediate the relationship between parenting stress and children's theory of mind and emotion understanding.

Second, the present study examined associations between parenting and children's social-cognitive performance using both questionnaire and observational methods. Questionnaires assessed lax and overreactive parenting. These dimensions were selected because they are dimensions of parenting with clinical implications (Arnold, O'Leary, Wolff, & Acker, 1993) that are yet to be explored in the developmental literature. Overreactive parenting is characterized by harsh verbal commands and physical punishment, whereas laxness involves submitting to child demands. Consistent with previous research on parental control (Hughes *et al.*, 1999; Pears & Moses, 2003), overreactive parenting was expected to be inversely related to theory of mind and positively related to emotion understanding. Given that previous study has not examined lax parenting in relation to children's social-cognitive development, no specific hypothesis was proposed.

Parental positive attention and 'responsiveness' also were examined. In this study, responsiveness was conceptualized as contingent reciprocation of a child's verbal and non-verbal behaviour. Extending developmental research, the present study incorporated current clinical knowledge of disruptive children and their parents. All current empirically supported interventions (i.e. Helping the Non-compliant Child, Parent-Child Interaction Therapy, The Incredible Years) begin treatment by improving parental responsiveness during parent-child interactions by encouraging parents to increase the 'non-demanding' aspects of their attention during a specified period of play each day, including imitation (either physical or verbal), descriptions (labelling of their child's play behaviour), and praise, while refraining from asking questions of their child, criticizing their child's play, or giving instructions/suggestions (Forehand & McMahon, 1981; Hembree-Kigin & McNeil, 1995; McMahon & Forehand, 2004; Webster-Stratton, 2000). In light of recent investigations of links between parental responsiveness and children's social-cognitive development, we hypothesized that theory of mind and emotion understanding would be positively related to positive aspects of parent behaviour designed to increase child socialization and compliance and negatively correlated with those aspects of parent behaviour that increase children's inappropriate and defiant behaviour.

The third set of hypotheses related to child outcome variables. More specifically, we examined relationships between parental reports of child externalizing behaviour and children's theory of mind and emotion understanding. Consistent with preschool data (e.g. Capage & Watson, 2001; Hughes *et al.*, 1998), we hypothesized that externalizing behaviour would be negatively related to both theory of mind and emotion understanding. Consistent with the work of Hughes *et al.* (1999), we examined whether these relationships depended upon the sex of the child.

METHOD

Participants

Eighty-three parents (65 mothers, 18 fathers; *M* age = 28 years; range = 20–46) participated with their 3- to 5-year-old child (49 boys, 34 girls; age range = 36–71 months; *M* = 51 months). Observational data were able to be coded for 47 of the 83 parent-child dyads because of technical difficulties. The sample with observational data included 35 mothers and 12 fathers (*M* age = 27.83;

range = 20–40) and 28 sons and 19 daughters (36–71 months; *M* age = 50.4). To ensure that the two samples were comparable, group comparisons were completed for all central variables. Child completed emotion understanding ($t = 0.56, p = 0.58$) and theory of mind ($t = 0.01, p = 0.99$) scores were statistically equivalent between groups with and without available observational data. Similarly, scores between groups on self-reported parenting measures [Parenting Scale (PS) overreactive $t = 1.47, p = 0.15$, and lax $t = 1.65, p = 0.10$] and child behaviour scales [Child Behaviour Checklist (CBCL) externalizing $t = -0.11, p = 0.91$, and internalizing $t = -0.24, p = 0.81$] were similar. Participants were solicited from a small, Northwestern city via the newspaper and introductory psychology courses. Parents received either \$20.00 or research credit; children received a book of their choice.

Ninety-three per cent of all responding parents were Caucasian, 4% were Hispanic, 1% was American Indian, and 2% were Asian. Fifty-eight per cent of parents completed high school or the equivalent, 16% completed vocational or technical school, 9% completed an Associate's degree, 13% completed a Bachelor's degree, and 4% completed a Master's or professional degree. Mean household income was between \$30 000–\$40 000 (range ≤ \$10 000–\$90 000) and children had an average of 1.4 siblings (range from 0 to 5).

Sample characteristics based upon parental responses on the CBCL and the Parenting Stress Index were largely consistent with characteristics expected in a community-based sample. Generally, children and their parents were well adjusted, with most not experiencing any major behavioural or emotional distress (see Table 1). Parental-reported child internalizing (i.e. depression, anxiety, somatic complaints) behaviour were average, as was child externalizing (i.e. attention problems and rule breaking behaviour) and total emotional and behavioural problems. Moreover, parents generally indicated that they were not experiencing significant parent- or child-related stress.

Design Overview

Parent–child dyads participated in one 1½–2-h session at a university laboratory. Sessions included two parts. During the first part of the session, parents

Table 1. Descriptive statistics for child and parent measures

	Mean	S.D.	Range
Child-report measures			
Language comprehension	58	24.4	21–112
Theory of mind	3.1	1.7	0–7
Emotion understanding	1.86	0.74	0.06–3.19
Parent-report measures			
CBCL internalizing <i>T</i> score	49.7	9.1	29–68
CBCL externalizing <i>T</i> score	49.2	9.3	28–73
CBCL total problem <i>T</i> score	49.6	9.2	29–76
Parenting Scale: laxness	2.6	0.8	1.1–4.7
Parenting Scale: overreactivity	3.2	0.9	1–5.6
Parenting Stress Index: parent related ^a	45.7	29	1.5–98
Parenting Stress Index: child related ^a	41.5	29.5	2.5–99

^aParenting stress index scores are calculated percentages based on sample norms described in the administration manual (Abidin, 1995).

completed questionnaires concerning parenting stress, parenting practices, and child behaviour. In an adjacent room, children completed language, theory of mind, and emotion understanding tasks. The theory of mind and emotion understanding tasks were counterbalanced. The second part of the session consisted of three 10-min videotaped parent-child interactions: a free-play interaction, a parent-busy task, and a clean-up task.

Parent Questionnaires

Demographic survey: Parents completed a demographic survey on which they indicated their and the other parent's age, ethnicity, marital status, highest education level completed, and employment status. They also indicated the yearly household income, number and ages of children, and the number of adults living in the home. Yearly household income was indicated on an 11-point scale ranging from less than \$10 000 to over \$100 000. Entwisle and Astone (1994) recommended using financial, human, and social capital as indicators of children's socioeconomic status; thus, data on household income, parental education level, and number of adults in the household were collected.

Child problem behaviours: Children's internalizing and externalizing problem behaviours were assessed via parental report using the CBCL 1.5-5 years (Achenbach, 1991). Parents responded to questions about different aspects of their child's behaviour on a three-point scale (e.g. never, sometimes, and always). The CBCL yields two broad measures of externalizing behaviour (i.e. delinquency, aggressiveness) and internalizing behaviour (i.e. withdrawn, depressed). The CBCL is well researched and widely used, and the Externalizing Disorder Scale demonstrates adequate internal consistency, test-retest reliability, and concurrent validity with other measures of children's conduct problems (Achenbach, 1995). Raw scores were converted to *T* scores for all analyses.

Parenting: Parenting approaches were examined with The Parenting Scale (PS; Arnold *et al.*, 1993), a 30-item scale that assesses parenting responses to child misbehaviour. For each item parents indicated on a Likert-type scale which of two responses was more characteristic of them. For example, for the first item, 'When my child misbehaves...', they chose between 'I do something right away' and 'I do something about it later'. Two factors encompassing overreactivity (e.g. When I am upset or under stress I am picky on my child's back) and laxness (e.g. I threaten to do things that I know I won't actually do) have demonstrated adequate reliability and concurrent validity with observed measures of parenting behaviour (Reitman, Currier, & Hupp, 2001). Both factors have acceptable internal consistency (alphas = 0.71 and 0.77, respectively) and distinguish clinic from non-clinic samples.

Parenting stress: Parents completed the Parenting Stress Index (Abidin, 1995) to assess the effect of stress on parent-child interactions. This 120-item measure is appropriate for parents of children between 1 month and 12 years of age. For each item parents either indicate the degree to which they agree with a statement on a five-point scale, select the appropriate response from those provided, or respond yes or no to a question. Two composites, child domain and parent domain, are calculated based upon 13 subscales. The child domain reflects the degree to which a parent perceives characteristics of her/his child as stressful (e.g. 'My child does a few things that bother me a great deal'). The parent domain reflects stress related to the parents' functioning (e.g. 'I feel trapped by my responsibilities as a parent'). A third component of the scale, life stress, reflects the

degree of stress a parent feels outside the parent-child relationship (Abidin, 1995). Life stress is calculated based upon whether any of the 19 events have occurred within the previous 12 months (e.g. marriage, separation, death of an immediate family member). All three of these scores were used in the present study to determine the degree to which different aspects of parenting stress relate to children's social-cognitive development and behaviour. Internal consistency alphas have ranged from 0.70 to 0.95. The measure also has high test-retest reliability and validity (Abidin, 1995). Parents completed the first 60 items with the other questionnaires and they finished the scale during the parent-busy interaction.

Child Measures

Theory of mind: Theory of mind understanding was assessed with the battery composed by Wellman and Liu (2004). Wellman and Liu developed a scale of theory of mind measures to reflect a broad set of changes in young children's mental state understanding (desires, emotions, knowledge, and beliefs), rather than only false belief. All of the tasks require children to recognize the subjective nature of mental states. The battery includes seven tasks with easier tasks preceding more difficult ones. Tasks include assessments of diverse desires, diverse beliefs, knowledge access, contents false belief, explicit false belief, belief emotion, and real-apparent emotion. Dolls and props are used to support the administration of each task (Wellman & Liu, 2004).

For the diverse desires task, children are introduced to Mr Jones who would like a snack. Children then are shown a picture of a carrot and a cookie and are asked which they like best. They are told that Mr Jones likes the snack the child did not choose. For the test question children are asked which snack Mr Jones would choose. The diverse belief task follows the same format, but it focuses on Linda who wants to find her cat. Children are correct if they are able to indicate that the character's desire or belief, respectively, differs from that of the child.

On the knowledge access task, children are asked to guess the contents of a drawer. Then they are shown the contents. After Polly approaches, children are asked if she knows what is inside of the drawer. Correct responses require children to understand Polly does not know what is in the drawer because she did not see inside of it.

The contents false belief task involves showing children that a familiar container holds something unexpected (e.g. a candy box containing a toy pig). For the test question, children are asked what Peter, whom has never seen inside, will think is in the container. The explicit false belief task assesses whether children understand that Scott will look for his mittens where he thinks they are, rather than where they really are.

The last two tasks assess children's understanding of emotional beliefs. For the belief emotion task children are shown a small box of Cheerios that has rocks inside. They then are told a story about Teddy whose favourite snack is Cheerios. They are asked how Teddy will feel when he gets the Cheerios box both before and after he sees inside. The real-apparent emotion task involves telling children about Matt who tries to hide his hurt feelings when he is teased on the bus. Children are asked how Matt really felt and how he tried to look on his face. For the belief emotion and the real-apparent emotion tasks, children have to answer both test questions accurately to be scored as correct. For each of the seven tasks children received one point for a correct response; thus, total scores ranged from 0 to 7 (Wellman & Liu, 2004).

Emotion understanding: Children's affective perspective-taking abilities were assessed with the task developed by Cassidy, Parke, Butkovsky, and Braugart (1992). First, the experimenter showed each child four emotion cards (i.e. happiness, sadness, anger, and fear), and asked him/her to identify the emotion expressed. If a child did not recognize the emotion the experimenter told him/her the correct answer and repeated the card sequence until the child responded correctly. All children identified the emotions accurately. Next, children were asked to identify what made them, their friend, their mother, and their father experience each emotion. For example, children were shown the happy emotion card and asked: (1) What kinds of things make you feel this way? The same set of questions was asked for each emotion and target person.

Children received a score of 0–4 representing the quality of their response for each of the emotions and target people (self, friend, mother, father). Scores were as follows: 0 = no response, refusal, don't know; 1 = poor response (irrelevant remarks, failure to understand causal nature of question, or cause identified that is unlikely to evoke intended emotion); 2 = adequate response (an appropriate one word or simple clause response); 3 = good response (relevant sentence-long response or two or more appropriate responses); 4 = excellent response (elaborate response or evidence of insight, including mixed emotions) (Cassidy *et al.*, 1992). Two researchers, blind to demographic and performance variables, coded all responses independently (Cohen's kappa = 0.92). Disagreements were resolved through discussion.

Language Assessment

Receptive language was assessed using the Test for the Auditory Comprehension of Language—Third Edition (Carrow-Woolfolk, 1999). The experimenter read a word, a phrase, or a sentence to each child and asked him/her to point to one of the three pictures that best corresponded to the experimenter's utterance. Raw scores were used to reflect individual differences in language comprehension rather than age-appropriate performance. Children received a composite score (0–139) depicting receptive language abilities.

Parent–Child Interactions

Each parent–child dyad participated in three consecutive 10-min behaviour analogs: free-play, parent-busy, and clean-up tasks. Only data from the free-play and clean-up observations were used in the data analyses. Parents received instructions from the experimenter prior to each analog. All parent–child interactions were videotaped using a standard Sony camcorder with remote.

Behaviour analogs: For all interactions, five large bins of age-appropriate attractive toys (e.g. Legos, kitchen set, dolls, and car track) were placed throughout the room. For the first 10-min segment, parents were instructed to play with their child as they would at home, allowing their child to lead the play activity (Brumfield & Roberts, 1998). After 10 min, parents received instructions for the second observation. For the second 10-min observation (i.e. parent-busy task), parents were told to complete a questionnaire and instruct their child to play independently. To this end, all parents were provided a standardized response that was read by them at the beginning of the observation. For the last observation, parents were instructed to have their child pick up all of the toys and

place them in their labelled bins, without actually aiding their child with the clean-up activity.

Coding: The free-play and clean-up tasks were coded according to separate coding schemes adapted from Forehand and McMahon (1981) by Brumfield and Roberts (1998), and originally designed to assess disruptive and defiant child behaviour.

For the free-play analog, the frequencies of six parent verbal response classes were recorded: descriptions, imitations, praise, questions, commands, and criticism. Parental descriptions, imitations, and praise statements reflect parental 'responsiveness' (see Eyberg, Bessmer, Newcomb, Edwards, & Robinson, 1994) and parental questions, commands, and criticism reflect 'intrusiveness' (see McMahon & Forehand, 2004). Parental statements were coded as descriptions if they immediately (within 5 s) followed and directly referred to their child's play and were not evaluative. Praise was defined as any positive evaluation of the child or the child's prior, ongoing, or future behaviour. Physical affection was coded as praise if initiated by parents. Imitation was defined and coded for all parent behaviour that approximated or extended their child's verbal or physical behaviour during the interaction. Parental questions were defined as any interrogative statement to which a verbal response from the child was required. Interrogative 'tags' (i.e. 'huh') attached to declarative statements were not coded as questions and were either ignored or coded as descriptions (if appropriate). Criticism was defined as a negative or disapproving statement about their child or child's prior, ongoing, or future behaviour. Finally, parental commands were coded when parents verbalized an order, suggestion, rule, or contingency to which the child must respond.

For the clean-up task, parental instructions, child compliance, and child non-compliance were coded. Parental commands were grossly separated into two categories: direct or indirect/vague/repeated (IVR). Direct commands were those that both specified and permitted (i.e. allowed sufficient time) a verbal or motoric response from the child. IVR instructions were coded for all commands that specified a response that was unable to be completed because of unnecessary repetition by the parent. IVR instructions also were coded in circumstances when either the parent provided a command, but the desired response was unclear or ambiguous, or he/she phrased the command as a question (i.e. 'Would you clean up for me?'). While it is possible that direct commands may limit the child's ability to choose whether to complete the assigned task independently, thus demonstrating some internalization of accepted social norms, indirect commands were assumed into the measure of parental ineffectiveness to remain consistent with current standards of clinical practice in this area (see Eyberg *et al.*, 1994; McMahon & Forehand, 2004).

Children were coded for compliance if they appropriately responded (verbally or physically) to their parent's instruction within 5 s of the instruction. If a child failed to respond either verbally or physically to his/her parent's request within the 5-s interval, the child was coded as being non-compliant. Finally, parents were recorded as having provided praise when they provided any statement connoting approval or acceptance of their child's behaviour within 5 s of their child's compliance.

Three indices were created from data obtained during the clean-up task for analyses. An index of the child's overall compliance or cooperation was created by summing all instances of child compliance and dividing by the sum of all parental instructions, both direct and IVR. An observed measure of parental skill (or effectiveness) was formed by creating a ratio of direct commands to total

commands (i.e. direct commands/direct+IVR commands). Finally, a likelihood index of parental praise was created by determining the ratio of total contingent praise statements to overall child compliance frequency.

Coding accuracy: Four independent raters unaware of demographic information and performance scores coded the interactions. Coders were trained to criterion together and randomly assigned to an analog such that two people coded each analog. Each coder was randomly assigned to 66% of participants—33% of segments were singly coded, and 33% were coded dually, meaning each coder coded roughly 66% of segments independently. Every 15th segment was coded by both coders together to ensure they continued to follow the same criteria. Inter-rater agreement was calculated by examining both temporal contiguity and accuracy of each code. Errors were coded if either the order of the code or the agreement of the class of behaviour differed between coders. Inter-rater agreement was calculated by summing all errors (both temporal and quality) across each participant family and dividing by total number of agreed upon responses. This method for establishing inter-rater reliability is well established for the aforementioned parent-child analogs (see Brumfield & Roberts, 1998; Eyberg *et al.*, 1994; McMahon & Forehand, 2004). Inter-rater reliability for each analog was: free-play ($r = 0.95$) and clean-up ($r = 0.87$). Data from the parent-busy task were used in another study and were not germane to the current investigation. Consequently, these data and associated reliability analyses are not reported.

RESULTS

Overview of Analyses

Analyses are organized into four sections. Preliminary analyses, including descriptive analyses and intercorrelations among measures, are reported first. Sections two through four report regression analyses to test the hypotheses. The second section reports analyses of parents' self-report data, whereas the third section includes analyses of data from observed parent-child interactions. The fourth section explores relationships between theory of mind and emotion understanding and children's internalizing and externalizing behaviours.

Preliminary Analyses

Emotion understanding: Children's emotion understanding scores for each emotion (happy, sad, angry, and scared) were correlated to examine the appropriateness of a composite score. All correlations were significant at $p < 0.001$. Internal consistency was high (Cronbach's $\alpha = 0.85$); thus, an average emotion understanding score (range from 1 to 4) was calculated for subsequent analyses.

Demographic variables: Relationships among theory of mind, emotion understanding, age, language, responding parent's age, responding parent's education, household income, and number of siblings were explored (see Table 2). As expected, age and language were related to both theory of mind performance and emotion understanding. Thus, they were controlled in subsequent analyses. Household income also was included in analyses of theory of mind performance given that these two variables were related.

Sex and order: There were no significant effects of sex on either theory of mind or emotion understanding scores, though the effect for emotion understanding

Table 2. Intercorrelations among theory of mind performance, emotion understanding, child age, receptive language, and demographic variables ($N = 83$)

Task	1	2	3	4	5	6	7	8
1. Theory of mind	—	0.50***	0.56***	0.61***	0.11	0.16	0.32**	0.05
2. Emotion understanding	—	—	0.61***	0.50***	-0.04	0.00	0.06	0.04
3. Child age (months)	—	—	—	0.67***	0.00	-0.05	0.12	0.16
4. Receptive language	—	—	—	—	0.02	0.17	0.19	0.03
5. Parent age	—	—	—	—	—	0.20	0.21	0.23*
6. Parent education	—	—	—	—	—	—	0.36**	0.01
7. Household income	—	—	—	—	—	—	—	0.23*
8. Number of siblings	—	—	—	—	—	—	—	—

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

approached significance [$t(79) = 1.92, p = 0.06$], with girls ($M = 2.05$; S.D. = 0.75) scoring slightly better than boys ($M = 1.73$; S.D. = 0.71). The effect of order was not significant for theory of mind, but it was for emotion understanding [$t(79) = 2.20, p < 0.05$]. Children who first completed the emotion understanding task performed better than did those who completed the theory of mind battery first. Order served as a control variable in subsequent analyses of emotion understanding.

A multivariate analysis of variance was conducted to determine whether parenting variables differed according to the sex of the child or the sex of the participating parent. No parenting variables differed according to the sex of the child, p 's > 0.10 . Rates of parental praise and number of commands differed depending upon the sex of the parent. Fathers provided more praise ($M = 7.58$; S.D. = 7.93) and fewer commands ($M = 3.58$; S.D. = 5.16) than did mothers [$M = 3.8, 7.77$; S.D. = 3.19, 6.29, respectively; F 's(1, 45) = 5.55 and 4.3, p 's < 0.05]. The difference between fathers' ($M = 2.80$; S.D. = 0.81) and mothers' overreactivity ($M = 3.27$; S.D. = 0.96) scores approached significance, $F(1, 80) = 3.72, p = 0.06$. Thus, parent sex was entered as a control variables in analyses of these variables.

Relationships among self-reported parenting style, observed parenting style, parenting stress, and child behaviour: As expected, lax parenting was positively associated with parental reports of both internalizing [$r(80) = 0.34, p = 0.002$] and externalizing [$r(80) = 0.34, p = 0.002$] symptoms (see Table 3). Only parental reports of child internalizing were related to overreactive parenting [$r(80) = 0.28, p = 0.01$]. Lax parenting was neither associated with dimensions of parental responsiveness (i.e. description, imitation, praise) nor parental intrusiveness (i.e. questions, commands, criticism; p 's > 0.10) during the free-play interaction. In contrast, overreactivity was positively associated with total child non-compliance [$r(69) = 0.30, p = 0.01$] observed during the clean-up task.

As expected, parenting stress was related to aspects of both parenting and child behaviour (see Table 3). Specifically, child-related parenting stress was associated with parental laxness [$r(82) = 0.42, p < 0.001$] as well as child internalizing and externalizing behaviour [$r(81) = 0.47$ and $r = 0.51$, respectively, p 's < 0.001]. Parent-related stress was associated with both laxness [$r(73) = 0.55, p < 0.001$] and overreactivity [$r(73) = 0.32, p = 0.006$]. This aspect of parenting stress also predicted child internalizing, $r(73) = 0.40, p = 0.001$, and externalizing, $r(73) = 0.33, p = 0.004$, behaviour. Interestingly, parents' usage of description during the play interaction was related to both child-related stress, $r(47) = 0.31, p = 0.02$, and parent-related stress, $r(47) = 0.49, p = 0.002$.

Table 3. Intercorrelations among observed parenting behaviours, self-reported lax parenting, self-reported overreactive parenting, self-reported parenting stress, child externalizing behaviours, and child internalizing behaviour problems (N = 47)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Lax parenting	—	0.53***	0.45**	0.48**	0.15	0.21	-0.01	0.08	0.15	-0.20	0.18	0.55***	0.49**	0.04
2. Overreactive parenting		—	0.34*	0.32*	0.08	0.10	0.04	0.06	0.19	0.15	0.17	0.41**	0.26	0.22
3. CBCL internalizing			—	0.45**	0.20	0.18	-0.05	0.19	-0.00	0.00	0.15	0.54***	0.38*	0.19
4. CBCL externalizing				—	0.08	0.06	-0.18	-0.05	0.06	-0.03	0.11	0.63***	0.38*	0.26
5. Descriptions (play)					—	0.04	0.08	-0.09	0.25	-0.03	0.26	0.31*	0.49**	0.31
6. Imitation (play)						—	0.37*	0.21	0.05	-0.14	0.20	0.03	-0.01	0.10
7. Praise (play)							—	0.12	-0.10	0.03	-0.02	0.11	0.13	0.11
8. Questions (play)								—	0.28	0.17	0.23	-0.16	0.03	-0.09
9. Commands (play)									—	-0.02	0.37*	0.08	0.07	-0.10
10. Criticism (play)										—	0.12	0.08	0.00	0.04
11. Parent indirect commands (task)											—	0.16	0.08	-0.06
12. Child-related stress												—	0.73***	0.34*
13. Parent-related stress													—	0.54***
14. Life stress														—

The table reflects results from participants with observational data. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Relationships among observed parenting style, child behaviour, theory of mind, and emotion understanding: There was an inverse relationship between parental commands and child compliance, $r(47) = -0.30, p < 0.05$ (see Table 4), such that parents who used more commands had children who were less compliant during the clean-up task. Similarly, parental commands and parental criticism were positively related to child non-compliance, $r's(47) = 0.35, p < 0.05$, and $0.52, p < .001$, respectively. As would be expected, child non-compliance also was negatively related to child compliance, $r(47) = -0.59, p < 0.001$.

Some aspects of parental responsiveness and intrusiveness were related to theory of mind and emotion understanding as well. Specifically, parental praise predicted theory of mind performance, $r(47) = -0.34, p < 0.05$, and parental imitation predicted emotion understanding, $r(47) = -0.43, p < 0.01$. Finally, child compliance was negatively related to theory of mind, $r(47) = -0.37, p < 0.05$, and the relationship with emotion understanding approached significance, $r(47) = -0.27, p = 0.08$. Surprisingly, all of these relationships were in a negative direction.

Self-reported Parenting Behaviours as Predictors of Children's Theory of Mind and Emotion Understanding

To test relationships between parent-reported parenting behaviours and children's theory of mind and emotion understanding, hierarchical regressions were conducted for each criterion (i.e. theory of mind performance and emotion understanding). For each analysis, age, language, and sex of child were entered on the first step. Household income also was included on the first step for analyses with theory of mind as the dependent variable and task order was

Table 4. Intercorrelations among observed parenting behaviours, theory of mind, emotion understanding, and observed child behaviour ($N = 47$)

	1	2	3	4	5	6	7	8	9	10
1. Theory of mind	—	0.71***	-0.07	-0.18	-0.34*	0.11	0.02	0.04	-0.37*	0.21
2. Emotion understanding		—	-0.03	-0.43**	-0.27	-0.01	0.11	-0.08	-0.27 ⁺	0.19
3. Parental descriptions			—	0.04	0.08	-0.09	0.25 ⁺	-0.03	-0.17	0.05
4. Parental imitations				—	0.37**	0.21	0.05	-0.14	-0.05	-0.08
5. Parental praise					—	0.12	-0.10	0.03	0.04	-0.07
6. Parental questions						—	0.28 ⁺	0.03	0.04	0.32*
7. Parental commands							—	-0.02	-0.30*	0.35*
8. Parental criticism								—	-0.12	0.52***
9. Child compliance									—	-0.59***
10. Child non-compliance										—

⁺ $p < 0.10$; * $p < 0.05$; ** $p \leq 0.01$; *** $p < 0.001$.

included when emotion understanding was the dependent variable. Parent-reported behaviours were entered on the second step in respective analyses.

Laxness and overreactivity: Given the difference between mothers' and fathers' overreactivity scores, parent sex was entered as a control variable in these analyses. The first regression examined theory of mind performance. Each of the control variables, except sex of child and sex of parent, accounted for unique variance in theory of mind performance on the first step (see Table 5). In the second step, laxness also contributed unique variance to children's theory of mind performance ($\beta = -0.208$, $p = 0.04$), though the R^2 change of 0.03 was not significant, $p = 0.09$. Contrary to the hypotheses, overreactivity did not predict children's theory of mind performance ($\beta = 0.055$, $p = 0.59$). Neither overreactive nor lax parenting accounted for unique variance in children's emotion understanding ($R^2 = 0.02$, $p = 0.36$).

Parenting stress: Additional analyses explored the relationship between parent-reported stress (parent related, child related, and life stress) and children's theory of mind and emotion understanding. Parent-reported life stress emerged as an individual predictor of theory of mind performance ($\beta = -0.175$, $p = 0.05$), although the second step of the model was not significant ($R^2 = 0.04$, $p = 0.19$; see Table 6). Parenting stress did not account for unique variance in emotion understanding ($R^2 = 0.01$, $p = 0.68$). Only child age ($\beta = 0.397$, $p = 0.00$) and sex ($\beta = 0.227$, $p = 0.02$) accounted for unique variance in emotion understanding in the final equation.

Given that both child-related and parent-related parenting stress were related to parental laxness, and laxness predicted children's theory of mind understanding, a mediational model was examined. Two regression equations were conducted to examine child-related stress and parent-related stress separately. In each case, the control variables were entered on the first step and parenting stress and laxness were entered on the second step with theory of mind as the dependent variable. In both analyses, laxness remained a significant predictor of theory of mind. Thus, no evidence was provided for the idea that parenting (i.e. laxness) mediates the relationship between parenting stress and theory of mind performance (see Baron & Kenny, 1986).

Table 5. Parent-reported lax and overreactive parenting styles predicting children's theory of mind performance

	B	S.E. B	Beta
Step 1			
Age of child	0.040	0.017	0.263*
Receptive language	0.027	0.008	0.384**
Sex of child	0.446	0.284	0.133
Household income	0.202	0.073	0.241**
Sex of parent	-0.049	0.336	-0.012
Step 2			
Age of child	0.045	0.018	0.287*
Receptive language	0.026	0.008	0.372**
Sex of child	0.375	0.281	0.112
Household income	0.197	0.073	0.235**
Sex of parent	-0.005	0.335	-0.001
Laxness	-0.426	0.198	-0.208*
Overreactivity	0.097	0.178	0.055

$R^2 = 0.48^{***}$ for Step 1; $R^2 = 0.51$, $\Delta R^2 = 0.03$, ns for Step 2. * $p < 0.05$; ** $p < 0.01$.

Table 6. Parent-reported stress predicting children's theory of mind performance

	B	S.E. B	Beta
Step 1			
Age of child	0.034	0.018	0.224 ⁺
Receptive language	0.027	0.008	0.410 ^{**}
Sex of child	0.520	0.297	0.157 ⁺
Household income	0.213	0.078	0.249
Step 2			
Age of child	0.033	0.018	0.217 ⁺
Receptive language	0.027	0.008	0.411 ^{**}
Sex of child	0.545	0.294	0.165 ⁺
Household income	0.201	0.079	0.234 [*]
Parent-related stress	-0.005	0.007	-0.077
Child-related stress	0.001	0.008	0.008
Life stress	-0.013	0.007	-0.175 [*]

$R^2 = 0.473^{***}$ for Step 1; $R^2 = 0.510$, $\Delta R^2 = 0.037$, ns for Step 2. ⁺ $p < 0.10$; ^{*} $p \leq 0.05$; ^{**} $p < 0.01$; ^{***} $p < 0.001$.

Observed Parental Responsiveness and Intrusiveness as Predictors of Children's Theory of Mind and Emotion Understanding

Given the small sample size ($N = 47$) of observational data, only variables that correlated significantly with theory of mind or emotion understanding were included in the following regression analyses. This limited the number of variables entered in each regression. Moreover, power analyses were conducted to examine the appropriateness of regressions with small sample sizes. All regression analyses exceeded the minimal criterion of 0.80 as described by Cohen (1987) for demonstrating adequate levels of power.

As with the analyses of parent-reported data, age, language, and sex of child were entered on the first step of each analysis. Sex of parent was included as well in the analyses of parental praise. Household income also was included on the first step for analyses with theory of mind as the dependent variable, whereas task order was included when emotion understanding was the dependent variable. Observed parental behaviours were entered on the second step in each case.

The first analysis examined theory of mind performance. Parental praise accounted for marginal unique variance in theory of mind performance beyond the control variables, ($R^2 = 0.05$, $p = 0.06$; see Table 7). Unexpectedly, as parental praise increased, children did less well on theory of mind tasks.

A different aspect of parental responsiveness predicted emotion understanding. Specifically, parental imitative statements and gestures (i.e. verbal extensions and approximations as well as direct physical imitations of the child's ongoing play behaviour) predicted children's emotion understanding ($R^2 = 0.10$, $p = 0.001$) such that children with lower emotional competence were more likely to have parents who engaged in greater rates of these imitative activities during the free-play interaction (see Table 8). Parental intrusiveness did not predict theory of mind or emotion understanding.

Child Disruptive Behaviour and Theory of Mind Performance, and Emotion Understanding

The following analyses were conducted to examine whether child disruptive behaviour predicted theory of mind and/or emotion understanding. They also

Table 7. Observed parenting behaviour during play predicting children's theory of mind performance

	<i>B</i>	S.E. <i>B</i>	β
Step 1			
Age of child	0.055	0.023	0.351*
Receptive language	0.024	0.010	0.323*
Sex of child	0.480	0.385	0.145
Household income	0.222	0.122	0.213
Sex of parent	0.568	0.426	0.153
Step 2			
Age of child	0.056	0.022	0.354*
Receptive language	0.023	0.010	0.313*
Sex of child	0.401	0.375	0.121
Household income	0.222	0.118	0.213 ⁺
Sex of parent	0.298	0.434	0.080
Praise	-0.074	0.038	-0.226 ⁺

$R^2 = 0.487^{**}$ for Step 1; $R^2 = 0.532$, $\Delta R^2 = 0.045^+$ for Step 2. ⁺ $p < 0.10$; * $p < 0.05$; ** $p < 0.001$.

Table 8. Observed parenting behaviour during play predicting children's average emotion understanding

	<i>B</i>	S.E. <i>B</i>	β
Step 1			
Age of child	0.032	0.009	0.474***
Receptive language	0.011	0.004	0.359**
Sex of child	0.112	0.146	0.079
Task order	-0.039	0.144	-0.028
Step 2			
Age of child	0.029	0.008	0.424***
Receptive language	0.011	0.003	0.363**
Sex of child	0.061	0.130	0.043
Task order	-0.056	0.128	-0.040
Imitation	-0.027	0.008	-0.316***

$R^2 = 0.594^{***}$ for Step 1; $R^2 = 0.689$, $\Delta R^2 = 0.10^{**}$ for Step 2. ** $p < 0.01$; *** $p \leq 0.001$.

considered whether relationships differed according to child sex. Given the inclusion of an interaction term, all scores were transformed to standardized *z* scores for centering purposes.

The first set of regressions examined whether parent-reported child internalizing and externalizing predicted children's social-cognitive performance. Control variables were entered on the first step in the same manner as with previous regression analyses. Child internalizing and externalizing behaviours, assessed via the CBCL, were entered on the second step. Neither predicted theory of mind performance ($R^2 = 0.01$, $p = 0.43$). The interaction terms (Sex by Internalizing, Sex by Externalizing) were entered on the third step to determine whether potential effects differed for girls and boys. Although the interaction terms did not account for unique variance in theory of mind performance ($R^2 = 0.03$, $p = 0.15$), the variance accounted for by the Sex by Externalizing

Table 9. Child externalizing and internalizing as predictors of children's average emotion understanding

	<i>B</i>	S.E. <i>B</i>	β
Step 1			
Age of child	0.387	0.122	0.392**
Receptive language	0.247	0.122	0.245*
Sex of child	0.174	0.089	0.175 ⁺
Task order	-0.152	0.091	-0.153
Step 2			
Age of child	0.330	0.119	0.333**
Receptive language	0.319	0.121	0.316**
Sex of child	0.207	0.087	0.209*
Task order	-0.138	0.088	-0.139
Externalizing	0.264	0.102	0.260**
Internalizing	-0.047	0.098	-0.047
Step 3			
Age of child	0.325	0.120	0.329**
Receptive language	0.323	0.122	0.319**
Sex of child	0.199	0.087	0.201*
Task order	-0.146	0.089	-0.147
Externalizing	0.237	0.104	0.233*
Internalizing	0.000	0.105	0.000
Sex by Externalizing	-0.114	0.106	-0.110
Sex by Internalizing	0.138	0.112	0.130

$R^2 = 0.426^{***}$ for Step 1; $R^2 = 0.480$, $\Delta R^2 = 0.054^*$ for Step 2; $R^2 = 0.494$, $\Delta R^2 = 0.013$ for Step 3. * $p < 0.05$; ** $p \leq 0.01$; *** $p < 0.001$.

variable approached significance ($B = -0.177$, $p = 0.09$). The trend suggests an inverse relationship between externalizing behaviour and theory of mind understanding for boys only.

The same analysis was conducted with emotion understanding as the dependent variable. The second step of the equation accounted for unique variance in emotion understanding ($R^2 = 0.05$, $p = 0.03$; see Table 9). In particular, externalizing behaviour predicted emotion understanding, $B = 0.237$, $p = 0.03$. The interaction terms did not account for additional variance, $R^2 = 0.01$, $p = 0.42$. Externalizing scores remained significant in the final equation, such that children with relatively higher externalizing scores performed better on the emotion understanding tasks than did those with lower scores.

Regression analyses also were conducted in a similar manner to examine relationships between observed child compliance during the clean-up task and theory of mind and emotion understanding. Neither child compliance nor non-compliance predicted either theory of mind or emotion understanding, p 's > 0.10 .

DISCUSSION

The current study revealed a number of interesting relationships among parenting, child behaviour, and children's social-cognitive development. In particular, lax parenting and life stress predicted theory of mind performance, whereas parental imitation during play (an aspect of responsive parenting) was negatively predictive of children's emotion understanding. Neither externalizing nor internalizing behaviours were predictive of children's theory of mind

development, yet externalizing behaviour was related to emotion understanding. Finally, the present findings further support the notion that theory of mind and emotion understanding are related yet distinct domains of social-cognitive development.

Parenting, Theory of Mind, and Emotion Understanding

Two interesting relationships were observed between parental behaviour and children's emotional and cognitive development. Unexpectedly, only lax (i.e. inconsistent, uninvolved, lackadaisical) parenting predicted poorer performance on theory of mind tasks; however, neither lax nor overreactive parenting predicted children's emotion understanding. We know that decreased parental engagement and disciplinary inconsistency increase the likelihood that children fail to socialize and are at risk for conduct and mood difficulties (e.g. Loeber, 1990; Patterson, 1982; Patterson, Reid, & Dishon, 1992). Moreover, these children are often seen by parents, teachers, and peers as immature and less popular. Given the results in the current study, lax/inconsistent/disengaged parenting may affect these changes by significantly altering the trajectory of children's cognitive development, via delayed development.

Parental imitation, an aspect of parental responsiveness, negatively predicted children's emotion understanding. While at first glance these results contradict current notions of parental responsiveness and earlier findings with lax parenting, there are two compelling reasons to believe that these observations are complementary, not contradictory. First, while it is possible that parental responsiveness, namely imitation, inhibits a child's emotional development, it is important to understand the cross-sectional and correlational nature of the study. Specifically, it is reasonable to surmise that these parental behaviours were used more often with children who required it, scaffolding their cognitive and social development. Rather than parent-driven, the presence of more frequent imitation with children exhibiting more inadequate emotion understanding may result from parental attempts to provide appropriate environmental supports to aid their child's development. Additional research is needed to explore this explanation.

A measure of laxness and overreactivity was chosen for the present study to extend previous work by focusing on parenting approaches associated with child misbehaviour (Arnold *et al.*, 1993). Indeed, parents who reported behaviour consistent with both lax and overreactive parenting indicated that their children demonstrate externalizing and internalizing behaviours. Consistent with current notions of parenting, self-reported overreactive parenting was associated with repeated, vague, and indirect instructions during subsequent observations. Ineffective parental commands also predicted increases in reported child internalizing and externalizing behaviours. These data support previous work suggesting that inconsistent, overly harsh, and lackadaisical parenting practices are associated with increased rates of child behaviour and mood difficulties (Arnold *et al.*, 1993). These data also provide criterion validity for the parenting measure in the present study.

The assessments of parenting and parent-child behaviours were driven by a behavioural coding system used in clinical settings (Brumfield & Roberts, 1998). Responsiveness was operationally defined as describing children's actions, imitating their gestures and statements, and providing praise in a play interaction. Responsiveness in prior work with theory of mind development included

modifying instructions in reaction to child behaviour (Meins *et al.*, 1998) and reflecting on a child's motives and mental states (Symons & Clark, 2000). These distinctions certainly could account for the differences in findings. Responsiveness in the current study was not related to theory of mind development. These data suggest that responsive actions specific to mental attunement relate to theory of mind development, rather than responsiveness more generally. It would be interesting to examine associations between behavioural and cognitive responsiveness. It seems likely that parents who are responsive in one domain are responsive in another, yet this is an empirical question to be addressed by future research.

Some caution must be taken in interpreting the results from the behavioural observations given that data for only 55% of the participants could be coded. At the least, the findings are suggestive of interesting relationships among facets of parenting and children's social-cognitive development.

Parenting Stress, Theory of Mind, and Emotion Understanding

The present study indicated that life stress accounted for unique variance in theory of mind performance. These data are consistent with those of Cole and Mitchell (1998) who found an inverse relationship between false belief performance and single-item measures of financial stress and lone parent stress. Thus, there is evidence that aspects of parental stress are negatively related to children's false belief performance. It is possible that parents with relatively low levels of stress are able to engage in parent-child interactions that facilitate children's theory of mind development; likewise, high stress levels may be associated with family contexts that hinder such understanding. These findings are inconsistent with those of Symons and Clark (2000) who found that maternal emotional distress at 2 years of age positively predicted children's false belief performance at 5 years. Taken together, data suggest that aspects of stress related to parenting could have differential relationships with children's theory of mind understanding.

It was hypothesized that parenting may mediate a relationship between parenting stress and children's theory of mind and/or emotion understanding. Though aspects of parenting stress were related to parental laxness, and laxness predicted theory of mind understanding, no support was found for a mediational relationship. This is further support for the complex nature of family dynamics.

Disruptive Behaviour, Theory of Mind, and Emotion Understanding

In contrast to expectations, child externalizing and internalizing behaviours were not related to theory of mind performance, yet externalizing behaviour was related to children's emotion understanding. Specifically, children with relatively higher rates of externalizing behaviour demonstrated better understanding of causes of emotion than did children with lower rates of such behaviour. It is possible that children's externalizing behaviour provides a context in which children learn that others' emotions differ from their own. These findings are consistent with previous work demonstrating relationships between parental discipline (Pears & Moses, 2003) and sibling conflict (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991) and children's understanding of others' emotional perspectives. Conflict between family members, either parent-child or child--

child, could provide opportunities for children to learn about the relative nature of emotional states.

Some caution needs to be taken in extrapolating from the present data set given the mean scores on the CBCL for both girls and boys. Most children were rated as relatively well adjusted, with very few children obtaining clinically significant elevations on any scales. Greater credence to the current results could be provided if this study were replicated with a clinical sample.

Theory of Mind and Emotion Understanding

The present study also provides further support for the idea that theory of mind and emotion understanding are somewhat independent areas of social cognition (Cutting & Dunn, 1999; Weimer & Guajardo, 2005). Although related, theory of mind and emotion understanding were differentially associated with observed and reported behaviour for boys and girls. For example, laxness predicted theory of mind performance, whereas parental usage of imitative statements and gestures predicted emotion understanding. Also, life stress was related to children's theory of mind performance, yet not to their emotion understanding. These findings, along with previous work (e.g. Cutting & Dunn, 1999; Weimer & Guajardo, 2005), suggest that these two domains of social cognition overlap, yet they relate differentially to various facets of parent-child interactions. Future research can examine how varying aspects of parenting and contextual factors account for development in these two areas.

Limitations

The present study has generated many interesting findings and considerations for future research. Caution is warranted in a few areas given limitations of the present work, though. The primary limitation concerns the small sample with observational data. Power analyses indicated that the regression analyses examining observational data had ample power to detect effects, yet the sample sizes were less than ideal for regressions. This idea generalizes to the other regressions as well. Given the number of control variables, larger sample sizes could lead to more stable models. Thus, the findings are suggestive of interesting relationships, but further research with larger samples is needed.

The theoretical model used has emphasized the idea that parental variables (parental stress, parenting) account for individual differences in children's social-cognitive development. Multiple regressions strengthen conclusions about direction of effect, yet they remain correlational analyses: true direction of effects cannot be determined. It is plausible that children's behaviour or social-cognitive development indeed impacts parents' stress or parenting styles. Most likely, there are dynamic relationships among these variables. Future work should consider this possibility.

CONCLUSIONS

Using both observational and self-report methods, the present study suggests complex relationships among parenting, parenting stress, child behaviour, and children's social-cognitive performance. Lax parenting approaches and life stress both predicted children's theory of mind performance, whereas parents' usage of

imitative gestures and vocalizations was related to their emotion understanding. Children's own behaviour also related to their social-cognitive performance such that children's externalizing behaviours were related to their understanding of the causes of emotions. Thus, there were associations between ineffective parenting approaches and child misbehaviour, and between aspects of child misbehaviour and early theory of mind and emotion understanding. The present study provides additional evidence that the social context of parents and their children accounts for aspects of early social-cognitive development.

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APPENDIX

Examples of coding categories for the free-play observation:

Responsiveness:

Descriptions:

Praise (P):

Imitations (I):

Parent: 'You have the blue block'.

Parent: 'You draw so well'.

Child: 'I've got the block now'.

Parent: 'Oh, you have it now'.

Intrusiveness:

Questions:

Commands:

Criticism:

Parent: 'Do you need some help?'

Parent: 'Play with the blocks'.

Parent: 'That's not good at all'.

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