

Preschool children with and without communication delays: The changes in their parents' report
of challenging behaviour, parental hassles and family conflict over a two-year period

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Abstract

The goal of this study was to examine the change, over a two year period, in mothers' reports of children's challenging behaviour and family conflict as they relate to change in parenting hassles (stress) among families who have preschool children with and without communication delays. Forty-four parent-child dyads participated in this Family Resource Project study that was funded by the Canadian Language and Literacy Research Network. Thirty-one of these families had preschool children with communication delays and 13 children were identified as not having communication delays. Child behaviour was evaluated using the Oppositional Subscale and ADHD Index of the Conners Parent Rating Scale (CPRS-R:S), the Conflict Subscale of the Family Environment Scale was used to examine family conflict, and the Parent Hassles Scale was used to examine parental stress. Results showed that change in mothers' daily hassles was influenced by change in their preschool children's ADHD behaviour and change in family conflict. Change in child oppositional behaviour did not predict change in mothers' hassles scores.

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Preschool children with and without communication delays: The changes in their parents' report of challenging behaviour, parental hassles and family conflict use over a two-year period

It is widely understood that the preschool period can be a challenging time for both children and parents for a variety of reasons. However, if the child has a speech and language delay, the challenges may be amplified. Speech and language delays are relatively common among preschool children with incidence rates ranging between 3 and 15% of delays with varying degrees of severity (Downey, Mraz, Knott, Knutson, Holte, & Dyke, 2002; Shriberg, Tomblin, & McSweeney, 1999).

Research has established that preschool children with speech and language delays may display aberrant behaviour (e.g., tantrums, aggressiveness, hyperactivity) (Qi & Kaiser, 2004). Thus far, some research (e. g., Beitchman, Wilson, Brownlie, Walters, Inglis, & Lancee, 1996; Silva, Williams, & McGee, 1987) has been conducted examining children's display of challenging behaviour and communication delays over time, from age five to twelve years. Long, Gurka, and Blackman (2008) have established a link between parental stress and hassles in families who have preschool children with communication delays. Finally, Goldstein, Harvey, Friedman-Weieneth, Pierce, Tellert, and Sippel (2007) have shown a connection between family conflict and preschool children with behavioural challenges.

However, after an extensive review of the literature, and to the best of the author's knowledge, no longitudinal studies have been conducted that have combined child behaviour challenges, family conflict and stress with families of preschool children with a communication delay. Therefore, the purpose of the present study was to examine the change, over a two-year period, in parents' reports of children's challenging behaviour and family conflict as they relate to change in parenting hassles (stress) among families who have preschool children with and

without communication delays. This study evaluated a simultaneous influence model that examined the relationship between change in child behaviour, change in family conflict, and change in parental hassles.

What are communication delays?

Communication is a way of exchanging information and ideas between people. Typically, by age five or six years children have developed basic communicative competences (i.e., phonology, morphology, syntax, semantics and pragmatics) and have acquired enough words to make most of their wants and feelings known (Bjorklund, 2005). As children grow, their communicative abilities increase as they are exposed to varied, often more complex, communication situations (Bjorklund, 2005). However, there are children who do not communicate effectively because of a delay in language processing and/or speech.

Language delays. A child who “demonstrates [a] significant lag [in language development] but whose language is still progressing according to the stages of normal language development is said to have language delays” (Winzer, 2008, p. 105). In defining a delay, clinicians often use the “rule of six”, which specifies that a child’s language development has to be six months behind the normal trajectory to be identified as delayed (Winzer, 2008, p. 105). However, Downey et al. (2002) acknowledged that the word “delay” implies that the child will catch up in the course of development but cautioned readers not to assume that this change would occur without appropriate intervention. Winzer (2008) also suggested that this catch up could happen but typically only for children who have minor delays in language development. However, Keogh, Garnier, Bernheimer, and Gallimore (2000) concluded that most preschool children characterized as having communication delays will continue to lag behind typically

developing peers as measured on standardized tests. For the purpose of this study, language delay is regarded as a slower-than-average acquisition of language milestones.

Language delay can include auditory and/or expressive hindrances. Receptive skill delay is the difficulty in understanding spoken language. Expressive disorders, which are more prevalent (Winzer, 2008), affect the creation of proper grammatical utterances. In other words, the child with an expressive disorder has trouble with syntax (e.g., grammatical rules). As Winzer indicated, language delays in children typically encompass both receptive and expressive challenges.

Speech delays. The other aspect of communication delays is speech delay. For the purposes of this study the definition of Shriberg et al. (1999) will be used: "Speech delay is characterized by age-inappropriate speech sounds deletions and substitution [of words], typically affecting speech intelligibility" (p. 1462). Just as language delays are classified into different categories so too are speech delays.

Articulation delay, a key area of speech delay, is divided into two aspects: phonological difficulties and articulation problems (Winzer, 2008). Phonological difficulties are said to occur when a child has perfected a sound but pronounces it correctly only in specific contexts. An articulation problem occurs when a child cannot make a sound accurately because of the incorrect placement of articulators (e.g., lips, tongue) (Winzer, 2008). For the purpose of the present study, a communication delay includes delay in speech and/or language, which incorporates articulation and/or phonological difficulties. Campbell (2002) indicated that children who have a communication difficulty will often have behaviour challenges as well.

Preschool Children and Behavioural Challenges

A cautionary warning is given to many clinicians when diagnosing preschool children with behavioural challenges, since behaviour variability is vast among younger children (Wakschlag, Leventhal, & Thomas, in press). Many preschool children develop aggressive tendencies by the age of 2 years (Keenan & Shaw, 1994). Other externalizing behaviours in early childhood, such as separation problems, marked noncompliance, hyperactivity, and poor impulse regulation, are typical toddler behaviours with few long-term implications (Campbell, Shaw, & Gilliom, 2000). Nevertheless, all of these behaviours can challenge parents' ability to manage the behaviours of their child. Therefore, with regard to the present study, a behavioural challenge is defined as "any expression of concern by a parent that relates to managing the day-to-day behaviours of his/her child or related to concerns about the child's future" (Vogin, 2008, p. 16 - 17).

Longitudinal studies of behavioural challenges among toddlers, preschool and school age children. There is a body of literature that indicates that challenging behaviour displayed in preschool children can continue into later years of life. However, at the same time, there is literature to suggest that children will outgrow their difficulties (e.g., McFadyen-Ketchum, Bates, Dodge, & Pittit, 1996), and some professionals will use the "wait and see approach" to determine whether children will outgrow their difficulties (Long et al., 2008). As Campbell (1990) indicated, it is difficult to discern whether problem behaviours in preschool children is a temporary part of typical development.

Campbell (2002) suggested that problem behaviours in children change with age. The management of difficult behaviours seems to peak at age three years as rated by paternal and teacher reports, and children's behaviour as rated by parents and teachers is less problematic

thereafter. As supported by longitudinal research (e.g., McFadyen-Ketchum et al., 1996), most children do show a decrease in aggression and disruptive behaviour even when assessed by parents. McFadyen-Ketchum et al. examined the change in child aggressive and disruptive behaviour from Kindergarten to grade three. Aggression was measured using parent reports and teacher reports of *The Child Behaviour Checklist* (CBCL), and peer reports were completed as a measure of child aggressive behaviour. Results showed a decrease in levels of aggression and disruptive behaviour as children grew older.

On the other hand, a large body of research shows parents' reports of their children's challenging behaviour in early childhood either are stable (Keenan & Shaw, 1994) or may become elevated over time (Richman, Stevenson, & Graham, 1982; Campbell, 1994). Keenan and Shaw (1994) attempted to determine whether independently observed aggression in toddlers was stable over time and whether there was a difference in aggressive behaviour between boys and girls. Participants in their study included 89 mother-child dyads. Children were assessed at ages 18 and 24 months. There were six components to each laboratory visit by the mother and child: free play, clean up, no toys in the room, three mother-child problem solving tasks, assessment of mother-child attachment, and completion of a questionnaire (which included a behavioural component) administered by an examiner. Parent-child interactions were videotaped and aggressive behaviour was coded and analyzed. Aggression was observed during selected components of the visit (i.e., free play, cleaning up toys, taking toys away, and with an examiner in the room).

Keenan and Shaw found most children were noncompliant 15 – 20% of the time. Some children demonstrated noncompliant behaviour up to 50 % of the time. Moderate stability of observed aggression was identified between ages 18 and 24 months across the selected

components. The summed aggression scores at age 18 months were highly correlated with the scores at age 24 months. Keenan and Shaw found no significant difference between boys' and girls' scores of aggression. As well, boys and girls had a similar stability of aggressive behaviour over time.

Although Keenan and Shaw did not include preschoolers in their study, Richman et al. (1982) did and found similar results. They indicated that children who were identified as showing clinically significant behavioural problems at age three years continued to have behavioural issues at ages four and eight years. The initial assessment identified child behaviour problems that were associated with a range of adverse family factors: maternal depression, poor marital relationship, parental disagreements over childrearing and high parent criticism of the child. All of these family factors can be characterized as family conflict, which will be discussed later.

Campbell (1994) evaluated parent and teacher reports of preschool children's challenging behaviour and family stress over a two-year period. In total there were 105 male preschool children between the ages of 29 and 58 months at the initial assessment. At follow up children ranged in age from 53 to 86 months. The initial assessment included home, preschool and laboratory observations. Laboratory settings were used to observe children's compliance as well as mothers' control strategies. Mothers were interviewed at their home and were given questionnaires that included the CBCL, among others. Although fathers were not interviewed they were given questionnaires that included the CBCL. Preschool teachers were also given a measures package; however the behaviour measure included in this package was the Swanson, Nolan, and Pelham (SNAP) Questionnaire. At follow up, mothers were asked to participate in a

laboratory visit and were interviewed a second time. As well, fathers and teachers were asked to fill out their respective questionnaires once more.

Results of Campbell's study showed a stability of externalizing behavioural challenges from preschool age to school entry age. It was also found that the family context played an important role in continuing behavioural challenges. Unlike the current study, Campbell did not follow female preschool children over a two-year period. The findings of Keenan and Shaw (1994), Richman et al. (1982) and Campbell (1994) all demonstrate clear evidence that behavioural challenges continue from toddler to school entry age; however, Richman et al. and Campbell included children without a developmental challenge. In particular, these studies did not include preschool children with a communication delay.

Longitudinal studies of behavioural challenges among school age children with communication delays. Unlike the research cited above, some studies (e.g., Silva et al., 1987; Dionne, Boivin, Trembly, Laplante, & Perusse, 2003; Beitchman et al., 1996) have revealed a strong link between communication delays and disruptive behaviours in children over time. Silva et al. (1987) conducted a study examining the relationship among children's language development, intelligence, reading skills and behaviour (as rated by the Rutter Behaviour Scale). The participants ($n = 1,037$) were pre-school children who were assessed every 2 years from ages 3 to 11 years. The behaviour of these children was rated at ages seven, nine, and eleven years. Children with general language delays and comprehension delays had significantly higher parent- and teacher-rated challenging behaviour scores at ages seven, nine, and eleven years when compared with children with expressive delays and children without a language delay. Silva et al. concluded that general language delays and comprehension delays were predictive of ensuing behaviour challenges.

The findings of Silva et al. were later supported by Beitchman et al. (1996) in a study with preschool children. In total there were 1,655 preschool children in wave one of their study. These participants were assessed using a variety of measures, including behavioural measures (i.e., CBCL, Conners Teacher Rating Scale, and the Teacher Report Form). One hundred and sixty-nine of the original 1,655 families participated in a follow up seven years later. Using cluster analysis with language groups (e.g., Overall High, Poor Comprehension, Poor articulation and Low Overall), the authors of the study found that the type of language delay diagnosed at an early age is predictive of subsequent behaviour problems. Specifically, children with pervasive language impairments (Low Overall cluster) and children with poor auditory comprehension (Poor Comprehension cluster) had continued behavioural problems (e.g., aggression and/or hyperactivity) at follow up. An extensive review of the literature revealed that only Silva et al. (1987) and Beitchman et al. (1996) have conducted studies that followed children with a communication delay longitudinally. Thus, it was the aim of this present study to investigate the connection between communication delay and behavioural challenges in preschool children over time.

Theoretical perspectives on the relationship between communication delays and behaviour challenges. Dionne et al. (2003) described two dominant models to explain the positive correlation between communication delays and behaviour challenges. First, the *shared or correlated etiological factors model* proposed that both communication delays and behavioural challenges share similar factors. For example, a child with classic Autistic Disorder is challenged in areas such as verbal and non-verbal communication, social relations and behavioural variability (Shriver, Allen, & Mathews, 1999; American Psychological Association, 2000); thus communication delays and behavioural challenges are part of the same syndrome. As

well, this theoretical position suggests “either genetic or environmental covariance through which both are linked etiologically. On the one hand, the same genes may have an impact on psychophysiological factors that predispose children to both language delays and behaviour problems” (Dionne et al., 2003, p. 262).

Second, the *phenotype-to-phenotype effect* model suggests that one phenotype (i.e., communication delay or challenging behaviour) directly affects the occurrence of the other phenotype. According to Dionne et al. (2003), in the second model there are three different levels of explanation for the relationship between communication delay and problem behaviour: (a) disruptive behaviour leads to communication problems; (b) speech and language impairment leads to problem behaviour; or (c) both occur together. Within the first level, it is theorized by Dionne et al. that problem behaviour is the focus of parental attention. Therefore, with the focus elsewhere, the interaction between parent and child that stimulates speech and language development may be limited. Further, it is thought that the child who displays disruptive behaviour may not “pay attention to the verbal stimulation coming from the environment, missing out on essential learning material for language development” (Dionne et al., 2003, p. 262).

The second level within the *phenotype-to-phenotype effect* model suggests that speech and language impairment leads to disruptive behaviour. As Dionne et al. explain, since children with communication delays have trouble communicating their needs, they may use what appears to be problem behaviour in a communicative function. This level of explanation coincides with the communication hypothesis: aberrant behaviour serves as a type of communication (Carr, Levin, McConnachie, Carlson, Kemp, & Smith, 1994). However, it is important to realize that this theory does not limit challenging behaviour only to those who cannot communicate verbally.

Instead, aberrant behaviour is conceptualized as a primal form of communication (e.g., individuals use escape behaviour to remove themselves from an unpleasant event).

The third level of explanation presumes that a reciprocal effect is possible between behaviour and language problems. This suggests that problem behaviour can affect language problems as explained above and that language problems can affect a child's behaviour also as explained above.

Consistent with Vogin (2008), and for the purpose of the present study, the second level in the phenotype-to-phenotype effect model will be used as the conceptual framework for understanding the relationship between communication delays and challenging behaviour. This model is supported by Dionne et al.'s (2003) conclusion that the link between physical aggression and expressive vocabulary could be best described by the phenotypic model of language to behaviour.

Preschool Children and Parenting Stress

With children who demonstrate challenging behaviour, it comes as no surprise that parenting can be a demanding experience which can often lead to stress (Marin, 2007; Goldstein et al., 2007). As children grow, their needs and behaviours change as do the issues that their parents face. In the present study, only the child-to-parent relationship was examined, as the measures selected focused only on the mothers' perception of events. However, it is acknowledged that just as children influence parents, a reciprocal effect occurs. For example, in his theoretical paper examining parenting with children with developmental disabilities, Hastings (2002) suggested the notion that parents under stress may adopt specific parenting behaviours that reinforce a child's inappropriate behaviours, such as reduction in demands for compliance.

Links between parental stress and preschool children. The daily hassles, as conceptualized by Crnic and Greenberg (1990), are “the irritating, frustrating, annoying, and distressing demands” that, to some extent, define one’s interactions with the environment (p. 1629). Crnic and Greenberg indicated that daily hassles can be either irregular or constant. Individual daily hassles do not have a significant impact on parental stress; however, when all the daily hassles are combined throughout the day, multiple days or longer, these cumulative hassles may contribute to parental stress (Crnic & Greenberg, 1990). In this study hassles were used as a manifestation of mothers’ stress.

Crnic and Greenberg (1990) examined minor parenting stresses among 74 parent–preschool child dyads. Specifically, they wanted to determine the regularity and the intensity of hassles and to explore the relationship of these hassles to different parenting styles, family status, and parent-child interactions. Finally, Crnic and Greenberg sought to determine the relationship among minor parenting stresses, social supports, and indices of parental function. The children participating in this study were all five years old. The mothers were asked to complete self-report questionnaires and to bring them to observational visits. The results determined that parents’ daily hassles are an important source of stress within the parent-child context. Crnic and Greenberg also concluded that some elements of parenting stress could be the result of accumulating hassles of childrearing over a period of time.

In another study, Crnic, Gaze, and Hoffman (2005) assessed stress domains across a two-year period among mothers with typically developing three-year-old preschool children. As well, this study examined whether mothers stress was predictive of ensuing child problem behaviour. One hundred and forty-one preschool children and their families were followed. Parents were asked to fill out a measure of stress and child behaviour (Child Behaviour Checklist). The

Parenting Daily Hassles scale was completed in conjunction with a variety of measures including those related to family functioning, life stressors, parental attitudes and the nature of the parent-child relationship. Home observations were conducted by trained observers, during which time the parents' rated their daily hassles. Results indicated that their stress was stable across the period of the study, suggesting that stressed parents are likely to stay stressed. However, Crnic et al. cautioned that stress can be accumulated over time. They also found that the parenting hassles predicted child behaviour problems at age five years.

Links between parental stress and preschool children with speech and language delays.

The unique challenges that are faced by families who have preschool children with a communication delay can be a source of parental stress. The literature suggests that parents who have a child with a developmental disability and who has behavioural problems are more likely to experience stress than parents with children who do not have exceptionalities (Hastings, 2002).

Specifically, Long et al. (2008) used a cross-sectional design that examined the relationship between preschool children who had language delays and/or who demonstrated challenging behaviour and how these variables impacted family functioning (i.e., parents' stress). There were two groups in the sample ($N = 27,350$), the younger group aged 10 months to 2 years 11 months and the older group aged 3 years to 5 years 11 months of age. It was found that parents with younger preschool children with language delays were almost seven times more likely to report that they were not coping well with the day-to-day demands of parenting compared to parents of preschool children without communication delays. Parents of older preschool children were 2.57 times more likely to indicate they were not coping well with the daily parenting demands compared to parents with preschool children without communication

delays. These parents were between 2.35 times (younger preschool children) to 2.09 times (older preschool children) more likely to say their child was harder to care for compared to most other children their age. These findings were similar to those of Paul and James (1990) who reported that parents of children who have a communication delay identify their child as being more temperamentally difficult and harder to manage compared to children without a communication delay.

Links between parental stress and behavioural challenges of preschool children.

Research (e.g., Crnic & Greenberg, 1990) showed that the level of stress reported by mothers is a significant factor that could impact the frequency of perceived child behaviour problems and greater marital distress. Crnic and Greenberg (1990) acknowledged that this finding does not prove that a causal relationship exists. Instead these authors suggested that mothers who report greater levels of distress are more inclined to perceive parenting as a hassle.

In a study that included behavioural data on 199 three-year-old children, Goldstein et al. (2007) found mothers of children with behavioural challenges reported more negative life stressors than mothers of children who did not have behavioural concerns. Similarly, Long et al. (2008) found that parents of younger children with behavioural challenges were more likely to indicate they were not coping well with the day-to-day demands of parenting compared to parents with children of similar age without a behavioural challenge. Parents of older children with a behavioural challenge were 18 times more likely to express difficulty with the day-to-day demands of parenting when compared to parents of age-matched peers without a behavioural challenge.

Similarly, parents of preschool children with just behavioural concerns had higher reported stress levels compared to parents who have preschool children without behavioural

challenges. In fact, the results show that parents of preschool children with just behavioural concerns felt they were 13 times (younger preschool children) to 22 times (older preschool children) more likely to indicate their child is harder to take care of than most other children their age. Further, compared to parents of preschool children with just language concerns, parents of preschool children with just behavioural concerns reported more stress overall (Long et al., 2008).

Links between parental stress and preschool children with behavioural challenges and speech and language delays. Parents of children with just language delays experience high levels of stress (Long et al., 2008). These parents were also found to report an increased rate of child behavioural challenges. This could be an additive source of parenting stress (Chaffee, Cunningham, Secord-Gilbert, Elbard, & Richards, 1991). As noted above, parents of children with just behavioural challenges are also likely to report a high level of stress (Long et al., 2008). Thus, it may be logical to conclude that parents who have children with both communication delays *and* behavioural challenges would be likely to experience more stress than parents of children who have either language or behaviour challenges alone.

However, Long et al. (2008) found otherwise. As may be expected, Long et al. found parents who reported concerns about both their child's communication ability and their behaviour were 7 to 12 times more likely, depending on age category of younger to older children, to report their children were more difficult to care for compared to parents with children who had neither communication nor behavioural concerns. Surprisingly though, when compared to parents who have children with behavioural challenge and communication delay, parents of children with just a behavioural challenge were more likely to report that their children were more difficult to care for, 12 – 22 times more likely as increasing with age (Long

et al., 2008). Thus, a much higher rating was found among parents who have children with just behavioural concerns, instead of the hypothesized conclusion that parents who have children with language and behavioural challenges would have the highest level of concern. The authors suspect that this is a unique population that may have changed parenting expectations or may be receiving intervention services.

Although intriguing, the results from Long et al.'s study were based on cross-sectional data: children were not followed longitudinally. Furthermore, there has been a very limited research focus on the strength of the relationship between preschool children with language delays and aberrant behaviour, as well as the effect of these factors on parent stress. In addition, there is limited research regarding family conflict and how that relates to parental stress over time with preschool children with and without communication delays.

Family Environment: Conflict

Bronfenbrenner and Ceci (1994) indicated that proximal processes are the primary source of effective development. They defined proximal process as the enduring, bidirectional "interaction between an active, evolving biopsychological human or organism [the child] and the persons, objects and symbols in its immediate environment" (p. 572). More specifically, it is this reciprocal interaction that cultivates and transforms the genotype (an inherent trait) to the phenotype. However, if the proximal process is weak, then genetic potential may not be realized. It is the child's characteristics and the type of environment in which the interactions occur that influence the proximal process. Thus, the type of environment is as important as the child's genotype. For the purpose of the present study, family conflict is examined as one aspect of family environment. In this study, family conflict is conceptualized as "the amount of openly expressed anger and conflict among family members" (Moos & Moos, 1994, p. 1).

Preschool children with behavioural challenges and family conflict. Children who are exposed to family conflict are at an increased risk of developing internal and external behavioural challenges (Campbell, 2002; Cummings & Davies, 2002). Campbell (2002) explained that young children are extremely receptive to the strength and quality of alterations in their immediate environment. In fact, if young children often witness parent arguments, it can become hard for them to “cope with their high levels of negative emotions and [this event] also undermine[s] feelings of safety and support in the family context” (p. 130). These feelings might be expressed in a variety of symptomatic behaviours: anxiety, sadness, withdrawal, acting-out, explosive behaviour, or a combination of these behaviours (Campbell, 2002). Campbell also suggested if there is conflict, the parents involved may have little tolerance for the typical behaviours of young children. As well, some adults may have less energy left for emotional and instrumental support for their children, a situation which could lead children to be frustrated. Ultimately, this could lead children to become defiant, demanding, and sometimes angry (Campbell, 2002). According to Bandura’s *Social Learning Theory*, “...psychological functioning is explained in terms of a continuous reciprocal interaction of personal and environmental determinants” (as cited in Lathem, & Saari, 1979, pp. 239 - 240). From this perspective, learning occurs through observation of others, direct experiences and, of course, direct teaching. Therefore, it makes sense that children with behavioural challenges could be mirroring what they see in the home environment.

Goldstein et al. (2007) examined how the behaviour challenges of three-year-old children relate to mothers’ stress. This study was also the first to examine the relationship between parental conflict and subtypes of behaviour problems. They found more intense and unresolved conflict among parents of children with behaviour problems compared to families with preschool

children without behaviour challenges. However, the children in this study did not have a speech and/or language delay.

Family conflict associated with parenting stress. Moos and Moos (1994) confirmed that family environment has an effect on parent-child functioning. They also confirmed that distressed families have a higher score on family conflict than non-distressed families. In a related study, Marin (2007) found a similar association between family climate, namely conflict, and mothers' stress. In her dissertation Marin had multiple objectives. The main objective was to examine maternal parenting stress and quality of mother-child interactions. Marin also examined the relationship between family conflict and parenting stress. There were 3,001 mothers who responded to various measures including the Family Environment Scale and the Parenting Stress Index – Short form. Each of these mothers had young children. Data were collected when children were 36 months old. Notably, there were no children reported as having communication delays. Results showed a positive correlation between family conflict and parenting distress. It was also found that mothers who had high levels of parenting stress and family conflict were less likely to engage in positive interactions with their children compared to mothers who had low levels of parenting stress and family conflict.

Lee, Vernon-Feagans, Vazquez, and Kolak (2003) examined how structural variables (i.e., division of labour), the child's characteristics, and family environment affect the mothers' and fathers' work/family role strain (characterized as stress). There were 36 families involved in this study. Each family had a preschool child 48 months old. Mothers and fathers were interviewed and were asked to fill out a variety of measures including the Work/Family Role Strain, Parent Daily Hassles and Family Environment scales. A hierarchical multiple regression

revealed that family environment including conflict, cohesion, and parenting daily hassles, explained a significant amount (57%) of parental strain.

Lee et al.'s (2003) study established that family environment is a predictor of parental stress. However, Lee et al. did not determine whether family conflict or child behaviour had the greater impact on parent stress. The result of Marin's (2007) study seems to have established an association between conflict and parental stress. Children with communication delays were noticeably absent in Marin's study. In fact, it appears that there is no literature to date that has examined the relationship between family conflict and parental stress among mothers of preschool children with communication delays. The purpose of the present study was to examine the extent to which family conflict and child behaviour contributes to parental stress among families who have preschool children with and without communication delays.

A Longitudinal Study that Examined how Preschoolers' Behaviour and Family Climate are Related to Family Stress.

Campbell, Breaux, Ewing, and Szumowski (1986) examined behaviour and family climate data collected from mothers with children in the late toddlerhood and early preschool age range. They wanted to understand whether child behaviour and family climate had any predictive significance for family functioning over time. Family functioning was conceptualized as the degree of stress expressed by mothers. At intake ($N = 68$) target children were between the ages of two and three years. Children who were identified as having problem behaviour ($n = 46$) were compared to children ($n = 22$) who were not identified as having problem behaviour. Each group was followed up at age four and at age six. At intake and when the children turned four years old, mothers were interviewed and were asked to complete a variety of measures including a preschool behavioural measure (the Behar Preschool Behavior Questionnaire).

During the interviews, mothers were asked questions including issues related to family stress and family composition. An overall family disruption score was calculated in order to determine the degree of stress contributed by the behaviour of the child in the study. This score was determined through the interview data and was assigned by the interviewers. When children had reached age six years, mothers were given different behavioural measures (SNAP Questionnaire and the Achenbach Child Behavior Checklist). Interviews were conducted again to evaluate the family stress level; however, this time mothers were asked to list five recent stressful events and to rate them on a 5 point Likert-type scale that reflected the degree to which they felt upset. The sum of these scores served as the perceived stress score.

Results showed that family climate was associated with hyperactivity and aggression scores among children at age six years as rated by their parents. They also showed that higher ratings of family stress at age six years are associated with higher hyperactivity ratings. Using a hierarchical multiple regression, Campbell et al. (1986) revealed that lower socio-economic status, family stress and troubled mother-child relationship in younger ages (between 2 and 3 years) predicted children's problem behaviours at ages four and six years.

Despite these interesting findings, there were limitations to this study. Children with a communication delay were excluded from participation in the study. As well, there was a subjective scoring of parental stress, and various measures were used to assess the children's behaviour at different points of time in the study. The family disruption rating, otherwise known as a stress rating, was conceptualized on a three-point Likert-type scale. A score of "one" reflected a stable family without apparent problems other than the difficulties of managing the target child's behaviour. A score of "two" was an indication of mild to moderate disruption in the stable family environment (e.g., a family member may be unavailable because of work

commitments). A score of “three” was an indication of serious chronic or multiple stresses in the family. This score was given subjectively by the researchers who knew the family. This may not be an accurate depiction of stress indices among families who have preschool children with behavioural challenges since family members themselves are not doing the rating. Therefore, the results should be interpreted with caution. As well, there were two different measures used to assess children’s behaviour: Behar Preschool Behavior Questionnaire at intake and later the SNAP and Achenbach Child Behavior Checklist. It was not apparent whether the measures were highly correlated with one another. Therefore, the measures used to assess children’s behaviour over time were inconsistent. Thus, the purpose of the present study was to further understand the interaction of these three factors in families of preschool children with and without communication delays using parent self-report measures.

Proposal for a Conceptual Model

Based on the literature cited above, the author of the present study has developed a theoretically-grounded model (see Figure 1) that suggests how change in child behaviour challenges and change in family conflict may be related to the change in parental stress. This model builds on the work of Deater-Deckard (1998), who showed that the relationship between parental stress and child behaviour problems was mediated by parenting behaviour. In this case, child behaviour was the dependent variable. The present model was also based on the study by Marin (2007) who showed a relationship between conflict and maternal stress and on the work of Goldstein et al. (2007) who found a correlation between parental conflict and child behaviour.

Based on current literature, it becomes evident that a child’s behaviour challenges and parental stress are theoretically linked (Deater-Deckard, 1998; Goldstein et al., 2007; Long et al., 2008). According to the conflict literature, there is a link between family conflict and maternal

stress (Marin, 2007; Lee et al., 2003). Using a multiple hierarchical regression, Lee et al. found that conflict, cohesion, and parenting daily hassles explained a significant proportion of mothers' role strain, characterized as stress.

From the review of the extant literature, it is apparent that there is little longitudinal data describing the relationship among child behaviour, family conflict and parental stress. Given the results reported in the literature examining the relationship between behavioural challenges of children with communication delays and parental stress (Long et al., 2008) and the relationship between conflict in the family environment and parental stress (Marin, 2007), there is a strong case for examining how change in each of these factors may relate to change in parental stress in the context of families who have children with and without communication delays. Therefore, the proposed model suggests that change in family conflict and change in child behaviour each predict change in parent stress. It is further proposed that change in family conflict and change in child behaviour are correlated.

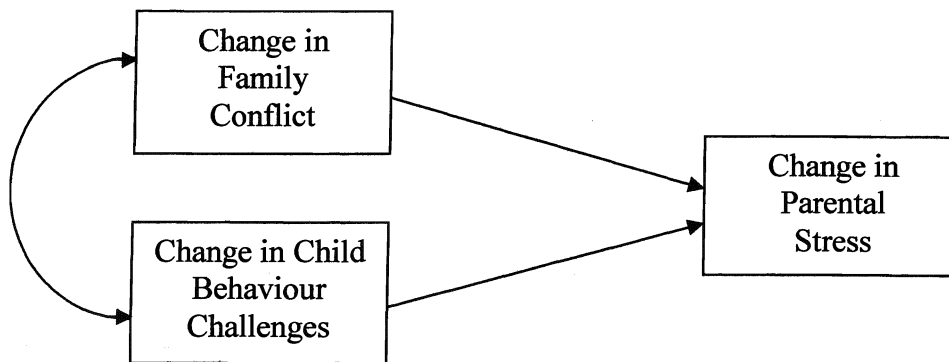


Figure 1.

Correlated simultaneous influence model of relationships among the change in parenting stress, child behaviour challenges and family environment in the context of communication delays.

Previous Family Resource Project Studies Related to Child Behaviour

Related research has been conducted, as part of the Family Resource Project, by Ilios (2004) and Vogin (2008). Ilios (2004) hypothesized that preschool children with communication delays ($n = 53$) would be associated with higher parent reported behavioural challenges (i.e., inattention, hyperactivity and impulsivity) than children without identified communication delays ($n = 32$). However, no significant difference was found between the two groups. As well, Ilios theorized that reported levels of conflict would be higher in the families of children with communication delays, than among families of children without communication delays. However, once again no significant difference was found between the groups.

Building on Ilios' (2004) study and using cluster analysis and qualitative analysis, Vogin's (2008) study had three main purposes: (a) to explore further whether parents who experience higher stress levels also express concerns about their child's behaviour in interviews; (b) to compare the difference in concerns about challenging behaviour and parenting experiences between families with preschool children with communication delays and those families with preschool children without communication delays; and (c) to determine the relationship between the type and number of risk factors in the family, and the number and type of concerns they express about their child's behaviour and their experiences of parenting. Further, her overall purpose was to explore the results that Ilios had found. What she discovered were clusters of families within the communication delay clinical group (high/low conflict and hassles) and no communication delay community group (high/low conflict and hassles). Neither the Ilios (2004) nor Vogin (2008) studies examined the child's behaviour over time.

Research Question

The purpose of this study was to address the limitations and gaps within the existing literature. Building on Vogin's (2008) study, the focus of the present study was to determine the change over a two-year period in children's challenging behaviour, family conflict, and parental stress in families who have preschool children with and without communication delays. The following general research question was used to guide the present study:

Do change in child behaviour and change in family conflict scores predict change in parenting stress scores in families with children with and without communication delays?

Hypotheses

Hypothesis One: Long et al. (2008) found that child behaviour scores were related to parental stress. The literature suggests that there is a relationship between child behaviour challenges and parental stress (Deater-Deckard, 1998; Goldstein et al., 2007; Long et al., 2008). Therefore, it was expected that the change in behavioural scores, between Time One and Time Two, would be predictive of changes in parental stress among families who have children with and without communication delays such that if there was a decrease in identified child behaviour problems from Time One to Time Two, there would be a decrease in the parents' stress scores. Similarly it was expected that an increase in child behaviour problems would relate to an increase in parent stress scores.

Neither Ilios (2004) nor Vogin (2008) found a difference between the Family Resource Project clinical group and community group at Time One. However, Silva et al. (1987) found significantly higher parent- and teacher-rated challenging behaviour scores at ages seven, nine, and eleven years, among children with comprehension and general language delays compared to children with expressive delays and children without language delays. Beitchman et al. (1996)

found that children with communication problems had continued behaviour problems as they got older. Given these findings, it was hypothesized in the present study that the clinical group would have higher child behaviour scores than the community group at Time Two. It was hypothesized that the clinical group would have significantly higher stress scores than the community group at Time Two.

Hypothesis Two: Lee et al. (2003) demonstrated that family conflict was predictive of parent stress in families with and without children with exceptionalities. Therefore, based on the current literature, it was also expected that change in family conflict scores would be predictive of change in parental stress such that if there was a decrease in family conflict, then there would be a decrease in parental stress. The opposite would also be expected. If there was an increase in family conflict, then there would be an increase in parental stress. It was further hypothesized that the clinical group would demonstrate higher family conflict scores than the community group at Time Two.

Hypothesis Three: Based on the work of Campbell et al. (1986) and Goldstein (2007), it was hypothesized that change in child behaviour would be positively correlated with change in family conflict.

Method

The data collected for this study was part of a larger project, the *Family Resource Project* funded by the *Canadian Language and Literacy Research Network*. This project was conducted in collaboration with researchers at Brock University and community partners from Speech Services Niagara. The larger project used a mixed-method design that included interviews, standardized measures, questionnaires, and time diaries. A description of the measures used in

this particular study is included below. This study was approved by the Brock University Research Ethics Board, File # 01 – 275 (see Appendix A).

Participants

At the start of the study, there were 93 parent-child dyads eligible to participate. There were 11 families (12%) from whom no response was received at Time One. From the 82 remaining parent-child dyads, 46 families (56%) participated during the second phase of data collection. However, only 44 participants were included in the present analysis. The other two dyads were excluded from analysis because they were considered to be multivariate outliers. This will be discussed later in this thesis.

The study focused on children between the ages of 27 and 64 months ($M = 46.89$, $SD = 9.53$ months) because of the interest in assessing this period of rapid developmental change. As pointed out earlier, very little longitudinal research focusing on preschool children with communication delays has been conducted. One parent from each family was asked to participate in interviews and to complete a measures package. For this study those who participated in the two phases of the study were mothers. In three cases both the mother and father filled out the measures package, but for consistency only the mothers' data were used in this study.

There were two groups of participants in the current study: a clinical group and a community group. Families within the clinical group ($n = 31$) had preschool children ($n = 21$ boys; $n = 10$ girls) who were identified as having a communication delay operationally defined as having a language and/or speech delay. In order to establish whether a child had a communication delay, the Preschool Language Scale – 4 (Zimmerman, Steiner, & Pond, 2002) and the Goldman-Fristoe Test of Articulation (Goldman & Fristoe, 2000) were used. A description of these measures is provided in the *Main Outcomes Measures* section. These

participants were recruited from Speech Services Niagara. This community resource offers speech and language services to children. All the participants in this study who had communication delays had to complete one twelve-week block of therapy before they participated in this study. The community group included families ($n = 13$) with preschool children ($n = 6$ boys; $n = 7$ girls) who were identified as not having a communication delay. These participants were recruited from daycare settings in the Niagara Region.

During the first phase of data collection, children, regardless of group affiliation, were between 27 and 64 months old ($M = 46.89$, $SD = 9.53$ months). In the community group children ranged from 27 to 61 months of age ($M = 40.54$, $SD = 11.07$ months) compared to the children in the clinical group who ranged from 33 to 64 months of age ($M = 49.55$, $SD = 7.51$). In the second phase of data collection, regardless of group affiliation, children were between 51 and 102 months of age ($M = 75.05$, $SD = 12.10$). Children within the community group were between 51 and 86 months of age ($M = 72.15$, $SD = 11.89$) in the second phase of data collection whereas children in the clinical group were between 58 and 102 months of age ($M = 76.26$, $SD = 12.17$).

At the start of the study, mothers, regardless of group affiliation, were between 22 and 51 years of age ($M = 34.69$, $SD = 5.18$). Mothers in the clinical group were between 22 and 51 years old ($M = 35.38$, $SD = 5.91$), whereas mothers in the community group were between 29 and 37 years old ($M = 33.15$, $SD = 2.54$). At Time Two, mothers' ages were between 24 and 53 years of age ($M = 36.93$, $SD = 5.03$). Mothers in the clinical group were between 24 and 53 years old ($M = 37.47$, $SD = 5.7$); whereas mothers in the community group were between 31 and 39 years old ($M = 35.69$, $SD = 2.75$). Mothers of the preschoolers ranged in education from some high school to completed post-graduate work. On average, mothers had some college or university

education ($M = 4.52$ $SD = 1.07$). During Time One and Two of the study, families ranged in income from under \$15 000 to over \$90 000, with most averaging between \$60 000 and \$75 000.

Attrition Analysis. The goal of this attrition analysis was to determine whether participants who did not complete the second assessment at Time Two differed systematically from those who did complete the study on important demographic variables and outcome variables. Each of the variables was compared against Bonferroni's correction p value ($p = .004$) and none were found to be significant. An examination of the demographic variables (i.e., group affiliation, $t(51) = .99, p > .05$, child's age at Time One, $t(81) = .52, p > .05$, child age at Time Two, $t(63) = .73, p > .05$, child's gender, $t(51) = 1.00, p > .05$, mothers' age at Time One, $t(95) = -1.00, p > .05$, mothers' age at Time Two, $t(66) = .30, p > .05$, mothers' education, $t(95) = -1.15, p > .05$, and family income, $t(95) = -.36, p > .05$), Time One predictor variables (Conners Oppositional, $t(71) = .28, p > .05$, Conners ADHD Index, $t(55) = -.55, p > .05$, Family Conflict, $t(68) = -.631, p > .05$), and the change predictor variables (change in Conners Oppositional, $t(53) = .68, p > .05$, and change in Conners ADHD Index, $t(53) = -.50, p > .05$, Family Conflict, $t(50) = -.23, p > .05$) among those who continued in the study compared to those who discontinued the study at Time Two was completed. Results showed there was no difference between the participants who completed the second assessment at Time Two and those who did not. Therefore, the conclusion of a non-biased sample was reached.

Main Outcome Measures

Diagnostic Inventory for Screening Children Preschool Screening (DISC). The DISC (Amdur, Mainland, & Parker, 1988) assesses eight areas of child development: fine motor skills, gross motor skills, receptive language, expressive language, auditory attention and memory, visual attention and memory, self-help, and social skills. This particular screening tool was

normed with 571 Canadian children. Each of these scales has 27 items distributed evenly across the measure, although these items are not hierarchically distributed; instead they are evenly distributed across the measure. "The DISC covers such a range of ability that a large proportion of the times ... add no precision of measurement to the assessment of any given child, but contribute substantially to measures of reliability when the complete age range is assessed" (Parker, Mainland, & Amdur, 1990, p. 366). Depending on the participant, this measure can be administered in between 15 and 40 minutes (Parker, Mainland, & Amdur, 1990).

The reliability of the DISC Screen has been evaluated using split-half reliability and test-retest reliability. This measure has demonstrated good split-half reliability ranging from .98 to .99 across all eight scales. In addition, it showed strong test-retest reliability (ranging from .94 to .98 respectively) one week apart (Parker et al., 1990).

The validity of the DISC Screen was also examined against the Denver Developmental Screening Test (Frankenburg, & Dodds, 1969) and the Stanford-Binet (Terman & Merrill, 1972). The correlations between the DISC scales and these two scales ranged from moderate to strong. This result demonstrates acceptable psychometric properties: DISC Screen and the Denver were .64 or greater, DISC and Stanford-Binet scales ranged from .64 to .78. Thus, when compared to the Denver and Stanford-Binet, the DISC measures similar constructs (Parker et al., 1990).

Preschool Language Scale (PLS) – 4. The objective of this test is to detect language delay in preschool children (Zimmerman et al., 2002). This test measures a wide variety of communication behaviours (e.g., preverbal interaction skills). The PLS-4 (Zimmerman et al., 2002) was created to allow children to use motor responses to reply to verbal questions that are organized in levels of increasing difficulty (e.g., pointing, nodding) demonstrating the child's receptive language abilities (Auditory Comprehension subscales). In addition, a corresponding

subscale requires the child to respond verbally. This demonstrates the level of expressive language skills (Expressive Communication subscale) (Zimmerman & Castilleja, 2005). Additionally, there is a short Articulation Screener, which measures articulation skills, a Language Sample Checklist, which assesses conversation skills, and a caregiver questionnaire, as a way for caregivers to provide information about children's communication behaviours at home. The purpose of this test for the present study is to identify children who have a language delay and who, therefore, qualify for formal intervention programs (Zimmerman & Castilleja, 2005).

According to Zimmerman et al., (1992) the PLS has a high internal consistency reliability. Cronbach's alpha for children from birth to 2 years of age ranged from .47 to .86 for the Auditory Comprehension subscale, .68 to .86 for the Expressive Communication subscale and .74 to .92 for the Total Language Score. When tested with its predecessor, the PLS – 3, with the same children, similar means and standard deviations were found thus validating the content of the test (Zimmerman & Castilleja, 2005). This test shows good validity as is well documented within the literature (e.g., Crais, Douglas, & Campbell, 2004; Layton, Crais, & Watson, 2000; Wetherby, Cain, Yonclas, & Walker, 1988).

Goldman-Fristoe Test of Articulation. This test was designed for Speech and Language Pathologists to assess individuals' articulation (speech) abilities at varying levels using American Standard English. This test examines a person's skill in articulation particularly in word initial, word medial and word final positions as well as in consonant blends. The Goldman-Fristoe Test of Articulation typically takes 5 to 15 minutes to administer, depending on the client, and is designed for ages 2 to 21 years. This test requires no reading or writing on the part of the examinee. For the purposes of the present study, the Goldman-Fristoe Test was used to

determine whether children had a speech delay that qualified them for formal speech and language intervention through Speech Services Niagara.

The Goldman-Fristoe Test of Articulation shows strong reliability for females (.96) and males (.94) and has good test-retest reliability (.98) (Goldman & Fristoe, 2000). Moreover, the test shows good validity (Goldman & Fristoe, 2000).

Conners' Parent Rating Scale – Revised – Short Form. The original Conners' Parent Rating Scale was developed to measure children's and adolescents' behavioural challenges (see Appendix B). The Conners' Parent Rating Scale – Revised (CPRS-R:S) (Conners, Sitarenios, Parker, & Epstein, 1998) was designed to compensate for the limitations of its predecessor as well as to update the content. This measure can be used for children between the ages of 3 and 17 years. This format uses a 4-point Likert-type scale to determine the degree to which parent responders agree with various descriptive statements in relation to their child. The scale ranged from one (*never*) to four (*very frequent*). In the original scale format of the CPRS-R:S the scale ranged from zero (*never*) to three (*very frequent*). There are two versions of the revised CPRS-R:S: a long form that consists of 80 items and a short version of 27 items. Therefore, for the purposes of the present study, the short version of the behaviour measure (CPRS-R:S) was used. The behaviour measure was one of six measures, so the Family Resource Project Team was concerned about responder fatigue. The CPRS-R:S yields scores on four scales, namely Oppositional, Cognitive Problems/Inattention, Hyperactivity-Impulsivity, and ADHD Index.

Once the total raw Conners scores were determined for both groups of participants during the first and second phase of data collection they were converted to T-Scores. According to Conners (2000) raw scores must be converted to standard scores in order to control for

developmental change and to facilitate comparison to norms¹. Each scale within the CPRS-R:S has the same mean of fifty with the standard deviation of ten. According to Conners (2000) the typical score is in the range of 45 – 55 which ultimately means the behaviour should not raise any concerns. If the score is between 56 and 60, then the behaviour is considered to be high and should raise concern. However, if a score is 61 or higher, then the behaviour score may be considered to fall in the clinical range. If the participant scores between 40 and 44, then the behaviour is considered to be approaching normality and should not be a concern. If a participant's behaviour score is below 39, it is an indication that the behaviour may be considered non-problematic and should not be a concern. For example a female participant who is 39 months old with a raw score of 13 on the Oppositional factor would yield a standard score of 84. This standard would be considered to be clinically significant.

The normative data used for the CPRS-R:S were from the Conners Parent Report – Revised: Long version data. The sample consisted of 2,426 parents or guardians with children ranging in age between 3 and 17 years. There were slightly more parents with male children ($n = 1,220$) than female children ($n = 1,206$). The parents were also asked to provide their ethnicity: 80% self identified as Caucasian, 4.3 % as African American; 3.8 as Hispanic; 2.1% as Asian; and finally 1% as Native American while the rest (4.3%) self identified as “other”.

Test-retest reliability for the CPRS-R was reported to be moderately strong for the scales. In addition, the internal consistency was strong (ranging from .75 to .94) for the CPRS-R (Robin,

¹ The CPRS-R:S is used with parents who have children who are at least three years old. Out of the 46, participants 6 participants in this study were below age 3 years old. These children ranged from 27 to 35 months of age. Although they are below the normed age range, their raw scores were converted to standard scores using the lowest age category available.

2004). An item analysis revealed that all the retained items measured what they were intended to measure which indicates good validity (Robin, 2004).

A reliability analysis was conducted using SPSS for this study that revealed that the Conners Oppositional subscale had an acceptable alpha level at Time One (.79) and Time Two (.89)². The cognitive/problem inattention scale also had appropriate reliability with an alpha level at Time One of .79 and at Time Two of .93. The hyperactivity subscale also had a good alpha level at Time One (.78) and at Time Two (.82). The ADHD Index had an alpha level at Time One of .87 and at Time Two of .94.

Parenting Daily Hassles Scale. The Parenting Daily Hassles (Crnic & Greenberg, 1990) is a 20-item measure designed to assess parental perceptions of common events in parenting and parent-child interactions (see Appendix C). There are two specific factors assessed in this scale. The first is parenting tasks which assesses eight typical tasks that parents perform (e.g., “Difficulties in getting kids ready for outing and leaving on time”). The second factor focuses on seven challenging behaviours (e.g., “The kids demand that you entertain or play with them” or “the kids are hard to manage in public”). Each item is separately measured on frequency and intensity. For the present study, the frequency scale is a four-point Likert-type scale ranging from one (*rarely*) to four (*constantly*). In the original scale, the frequency was evaluated on a five-point Likert-type scale from one (*never*) to five (*constantly*). Parents were also asked to use a five-point scale to indicate the degree of intensity of the hassle associated with each item (one *no hassle* to five *big hassle*). Similar to Coplan, Bowker, and Cooper (2003), the frequency and intensity subscales were aggregated to create a global measure of parenting hassles.

² This alpha is acceptable because it is above the .7 cut off. All of the corrected item total correlations and the squared multiple correlations are above the .2 cut off during Time One and Time Two.

Separately, the frequency and intensity scales have acceptable psychometric properties. Each scale has sufficient internal consistency with the alpha coefficients of .81 for the frequency scale and .89 for the intensity scale (Crnic & Booth, 1991). As well, these two scales have a high correlation ($r = .78$). Notably, there are no clinical cut off scores available. However, if the total score on the frequency scale is above 50 or the total score on the intensity scale is above 70, this indicates that a high frequency of hassles is perceived and the parent is experiencing pressure related to parenting (Crnic & Greenberg, 1990).

A reliability analysis for the present study was also conducted with the items in each scale. The frequency scale had an acceptable alpha level at Time One (.82) and at Time Two (.88). In examining the corrected item-total correlation at Time One, it was apparent that two items, i.e., “mealtime difficulties (picky eaters, complaining, etc.)”, and “the kids have difficulties with friends (e.g., fight, trouble getting along, or no friends available),” were below the appropriate cut off of .2 and they also had a low squared multiple correlation. However, if each of the items was taken out of the analysis, then the alpha level at Time One would increase slightly ($< .01$ point). If either item was removed at Time One, then the same item would have to be removed at Time Two resulting in a drop of the Time Two alpha level. Therefore, because the alpha level was already strong at Time One, and because of the effect it would have on the alpha level at Time Two, it was decided to retain these two items in the analysis.

The intensity scale had an acceptable alpha level at Time One (.85) and at Time Two (.90). There was one item (i.e., “The kids resist or struggle over bedtime with you”) that fell below the corrected item-total correlation cut off. This item also had a low squared multiple correlation (.39). If this item were removed, then the alpha would not increase at Time One. However, if it were removed at Time Two, the alpha level would decrease. Therefore, because

the alpha level is already strong at both Time One and Time Two, the decision was to retain the item.

The Family Environment Scale. The Family Environment Scale (Form R) (Moos & Moos, 1994) was developed to measure the social climate of families. The scale consists of three dominant dimensions: relationship, personal growth, and system maintenance. There are ten different subscales that make up these dimensions. Originally there were 90 items in the scale. However, for the purposes of the Family Resource Project, only the 36 items were included that made up the cohesion, conflict, organization, and control subscales (see Appendix D).

For the present study only the conflict subscale under the relationship dimension was used, as little research had been conducted previously on this subscale with a longitudinal focus on preschool children with and without communication delays. The conflict subscale consists of items 2, 6, 10, 14, 18, 22, 26, 30, and 34 (e.g., “Family members sometimes get so angry that they throw things”). Participants responded to each question by indicating whether the item was true or false for their family. The items that made up this scale were predominantly relating to overt verbal (item 18, 26, 34) and physical aggression (item 10, 22) as well as openly expressed anger (item 2, 6, 14) and one item that dealt with family competition (item 30).

The normative data were compiled on 1,432 typical and 788 distressed families (Moos & Moos, 1994). Those who were included in the control group consisted of single parent and multigenerational families, racial minority groups, families with children from preschool to adolescents and others. The distressed families included families of psychiatric patients, alcohol abuse problems, families with children or adolescents with conduct disorder and others. On the conflict subscale, typical families scored an average raw score of 3.18 ($SD = 1.91$) whereas distressed families scored an average raw score of 4.02 ($SD = 2.07$) (Moos & Moos, 1994).

The test-retest reliability of all original scales showed appropriate psychometric properties. The conflict subscale was of particular interest and with a one-year inter-test interval this subscale had a moderate test-retest reliability (.71 coefficient) (Moos & Moos, 1994).

A reliability analysis was conducted on the conflict scale using the Family Resource Project data. This scale had an acceptable alpha level at Time One (.7) and alpha level that approached an acceptable level at Time Two (.67). After the corrected item-total correlation at Time One was examined, item 30 ("Family members often try to one-up or out-do each other") was below the .2 cut off (.064) and had a low squared multiple correlation of .295. At Time Two item 30 was found to have a low corrected item-total correlation of -0.11 and squared multiple correlation of .14. Thus, it was determined that this particular item brought the alpha level below acceptable range (.7). The decision was made to remove this question from the scale. As a result, the conflict scale then had acceptable alpha levels at Time One (.73) and at Time Two (.72).

Procedure

Contacting participants. Potential clinical participants were contacted by phone or in person by a Speech Services Niagara staff member. A contact script was provided on how to introduce the project to a potential participant (see the Appendix E). Once caregivers signed a consent form to release contact information to Brock researchers, they were contacted by a research assistant who further explained the study and the role of participants. At this time, arrangements were made to conduct an interview and child assessment.

The community participants were contacted through their daycare provider or resource centre. They were given an information letter introducing them to the project. Parents could return the letter with their contact information to the daycare or resource centre. A research assistant then contacted the family to explain the study further and to arrange an interview and

child assessment. It was made clear to both groups of parents that participation was purely voluntary, and with the completion of the interviews and the measure package they would receive a \$50 honorarium to compensate them for their time.

Rapport building. An initial meeting was held with participants to explain the study and to allow research assistants to build rapport with families. During this time, the examiner went to the participants' home and interacted with the families until it seemed that they felt comfortable with the examiner. In this initial session, the examiner explained the study to the parent and acquired informed consent for the research. This form clearly outlined that the participant could withdraw from the study without penalty. As well, referral information and a list of community resources were offered.

Interviews and developmental assessment. A semi-structured interview was completed with participating caregivers at the location of their choice: either in their home, daycare centres, family resource centres or at Brock University. Two research assistants were present to conduct the interview and developmental assessment, one to conduct the interview with the participating parent while the other attended to the child and administered the DISC. The interview lasted for one hour. A tape recorder was used in the interview to record participant responses. After the interview was completed, it was transcribed into Microsoft Word by a research assistant. Once transcribed, the audiotapes were destroyed. The interview questions focused on the parents' awareness of the impact on their family of having a child with a communication delay (in the clinical sample) or a preschool child who was typically developing (in the community sample). The questions also addressed a variety of issues such as what resources were available to the family and how they met the child's needs.

During the interview, the child was given a developmental assessment by one of the research assistants trained to administer the Diagnostic Inventory for Screening Children (Version 3.0) (Parker, Mainland, & Amdur, 1997). The Preschool Language Scale (Zimmerman, Steiner, & Pond, 2002) and the Goldman-Fristoe Test of Articulation (Goldman & Fristoe, 2000) were also conducted by a Speech and Language Pathologist at a different time. Before these assessments were administered, children were asked to give verbal assent.

Questionnaire package. When the interviews were complete, a questionnaire package that consisted of multiple measures was given to the caregiver to be completed at their convenience: The Parenting Scale (Buri, 1991), The Family Resource Scale (Dunst & Leet, 1987), the Parenting Daily Hassles Scale (Crnic & Greenburg, 1990), the Social Provisions Scale (Cutrona & Russell, 1987), the Family Environment Scale (Moos & Moos 1994) and the CPRS-R:S (Conners et al., 1998) were included in this package along with a time diary. Parents were asked to complete the questionnaires over a two-week period and mail the package back to the Family Resource Project researchers. The raw data from the questionnaires were coded and imputed into SPSS.

Feedback and follow-up. Families participating in the study were provided with a feedback letter following completion of the measures package. In order to continue to generate interest in the study over a two-year period, a brief one-year follow up questionnaire was sent to families. As well, families were sent periodic project newsletters to keep them connected to the project. These newsletters provided information about community activities for their children and resources for parents and children. Additionally, contact was continued by sending holiday and birthday cards to children.

Time Two. After a two-year period these families were asked to participate once again using the same procedures outlined for the interview questions and measure package. However the DISC Screen, the PLS and the Goldman-Fristoe Test of Articulation were not included in the Time Two measures.

Results

Due to the attrition in the community group from Time One to Time Two (discussed in the description of participants above), the main analysis testing the proposed model could not include a between groups comparison. Thus, Hypotheses One and Two could be only be partially addressed as the regression results, discussed later in this section, will report on analyses of the merged sample. However, in order to gain a complete picture of the sample, it is important to understand how participants' scores were distributed on each of the scales. As part of this process, the opportunity was taken to examine whether between group differences might be present at the level of individual measures.

A Clinical Profile of the Sample by Measure

Table 1 reports the means and standard deviations using standard scores for the clinical and community groups for each of the measures used in this study.

Conners' Parent Rating Scale – Revised – Short Form. For the present study, only the Oppositional subscale and the ADHD Index scores were examined.

CPRS-R:S Oppositional Subscale. A 2 (time) X 2 (group) repeated measures ANOVA revealed that there was no significant difference between the clinical and community group scores on the Oppositional scale, $F(1, 42) .36 p > .05$. There was no significant difference from Time One to Time Two regardless of group affiliation, $F(1, 42) .33, p > .05$. However, a significant main effect was found within each of the clinical and community groups from Time

Table 1
The Average Standard Scores of the Measures

Measure	N	Time 1				Time 2			
		Minimum	Maximum	Mean	Standard Deviation	Minimum	Maximum	Mean	Standard Deviation
Oppositional									
Community	13	44	63	54.54	5.59	39	68	52.46	6.97
Clinical	31	41	65	53.32	6.66	40	86	56.71	11.01
Total	44	41	65	53.68	6.32	39	86	55.45	10.1
ADHD Index									
Community	13	45	77	54.92	9.19	43	68	52.31	8.03
Clinical	31	40	71	55	7.65	42	77	55.23	10.87
Total	44	40	77	54.98	8.03	42	77	54.36	10.11
Parent Hassles Scale									
Community	13	62	113	80.54	15.04	52	106	77.23	17.64
Clinical	31	53	131	87	18.7	52	139	83.42	21.04
Total	44	53	131	85.09	17.77	52	139	81.59	20.09
Conflict									
Community	13	33	60	45.46	10.99	33	65	45	11.06
Clinical	31	33	75	43.61	10.2	33	70	45.52	10.09
Total	44	33	75	44.16	10.35	33	70	45.36	10.26

One to Time Two, $F(1, 42) 5.80, p < .05$, although it was a small effect size (eta-squared = .12). The two groups at Time One were very similar, however, at Time Two the two groups diverged. Overall, the clinical group showed an increase in oppositional behaviour from Time One to Time Two. At Time One, mothers in the clinical group rated their children's oppositional behaviour such that scores ranged between 41 and 65 ($M = 53.32, SD = 6.66$). These same mothers rated their children's oppositional behaviour between 40 and 86 at Time Two indicating that their children were showing more oppositional behaviours overall at Time Two ($M = 56.71, SD = 11.01$).

Overall, mothers in the community group rated their children as showing a reduction in oppositional behaviour from Time One to Time Two. Mothers in the community group at Time One rated their children's behaviour between 44 and 63 ($M = 54.54, SD = 5.59$). These same mothers within the community group rated their children's oppositional behaviour between 39 and 68 ($M = 52.46, SD = 6.97$) at Time Two.

From a qualitative perspective, it is useful to understand how many mothers in each group rated their children as displaying oppositional behaviour at a clinical level. At Time One, there were four participants in the clinical group who had a standard score of 62 or higher on the Conners' Oppositional subscale. In fact, they ranged between standard scores of 62 and 65 ($M = 63, SD = 1.5$). This is an indication that the behaviour may be considered clinically problematic. In the community group at Time One, two participants scored in the clinical range, both of whom had a standard score of 63. No children in either sample were rated by their mothers as exhibiting low challenging behaviour at Time One. The results of a 2 (group) X 2 (clinically significant) Chi-squared analysis it was demonstrated that there was no significant

difference between the two groups in the number of children rated at the clinical level and not at the clinical level at Time One, $\chi^2 (1, N = 44) = .048, p > .05$.

At Time Two, there were 10 mothers who rated their children's behaviour above the 61 clinical cut off criterion. Nine of these children were in the clinical group with standard scores ranging between 65 and 86 ($M = 70, SD = 7.0$). In the community group, one mother rated her child as showing high oppositional behaviour problems with a standard score of 68. Within the clinical group no mothers rated their children as exhibiting low problem behaviour, while one mother in the community group rated her child as showing little behavioural challenge (score of 39). The results of a 2 (group) X 2 (clinically significant) Chi-squared analysis demonstrated that there was no significant difference between the two groups in the number of children rated at the clinical level and not at the clinical level at Time Two, $\chi^2 (1, N = 44) = 2.375, p > .05$.

Regardless of group affiliation, a Chi-squared analysis showed the number of mothers at Time One who rated their children as showing clinical oppositional behaviour was not significantly different than the number of mothers at Time Two who rated their children as displaying clinically significant oppositional behaviour, $\chi^2 (1, N = 44) = 3.088, p > .05$.

CPRS-R:S ADHD Index. The results of a 2 (time) X 2 (group) repeated measures ANOVA demonstrated that there was no significant difference between the clinical and community group scores on the ADHD Index scale, $F (1, 42) .298, p > .05$. There was no significant difference from Time One to Time Two regardless of group affiliation, $F (1, 42) .85, p > .05$. Finally, there was no significant difference within the two groups from Time One to Time Two, $F (1, 42) 1.2, p > .05$. As Table 1 describes, mothers in the clinical group at Time One ranged in their ratings of their children's ADHD behaviour between 40 and 71 ($M = 55$,

$SD = 7.65$). At Time Two, these mothers scored their children between 42 and 77 ($M = 55.23$, $SD = 10.87$). Mothers in the community group rated their children between 45 and 77 ($M = 54.92$, $SD = 9.19$) at Time One. At Time Two, these mothers rated their children between 43 and 68 ($M = 52.31$, $SD = 8.03$).

Nevertheless, the following qualitative description provides a useful overview of the number of children identified as having ADHD behaviours who scored at a clinical level. During the Time One data collection, of 44 families, 8 families in the clinical group rated their preschool children as showing ADHD behaviour symptoms who scored at the clinical level. The standard scores for these children fell between 62 and 71 ($M = 65$, $SD = 3.02$). There were two families in the community group who indicated that their preschool child exhibited clinical level ADHD symptomatology at Time One. These two children's standard scores were 68 and 77 respectively ($M = 72$, $SD = 6.36$). Also at Time One, there were no families in either the clinical or the community group who rated the target child's behaviour below 39. The results of a 2 (group) X 2 (clinical significance) Chi-squared analysis demonstrated that there was no significant difference between the two groups in the number of children whose scores fell in the clinical range and not in the clinical range at Time One, $\chi^2(1, N = 44) = .566, p > .05$.

During the Time Two collection, there were ten mothers in the clinical group who rated their children as displaying a clinical level of ADHD behaviour. These children had standard scores that fell between 62 and 77 ($M = 69$, $SD = 5.77$). Within the community group, there were only two children who had a standard score rating of either 66 or 68 ($M = 67$, $SD = 1.41$). As in the Time One data, no families in either group rated their children below the low behaviour cut off criterion on the ADHD Index subscale. The results of a 2 (group) X 2 (clinical significance) Chi-squared analysis demonstrated that there was no significant difference between the two

groups in the number of children whose scores fell in the clinical range and not in the clinical range at Time Two, $\chi^2 (1, N = 44) = 1.315, p > .05$.

Regardless of group affiliation, the number of mothers who indicated that their children showed clinical level ADHD behaviours was not significantly different than the number of mothers at Time Two who indicated the same thing, $\chi^2 (1, N = 44) = .518, p > .05$.

Parenting Daily Hassles Scale. The results of a 2 (time) X 2 (group) repeated measures ANOVA demonstrated that there was no significant difference between the clinical and community group scores on the Parenting Daily Hassles Scale, $F (1, 42) 1.15, p > .05$. As well, no significant difference was found from Time One to Time Two regardless of group affiliation, $F (1, 42) 2.72, p > .05$. Finally no significant difference was found within the two groups from Time One to Time Two, $F (1, 42) .004, p > .05$.

This scale has not been normed; therefore, there are no standard scores for this particular measure so raw scores were used in the calculations. As explained in the description of the measures, the scores for this measure were combined to generate a global score of parenting hassles within families who have preschool children with and without communication delays. Therefore, the total minimum score for this measure was 40 points with a total possible score of 180 points. Responses from mothers in the clinical group at Time One ranged from 53 to 131 ($M = 87, SD = 18.7$). At Time Two, the scores of these mothers ranged between 52 and 139 ($M = 83.42, SD = 21.04$). Scores for mothers in the community group at Time One ranged from 62 to 113 ($M = 80.54, SD = 15.04$). When mothers were asked again to rate the daily hassles at Time Two, their scores ranged between 52 and 106 ($M = 77.23, SD = 17.64$).

Family Environment Scale: Conflict. Even though this measure has multiple subscales, for this study only the conflict subscale was examined. The results of a 2 (time) X 2 (group)

repeated measures ANOVA demonstrated that there was no significant difference between the clinical and community group scores on the Family Environment Conflict Scale, $F(1, 42) .403$, $p > .05$. As well, there was no significant difference from Time One to Time Two regardless of group affiliation, $F(1, 42) .36$, $p > .05$. Finally, no significant difference was found within the two groups from Time One to Time Two, $F(1, 42) .97$, $p > .05$.

This particular scale ranged from a possible standard score of 33 to 80 with the mean of 50. At Time One of the data collection, the clinical group scores ranged between 33 and 75 with a mean score of 43.61 ($SD = 10.2$). At Time Two, mothers in this group rated their family conflict between 33 and 70 ($M = 45.52$, $SD = 10.09$). At Time One, mothers in the community group rated their family conflict from 33 to 60 with a mean score of 45.46 ($SD = 10.99$). At Time Two, the standard scores for mothers in this group ranged from 33 to 65 ($M = 45$, $SD = 11.06$).

Correlations among Variables

Zero order correlations were calculated among the descriptive variables, predictor variables, and outcome variables. These are shown in Table 2.

Correlations among demographics and predictor variables. There was a negative correlation between mothers' age at Time Two and ADHD change raw scores ($r = -.355$, $p < .05$) with a mean change score of 0.2 ($SD = 5.77$). This finding means there was an inverse relationship between mothers' age and reports of degree of change, meaning, children of older mothers changed less on ADHD scores than children of younger mothers.

Correlations among predictors. It comes as no surprise that Oppositional behaviour at Time One was significantly positively correlated with ADHD behaviours at Time One ($r = .55$, $p < .05$). Similarly, there was a significant positive correlation between the Oppositional change raw score and the ADHD Index change raw score ($r = .436$, $p < .001$). There was also a

Table 2

Zero Order Overall Correlations Among Each of the Descriptive Variables and Predictor Variables ($N = 44$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Global Hassles change raw score ^a	1	0.066	0.217	-0.139	0.166	-0.092	0.003	0.319*	0.047	0.053	0.063	0.185	.484**	0.212
2 Child's Gender		1	0.198	-0.14	0.044	-0.04	0.089	-0.275	0.152	0.269	0.019	0.129	0.07	0.203
3 Child's Age (mo). At T1			1	.764**	0.239	0.155	0.169	0.028	0.015	0.065	0.068	0.222	-0.278	0.068
4 Child's Age (mo) At T2				1	0.16	0.136	0.035	0.127	0.094	0.025	0.107	0.082	-0.213	0.029
5 Mom Age (yrs) At T1					1	.942**	0.15	0.011	0.025	-0.04	0.225	0.188	-0.266	-0.191
6 Mom Age (yrs) At T2						1	0.197	0.064	0.053	0.034	0.214	0.311	-0.355*	-0.174
7 Mom Education							1	.301*	0.104	.299*	0.001	0.086	0.046	-0.099
8 Family Income at T2								1	0.038	0.016	0.107	0.168	0.015	0.237
9 Oppositional total raw score at T1									1	.550*	0.018	0.218	0.25	-0.172
10 ADHD Index total raw score at T1										1	0.078	-0.18	0.055	-.307*
11 Conflict total raw score at T1											1	0.188	-0.066	.333*
12 Oppositional change raw score												1	.436**	0.19
13 ADHD Index change raw score													1	-0.021
14 Conflict change raw score														1

^aDependent Variable: Global Hassles change raw score

Note: T1 is represents Time One and T2 represents Time Two

* $p < .05$ ** $p < .001$

significant positive correlation between Conflict at Time One and the Conflict change raw score variable ($r = .333, p < .05$). There was a significant negative correlation between ADHD Index at Time One and Conflict change raw score ($r = -.307, p < .05$).

Correlations between the outcome variable and other variables. A significant positive correlation was found between the Global Hassles change score and the Family Income at Time Two variable ($r = .319, p < .05$). This result means that a higher Time Two income was correlated with a higher positive Hassles change score.

Child Behaviour and Family Conflict as Predictors of Parental Stress

A hierarchical multiple regression was used to examine whether the change in mothers' reports of child behaviour challenges and family conflict were related to the change in mothers' stress as measured by the Daily Hassles scale. In order to avoid the violation of the minimum ratio of cases to variable assumption but still understand the relationship between the predictor variables and the dependent variable, the clinical and community groups were amalgamated; therefore, the sample consisted of 70% ($n = 31$) of children with a communication delay. If the groups had been bifurcated, then the community group's results would have been of questionable value because of the small sample size ($n = 13$). Unfortunately, for this reason it was not possible to address the between group differences in the proposed model.

In the multiple regression analysis, change scores were used. The change of individuals' scores is the difference between the first and last testing (Gupta, Srivastava-Ncert, & Sharma, 1988). There are many issues concerning the use of change scores. In particular, there are criticisms that surround the issue of reliability of change scores. According to Lord (1956) "differences between scores tend to be much more unreliable than the scores themselves" (p. 429). Another criticism is the issue of regression effects. However, Rogosa and Willett (1983)

have demonstrated that change scores are indeed reliable in some situations. In fact, Rogosa and Willett stated that the “difference score cannot detect individual differences in change that do not exist, but it will show good reliability when individual differences in true change are appreciable” (p. 341). Rogosa and Willett went on to state that when individual differences in change are not small, the reliability of the scores is respectable. As well, the issue of low reliability of change scores does not necessarily mean lack of accuracy. To elaborate, reliability indicates consistent results over time. However, accuracy of these results means to be precise at a particular point in time. Thus, one can be accurate at a specific point in time, however, if asked the same questions again and the results have changed, then the answers are not reliable. As Rogosa and Willett have demonstrated, the use of change scores can be an accurate measure of individual change within low reliability situations.

Another common criticism of the use of change scores is that pre-test or post-test scores can influence the change score. For instance, if inaccurate answers were given at pre-test, then that inaccuracy also influences in the change score. However, this same misrepresentation may happen even if a repeated measures ANOVA was used. Allison (1990) said the “change score method is equivalent to a repeated measures analysis of variance in which a test for an effect of X on Y is achieved by testing the interaction of X with the within-subject factor” (p. 94). After careful consideration it was determined that the use of change scores was appropriate in the present study.

Prior to analysis, an analytic examination of each of the variables used was completed in order to obtain the total raw scores: The CPRS-R:S (Oppositional total raw score at Time One, ADHD Index total raw score at Time One, Oppositional change raw score, ADHD change raw

score)³, The Hassles Measure (Global Hassles change raw score)⁴ and The Family Environment Scale (Conflict total raw score at Time One, Conflict change raw score)⁵. This was conducted to deal with the accuracy of data entry and missing values. A visual check of the data on each of the individual measures revealed that there were data entry errors. If there were participants who had missing values, their total raw scores could not be determined, and subsequently, if applicable, the standard scores would not be available as well. As the Parenting Daily Hassles scale was not normed, the standard scores were not available. Similar results were found when the analysis was run using standard scores of the predictor variables. Therefore, after careful consideration and in the interest of consistency, the decision to use raw scores was made. Only participants who had completed the Conners Scale (Oppositional Subscale and ADHD Index), the Daily Hassles measure and Conflict subscale of the Family Environment Scale in full at Time One and Time Two were included in the analysis⁶.

³ Conners (2000) indicates that if a participant left an answer for an individual item blank on a scale then a score of a 0 is appropriate for that item.

⁴ Case ID 20 and 43 had non-probable scores in the Hassles Frequency and Intensity variable for Time One. There was a missing value for the item dealing with "sibling arguments require a referee". After an examination of the demographics of these families, it was determined these families only had one child therefore, the question did not pertain to this family. Case ID 4, 37, 40 had non-probable scores in the Hassles Frequency variable for Time Two. There was a missing value for the item involving siblings. After an examination of the demographics for these families taken at Time Two, it was determined these families only had one child at the time of the study. In each of these cases, a score of zero was substituted for the missing value. A score of one ("*rarely*") is not an accurate depiction for these families, as this is an indication that this event still happens.

⁵ Because there are only nine items that make up the Conflict subscale, if there were missing data then a substitution could not be used as this substitution would account for 11% of the total raw score. Therefore, it may not be an accurate depiction of the family. No substitutions were made for these participants.

⁶ A decision was made to use only cases with complete data sets on the three target assessment tools. A filter was created to help sort out the cases that did not have enough data to pursue analysis. In addition, after thorough examination of the data it was found that there were cases that the filter eliminated because some of the data could not be converted to standard scores (e.g.,

After the data entry errors had been corrected, each of the subscales was tallied to obtain a total raw score and total standard scores, if applicable, were then determined. Once the Time One and Time Two scores were determined, Time Two scores were subtracted from Time One scores (Time One minus Time Two) to determine the change in raw scores. If the change was negative, then it was an indication that Time Two scores were higher than Time One scores⁷ (i.e., increase over time). If the change was positive, Time Two scores were lower than Time One scores (i.e., decrease over time).

A hierarchical multiple regression was conducted by regressing Global Hassles change scores on child behaviour (CPRS-R Oppositional subscale and ADHD Index scores) and Family Conflict change scores. In each step of the regression, a different predictor variable was used. The Time One Oppositional subscale, ADHD Index and Family Conflict raw scores were used as the covariates. The effects of the independent variables were hierarchically ordered. The first entry in the hierarchal regression model was evaluated and controlled for before the evaluation of the other predictor variables that were entered later in the regression model (Tabachnick & Fidell, 2001b). Therefore, preschool children's Oppositional Time One, ADHD Index Time One and Conflict Time One raw scores were put in the first model. This was done because it was

Case ID 100). Therefore the author manually converted these cases and included in the analysis. Mean substitution was considered for cases where participants were missing some data points. However, after the author looked at the participants with missing values, it was noted that all participants with missing values had a total of three or more variables missing across all measures. Thus, if mean substitution was to be used for three items on a scale that had nine items, then mean substitution would account for 33% of the total scale score. This could be an inaccurate representation of the participant and the data. Therefore, mean substitution was not conducted.

⁷ If the change score was determined, then that participant had completed the measures in full from Time One to Time Two and the same analytical treatment procedures were already conducted with each phase of data collection.

important to control for children's Time One raw scores in order to evaluate the association among the change predictor variable scores on The Global Hassles change scores.

An analysis was completed using SPSS REGRESSION and SPSS EXPLORE for evaluation of the assumptions. Results indicated that no violations among the assumptions occurred (normality⁸, linearity, homoscedasticity⁹).

With the use of mahalanobis distance, an outlier was found (Case ID 74) and removed from further analysis ($N = 45$). At Time One, the target child in this family, who was part of the clinical group, was 3.25 years old and at Time Two she was 5.33 years old. However, she was removed from further analysis as this particular participant was considered a multivariate outlier. With the use of a Chi-squared critical value of 22.46 ($p < .001$ with six variables), it was determined that this participant's mahalanobis distance was above the cut off with a score of 23.76. Although just slightly above the critical cut off score, this participant was an outlier on the Oppositional total raw score at Time One and the ADHD change raw scores. At Time One, her total oppositional score was 13. Compared to the sample, her standard score of 84 was very high.

⁸ To determine normality, the distributions of residuals against Random Numbers were tested. Random Numbers were used as outcome variables and the same predictor variables were used as they would be in the final regression model. A histogram revealed that the residuals were normally distributed. A second way of confirming that normality was met, as prescribed by Norušis (2006), was examining the normal PP Plots. For each variable, skewness and kurtosis were within their normal limits between ± 1 . Tabachnick and Fidell (2001a) say, if this assumption of normality is met at this level, then there is no reason to check the individual variables.

⁹ "Homoscedasticity is related to the assumption of normality because when the assumption of multivariate normality is met, the relationship between variables are homoscedastic" (Tabachnick & Fidell, 2001a, p. 79). When the variability in the scores is roughly the same at all levels of another variable homoscedasticity is met. However, if the spread of the scores is not the same, the scores are then said to be heteroscedastic; therefore, the assumption of homoscedasticity has failed (Tabachnick & Fidell, 2001a; Norušis, 2000). The spread of the residuals appears constant over the range of the predicted values, thus complying with the homoscedasticity assumption.

The parent's perception of her child's ADHD Index score at Time One was nine points (a standard score of 56) and at Time Two her mother felt that her daughter had an increase in ADHD symptomatology as her score was 28 points (a standard score of 90). After the removal of this outlier, the assumptions were checked again.

Tabachnick and Fidell (2001b) indicated that, more often than not, multivariate outliers would be masked by other multivariate outliers. Therefore, when the first few cases are identified and removed, the data set becomes more consistent and more cases are shown to be extreme; thus it was suggested to screen for multivariate outliers and run the assumptions multiple times (Tabachnick & Fidell, 2001b). Based on this recommendation, the assumptions were completed again with the first outlier removed.

As a result, another multivariate outlier was found (Case ID 46) and was removed from analysis ($N = 44$). This parent-child dyad was part of the clinical group. At Time One, the target child was 4.75 years old, and at Time Two he was 7.83 years old. However, this pair was removed from the analysis as this particular participant was considered to be a multivariate outlier. When a Chi-squared critical value of 22.46 ($p < .001$ with six variables) was used, it was determined that this participant's mahalanobis distance was above the cut off with a score of 26.28. The child's score was unique on two variables: the Oppositional total raw score at Time One and Oppositional change raw score. At Time One, his Oppositional total raw score was 13 points (a standard score of 73), and at Time Two his oppositional score improved to a score of three points (a standard score of 47). Thus, his Oppositional change raw score was ten points. This led to the conclusion that this participant's oppositional behaviour reportedly was better at

Time Two. Once this second outlier was removed, the assumptions were then checked once more. No new multivariate outliers were found¹⁰.

Before a regression analysis was performed, the possibility of singularity and multicollinearity¹¹ was checked. According to the collinearity diagnostics, it was found that the Conners Oppositional subscale and the ADHD Index were measuring similar things. However, after the author assessed the individual items in each of these scales, it was determined that they were indeed measuring different variables. Therefore, it was decided to keep both variables in the model. All of these assumptions (normality, linearity and homoscedasticity, outliers, and multicollinearity) were tested once more against the dependent variable, Global Hassles change scores. Each of these assumptions was met with the dependent variable.

SPSS REGRESSION procedures were utilized to explore whether change in child behaviour and change in family conflict predict the change in mothers' hassles (stress). The regression was initially run with age and gender as part of the regression model. There are often effects with age and gender on behaviour challenges. For instance, ADHD behaviours are often higher among boys (Kronenberger & Meyer, 2001). As well, as shown in the literature review, behavioural challenges often change with age of children (Campbell, 2002). However, these two variables were found to be not significant, similar to the findings of Keenan and Shaw (1994). Therefore, in order to preserve the variable to ratio assumption, they were eliminated from the model.

¹⁰ A regression analysis was completed with these two participants included. No difference was found in the results when they were and were not included.

¹¹ Multicollinearity and singularity issues occur if variables are too highly correlated (Tabachnick & Fidell, 2001b). These authors suggest a high correlation is .9 and above.

Table 3 displays the unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), R , R^2 , and adjusted R^2 . Additionally, the reported F value after every step in the regression model is reported in the table. In step one, the Oppositional total raw scores at Time One, ADHD Index total raw scores at Time One, and Conflict total raw scores at Time One were entered. This step in the regression model accounted for 0.7% of the variance in the Global Hassles change score and was found to be not significant, (adjusted R^2 -.068) $F(3, 43) = .09, p > .05$. It was found that there was no significant relationship among the predictors entered in step one and the dependent variable. Therefore, the null hypothesis was not rejected indicating that Time One Oppositional scores, Time One ADHD Index raw scores and Time One Conflict raw scores did not predict the Global Hassles change scores.

The effects of the change scores of the same variables were examined in step two of the regression procedures. In step two of the regression model, the Oppositional change raw scores, ADHD Index change raw scores, and Conflict change raw scores were entered. Overall, this step accounted for 35% of the variance in the Global Hassles change raw scores (adjusted R^2 0.245) $F(6, 43) = 3.322, p < .01$.

While this analysis does not allow for conclusions to be drawn concerning causal relationships among factors, it was evident that change in the ADHD raw scores predicted a portion of the overall change in the mothers' Daily Hassles raw scores. In other words, compared to the other variables, the greater the change in children's ADHD symptomatology, as perceived by the mothers, the greater the change in the mothers' Daily Hassles scores $\beta = .634, p < .001$. When children's ADHD behaviours decreased, then so did the mothers' stress scores. When children's ADHD behaviours scores increased, then so did the mothers' stress scores. The

Table 3

Change in Child Behaviour and Change in Family Conflict Predicting Change in Daily Hassles (N = 44)

Variable	B	SE B	β	R	R ²	Adjusted R ²	R ² Changed	F
Step 1								
(Intercept)	5.897	-5.568						
Oppositional total raw score at Time One	-0.158	1.071	-0.028					
ADHD Index total raw score at Time One	-0.076	0.433	-0.033					
Conflict total raw score at Time One	-0.386	1.025	-0.06	0.083 ^a	0.007	-0.068	0.007	0.092
Step 2								
(Intercept)	10.349	5.014						
Oppositional change raw score	-1.101	0.84	-0.219					
ADHD Index change raw score	1.375	0.351	0.634**					
Conflict change raw score	2.917	1.429	0.318*	0.592 ^b	0.35	0.245	0.343	3.322*

^a Predictors: Predictors: (Constant), Conflict total raw score Time One, Oppositional total raw score Time One, ADHD total raw score Time One.^b Predictors: Predictors: (Constant), Conflict total raw score Time One, Oppositional total raw score Time One, ADHD total raw score Time One, Oppositional change raw score, ADHD change raw score, Conflict change raw score.^c Dependent Variable: Global Hassles change raw score.* $p < .05$ ** $p < .001$

second largest predictor of change in mothers' Daily Hassles scores was the change in Family Conflict scores ($\beta = .318, p < .05$). If the mothers' family conflict scores decreased, so did their stress scores. If the mothers' family conflict scores increased, then so did their stress scores. The only non-significant variable in this step was the Oppositional change raw score. It was found that the change in Oppositional scores did not predict the Global Hassles change raw scores ($\beta = -0.219, ns$).

A Post Hoc Analysis: Testing for Mediation Effects

The possibility of a mediation model was also tested as a post hoc analysis. As the literature suggested, there could be a mediation effect between variables on change in parental stress: Deater-Deckard (1998) said a relationship existed between parental stress and child behaviour problems and was mediated by parenting behaviour. The overarching mediation model that was tested is shown in Figure 2. As in the hierarchical multiple regression model, the change in behaviour was bifurcated (Oppositional and ADHD behaviour). Therefore, two potential mediation models were tested.

As recommended by Baron and Kenny (1986), a series of standard regression analyses were performed. A mediation effect is said to exist only if four preconditions are met: (1) the predictor variable is related to the outcome variable (Path A) (Regression One); (2) the predictor variable is related to the mediator variable (Path B) (Regression Two); (3) the mediator is related to the outcome variable (Path C) (Regression Three); and (4) the predictor and mediator variables are evaluated simultaneously with the outcome variable. If the predictor variable is not significant, while the mediator variable remains a significant predictor, it is said that there is full mediation. Partial mediation is said to exist when there is a significant reduction in the

relationship between the predictor variable and the outcome variable, while the mediator remains a significant predictor (Regression Four).

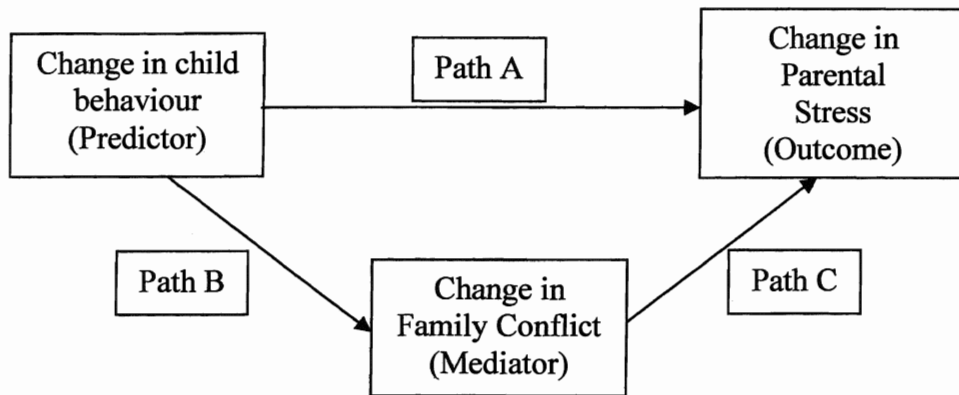


Figure 2

Overall Proposed Mediation Model

The literature suggested that child behaviour (predictor variable) and parental stress (outcome variable) are related (Long et al., 2008) which could satisfy the first condition. As Figure 2 suggests child behaviour is related to family conflict (Campbell et al., 1986; Goldstein et al., 2007) which satisfies the second condition. Based on Marin's (2007) work there was a correlation between conflict and mothers' stress. The association between these two variables was an indication that the third precondition for a mediation model should be met. Once these three conditions are met the fourth condition can be tested. Therefore, with the associations among the variables present within the literature, there was a basis to evaluate whether a mediation model exists against the simultaneous influence model.

Evaluation of Mediation Model One. Each of the preconditions was evaluated using a simple regression model as prescribed by Baron and Kenny (1986). The first model incorporated

change in the Oppositional raw score as the measure of child behaviour predicting change in Parent Hassles, with change in Family Conflict mediating this relationship. The first precondition (Path A) was evaluated with Regression One. The purpose of this regression was to determine if the predictor variable was related to the outcome variable. The Oppositional change raw score was the predictor variable and mothers' stress change score (the Global Hassles change raw score) was the outcome variable. The Oppositional change raw score accounted for 19% of the variance in the Global Hassles change raw score and was found not to be significant, (adjusted $R^2 .034$) $F(1, 43) = 1.49, p > .05$. Therefore, the first precondition was not met.

The second precondition (Path B) was evaluated with Regression Two. The same predictor variable, the Oppositional change raw score, was used to determine if the predictor variable was related to the mediator variable (Conflict change raw score). This regression model found the Oppositional change raw score accounted for 19% of the variance in the Conflict change raw score and was not significant, (adjusted $R^2 .03$) $F(1, 43) = 1.56, p > .05$. Therefore, the second precondition was not met.

The third precondition (Path C) was evaluated with Regression Three. The purpose of this regression was to determine if the mediator variable (Conflict change raw score) was related to the outcome variable (the Global Hassles change raw score). A regression model found that the Conflict change raw score accounted for 21% of the variance in the Global Hassles change raw score and was not significant, (adjusted $R^2 .045$) $F(1, 43) = 1.97, p > .05$. Therefore, the third precondition was not met.

The evaluation of the fourth precondition could not be completed because none of the preconditions were met using the Oppositional change raw score as a predictor variable. Therefore, there was no statistical support for a mediation model.

Evaluation of Mediation Model Two. The second mediation model incorporated the change in ADHD Index raw scores as the measure of child behaviour predicting change in Parent Hassles, with change in Family Conflict mediating this relationship. Regression One, which evaluated the first precondition (Path A), was completed with the ADHD Index change raw score as the predictor variable and mothers' stress change score (the Global Hassles change raw score) as the outcome variable. The ADHD Index change raw score accounted for 48% of the variance in the Global Hassles change raw score and was found to be significant, (adjusted R^2 .234) $F(1, 43) = 12.84, p < .001$. Therefore, the first precondition was met.

The second precondition (Path B) was evaluated with Regression Two. The same predictor variable, ADHD Index change raw score, was used to determine if the predictor variable was related to the mediator variable (Conflict change raw score). The ADHD Index change score accounted for 2% of the variance in the Conflict change score and was not significant, (adjusted R^2 .0004) $F(1, 43) = .01, p > .05$. Therefore, the second precondition was not met.

The third precondition (Path C) was evaluated with Regression Three. As indicated above, the purpose of this regression was to determine if the mediator variable (Conflict change raw score) was related to the outcome variable (the Global Hassles change raw score). This regression model found the Conflict change raw score accounted for 21% of the variance in the Global Hassles change raw score and was not significant, (adjusted R^2 .045) $F(1, 43) = 1.97, p > .05$. Therefore, the third precondition was not met.

Even though the first precondition was met using the ADHD Index change raw score as the predictor variable, the second and third preconditions were not met. Therefore, the final

precondition could not be evaluated and thus there was no statistical support for a mediation model.

Time One and Time Two Mediation Model Effects.

The mediation models presented above are a reflection of the change scores. In order to be thorough, Time One variables were used to test if a mediation model was present. As well, it was important to evaluate the Time Two variables in order to have a complete understanding of the data presented within this project.

Evaluation of Mediation Model Three. The third mediation model incorporated the Oppositional raw scores at Time One as the measure of child behaviour predicting Parent Hassles at Time One, with Family Conflict at Time One mediating this relationship. The first precondition (Path A) was evaluated with Regression One. The Oppositional total raw score at Time One was used as the predictor variable and the Global Hassles total raw score at Time One was used as the outcome variable. This model accounted for 44% of the variance and was significant, (adjusted R^2 .173) $F(1, 43) = 10.00, p < .01$. Therefore the first precondition was met.

The second precondition (Path B) was evaluated with Regression Two. It was the intention of this regression to determine if the predictor variable (the Oppositional total raw score at Time One) was related to the mediator variable (Conflict total raw score at Time One). This model accounted for 2% of the variance and was found to be not significant (adjusted R^2 .001) $F(1, 43) = .03, p > .05$. Therefore, the second precondition was not met. Thus, there was no statistical support for this mediation model.

Evaluation of Mediation Model Four. The fourth meditation model incorporated the ADHD Index total raw scores at Time One as the measure of child behaviour predicting Parent

Hassles at Time One, with Family Conflict at Time One mediating this relationship. The first precondition (Path A) was evaluated with Regression One. The ADHD Index total raw score at Time One was used as the predictor variable and the Global Hassles total raw score at Time One was used as the outcome variable. This regression found the ADHD Index total raw score at Time One accounted for 50% of the variance and significant, (adjusted R^2 .245) $F(1, 43) = 13.65, p < .001$. Therefore, the first precondition was met.

The second precondition (Path B) was evaluated by Regression Two. It was the intention of this regression to determine if the predictor variable (the ADHD Index total raw score at Time One) was related to the mediator variable (Conflict total raw score at Time One). This model accounted for 7% of the variance and was not significant (adjusted R^2 .006) $F(1, 43) = .24, p > .05$. Thus, the second precondition was not met and there was no statistical support for a mediation model using the Time One predictor variables.

Evaluation of Mediation Model Five. The fifth mediation model incorporated the Oppositional total raw scores at Time Two as the measure of child behaviour predicting Parent Hassles at Time Two, with Family Conflict at Time Two mediating this relationship. The first precondition (Path A) was evaluated with Regression One. The Oppositional total raw score at Time Two was used as the predictor variable and mothers' stress (Global Hassles raw score at Time Two) was used as the outcome variable. This regression model found the Oppositional total raw score at Time Two accounted for 56% of the variance in the Global Hassles total raw score at Time Two and was significant, (adjusted R^2 .305) $F(1, 43) = 19.84, p < .001$. Therefore, the first precondition was met.

The second precondition (Path B) was evaluated with Regression Two. The Oppositional total raw score at Time Two was used as the predictor variable and Conflict total raw score at

Time Two was used as the outcome variable. This regression model found the predictor variable accounted for 30% of the variance in the Conflict total raw score at Time Two and was significant, (adjusted R^2 .067) $F(1, 43) = 4.09, p < .05$. Therefore the second precondition was met.

The third precondition (Path C) was evaluated with Regression Three. This step was to determine if the potential mediator variable (the Conflict total raw score at Time Two) was associated with the Global Hassles total raw score at Time Two. This regression model revealed the Conflict total raw score at Time Two accounted for 35% of the variance in the Global Hassles total raw score at Time Two and was significant, (adjusted R^2 .125) $F(1, 43) = 6.02, p < .01$. Therefore, the third precondition was met.

With the first three preconditions met the fourth precondition was evaluated with Regression Four. The predictor (Oppositional total raw score at Time Two) and mediator variable (Conflict total raw score at Time Two) were evaluated simultaneously with the outcome variable (Global Hassles total raw score at Time Two). If the predictor variable was not significant, while the mediator variable remained a significant predictor, it could be said that full mediation was present. Although the regression itself was significant, (adjusted R^2 .358) $F(1, 43) = 11.45, p < .001$, the predictor variable remained significant ($\beta = .506, p < .001$) and the mediator variable was no longer significant ($\beta = .203, ns$). Therefore, even though the first three preconditions were met the fourth precondition was not met. Thus, there was no statistical support for this mediation model.

Evaluation of Mediation Model Six. The sixth and final mediation model incorporated the ADHD Index total raw scores at Time Two as the measure of child behaviour predicting Parent Hassles at Time Two, with Family Conflict at Time Two mediating this relationship. The first

precondition (Path A) was evaluated by Regression One. The ADHD Index total raw score at Time Two was used as the predictor variable and mothers' stress (Global Hassles raw score at Time Two) was used as the outcome variable. This regression model found the ADHD Index total raw score at Time Two accounted for 53% of the variance in the Global Hassles total raw score at Time Two and was significant, (adjusted R^2 .262) $F(1, 43) = 16.30, p < .001$. Therefore, the first precondition was met.

The second precondition (Path B) was evaluated with Regression Two. The ADHD Index total raw score at Time Two was used as the predictor variable and Conflict total raw score at Time Two was used as the outcome variable. This regression model found the predictor variable accounted for 24% of the variance in the Conflict total raw score at Time Two and was not significant, (adjusted R^2 .037) $F(1, 43) = 2.66, p > .05$. Thus, the second precondition was not met. Therefore, there was no statistical support for this mediation model using Time Two predictor variables. The author of the study came to the conclusion that there was no statistical evidence to support any of the tested mediation models using Time One, Time Two or Change score variables.

Discussion

The aim of this study was to determine whether change in parents' stress, as conceptualized by the parenting Daily Hassles scale, was predicted by the change in behavioural challenges of their preschool children with and without communication delays and by change in family conflict over a two-year period. It was hypothesized that change in child behaviour would predict change in mothers' stress and that change in conflict would also predict change in mothers' stress. It was also hypothesized that change in family conflict would be correlated with change in child behaviour. Regrettably, because of the high attrition rate in the community

sample at Time Two, a meaningful between groups comparison was not possible. However, because of the continued interest in examining whether child behaviour and family conflict predict parents' stress levels, the data from the community and clinical groups were combined in the analysis of this conceptual model.

The Parental Stress, Child Behaviour and Family Conflict Model

The results of this study showed that change in mothers' reports of stress was predicted by change in their children's challenging behaviour scores, specifically ADHD behaviours, and by change in Family Conflict scores. In fact, it was found that, when children displayed an increase in ADHD behaviours, or if there was an increase in family conflict, then there was an increase in mothers' perceived parenting stress. The opposite also held true. Decreased child ADHD behaviours or decreased family conflict, as perceived by the mothers, was related to a decrease in mothers' level of parenting stress. Each of these predictors contributed uniquely to the prediction of change in stress, independent of any shared variance between the predictors.

Deater-Deckard (1998) demonstrated that parental stress predicts child behaviour problems but that this relationship is mediated by parenting behaviour. The author of this study found the opposite relationship: change in child behaviour predicts change in mothers' stress. However, in this study this relationship was not mediated. The literature supports that children's problem behaviour is often related to poorer developmental outcomes, in areas including academic performance and social difficulties (Long et al., 2008). Now, based on the findings from the present study, it can be added that change in children's problem behaviour may also be related to change in parents' mental health in terms of perceived stress related to parenting.

While the design of the study does not allow for determination of causal relationships among the factors, the finding that change in child behaviour relates to change in parental stress

does appear to support the importance of early identification and intervention with regard to child behaviour concerns. The cycle of child problem behaviour and parental stress, that is now established by Deater-Deckard (1998) and by the findings of this study, needs to be addressed. In fact, Matos, Bauermeister, and Bernal (2009) conducted a study with preschool children aged four to six years who were diagnosed with ADHD. They wanted to understand if parents who used the Parent-Child Interaction Therapy would report less significant child behaviour problems, lower levels of parenting stress, and the use of more positive parenting practices compared to a waitlist control group. Results showed that there were significant differences between the two groups. Mothers who used the Parent-Child Interaction Therapy reported a significant reduction in their child's ADHD behaviour, as well as a reduction in parent-child related stress and improved parenting practices. This family-centred approach demonstrated positive results and is an example of the kind of early intervention that may be effective in altering the cycle of child behaviour problems and parental stress described above.

In the present study the author also found that change in family conflict predicts change in mothers' stress. This particular finding was similar to those of Marin (2007) and Lee et al. (2003). Marin found a positive correlation between family conflict and mothers' stress levels. Lee et al. (2003) reported that family conflict, among other variables, predicted mothers' stress levels. They found that family conflict, cohesion and parenting daily hassles accounted for 57% of mothers' role strain. This supports the hypothesis underlying the proposed model in the present study.

Very little research has been conducted examining the relationship between family conflict and parental stress longitudinally among families with preschool children. Marin (2007) found that mothers who report high levels of family conflict and have high levels of parenting

stress are less likely to engage in positive exchanges (e.g., warm, sensitive, affectionate) with their children. According to Marin, these mothers are more likely to interact with their children in an intrusive, harsh, and insensitive manner. In fact, using structural equation modelling McKelvey, Fitzgerald, Schiffman, and Von Eye (2002) have shown that mothers who have lower levels of family stress, characterized as “satisfaction with the partner and conflict within the family”, and a measure of family economic need, engage in more positive interactions with their infants (p. 176). These findings, with the results of the present study, underscore the importance of early intervention to address family conflict in an effort to reduce parental stress and, by extension, to improve the quality of interaction between parents and children.

It is surprising that change in child oppositional behaviour did not predict change in mothers' stress. One possible reason is that we had six participants who were below the age range for the CPRS-R:S at Time One. These children ranged from 27 to 35 months of age. The CPRS-R:S is normed for use with children three years of age and older. In order to compensate for this procedural issue, the measure was still scored but using the lowest age category available. However, when doing this there was diminished measure sensitivity for behaviours in this group of children who fell outside the norm range for the measure. These participants were still in the lowest age category of the measure at Time Two again which may have affected the results. However, this was true not only for the Oppositional subscale but also for the ADHD Index for which, despite what may be a limitation of the measure, there was a significant predictive relationship with change in mothers' stress.

Finally, the results do not indicate that there was a relationship between the change in ADHD Index and change in Oppositional scores with change in Family Conflict scores. However, there was a negative correlation between ADHD Index scores at Time One and

Conflict change raw scores. The higher the ADHD scores at Time One, the more negative the Family Conflict change score. Since the change was calculated by subtracting Time Two scores from Time One scores a negative change means the conflict got worse over time. This finding suggests that higher ADHD Index scores at Time One were correlated with an increase in Family Conflict scores from Time One to Time Two. Lower Time One ADHD Index scores were correlated with a decrease in Family Conflict change scores.

Child Behaviour Change Over Time by Group

While the specific hypotheses related to between-group differences for the main model could not be addressed due to the attrition in the sample, there was an opportunity to complete an analysis by measure of possible between-group differences. There was only one significant finding. The results of the within-groups analysis of the Oppositional subscale revealed an interesting difference from Time One to Time Two. While there was no difference between the groups at Time One or Time Two, within the groups the clinical group's Oppositional scores increased significantly and the community group's Oppositional scores decreased significantly over time. This is a similar finding to that of Silva et al. (1987) and Beitchman et al. (1996). Silva et al. found children with general language delays and comprehension delays had significantly higher parent- and teacher-rated challenging behaviour scores at ages seven, nine, and eleven years when compared with children with expressive delays and children without a language delay. Silva et al. suggested that general language delays and comprehension delays were predictive of the presence of behaviour challenges at various ages. Beitchman et al. also found an association among children with a communication difficulty at age five and continued behavioural problems at a seven year follow up. Regrettably, in the present study, the author was not able to gain access to the files that indicated the type of communication delays diagnosed for

each of the participating children. It is possible that the present sample includes children who have all the communication issues discussed in Silva (1987). However, because of the lack of availability of diagnostic information, an analysis based on children's specific communication delays could not be undertaken. Based on Silva's (1987) work it would be expected that children who have general and comprehensive communication delays would show higher behaviour scores than children with expressive communication problems.

The Mediation Models

Deater-Deckard's (1998) model, in which the relationship between parental stress and child behaviour problems existed was mediated by parenting behaviour, suggested the need to test a mediation model using the variables in the present study. Marin (2007) found an association between conflict and child behaviour, while Goldstein (1986) found an association between conflict and parent stress. Therefore, based on this literature, it was plausible to test whether family conflict mediated the relationship between child behaviour and parent stress in the present study. In this case, the proposed model consisted of change in child behaviour from Time One to Time Two as the predictor variable and change in stress (Global Hassles change score) as the outcome variable with change in family conflict from Time One to Time Two as the mediator. However, there was no statistical support for the proposed mediation model.

One possible explanation for the lack of mediation effect could be the choice of mediator. In the process of examining the variants of the proposed mediation model, an alternative mediator was suggested. An association was found between child Oppositional raw scores at Time Two and family conflict scores at Time Two as shown in Mediation Model Five. Specifically, the Oppositional raw score at Time Two predicted both Global Hassles raw score at Time Two and Family conflict raw score at Time Two. Family Conflict raw score at Time Two

predicted Global Hassles raw score at Time Two. While the mediation relationship between Oppositional and Global Hassles scores in this model was not statistically supported, the results do support the Oppositional score as a mediator between Family Conflict and Global Hassles scores, but only at Time Two. This suggests the possibility of a new relationship as none of the previous literature reviewed discussed a mediation model using child Oppositional behaviour as the mediator between family conflict and parenting stress. Other mediation models could also be investigated to examine the impact of individual factors such as parenting style, income, and nature of parental employment.

Limitations of the Study

Despite the intriguing findings of this study, there are several limitations that should be considered when interpreting these results. The first limitation is the uneven sample size in the clinical and community groups. In order to continue the interest by participants in the study during the two year interval, they were updated with periodic newsletters about the progress of the study, were sent birthday and holiday greetings, and information about upcoming community events. As well, there was a one-year follow-up screening which kept participants connected to the study. When it came time to collect Time Two data, participants were notified, asked if they still wanted to participate in the study and were given reminder phone calls about returning the measures package. This multistep protocol seemed to be effective as 46 families (56%) of the original 82 families participated two years later. However, the uneven attrition that left only 13 community participants with complete sets of data in the selected scales at Time Two proved to be problematic from an analysis perspective.

The second limitation was that the amount of language treatment children received from Time One to Time Two cannot be accounted for within the clinical group. It is known only that

these children must have had one block of speech and language therapy before starting in this study at Time One. The author also had no specific information about any behavioural or mental health interventions that children and/or families may have had during the study. The interview that was part of this study included questions concerning whether families were referred for services but it is not known if they received or even completed the services. Because of the theoretical perspective taken in regard to looking at the relationship between communication delays and challenging behaviour (level two of the phenotype-to-phenotype model: speech and language impairments lead to problem behaviour) knowing the amount of speech and language therapy completed is important. Children who have completed entire speech and language programs may have improved communication skills. Therefore, children who would have been classified as having a communication delay at Time One may or may not be identified as children with a communication delay at Time Two following the completion of therapy. Further, given the work of Carr et al. (1994), change in communication skills may be related to change in behaviour as well. Therefore, in the absence of information about therapy services to which the participating families may have had access, it was not possible to control for possible effects of intervention in this study.

The CPRS – S:R is useful in the clinical context to capture parents' perceptions of their children's behaviour. Although self-report surveys are an established methodology within the literature, a common limitation for studies dealing with human participants and questionnaires could be misinterpretation of the questions, biases and errors in judgment on the part of respondents. These possibilities could influence the results and cause either a Type I or II error. Among the reason why children's challenging behaviour accounts for a high proportion of the variance in parental stress may be a similar concern expressed by Campbell et al. (1986):

“women with a preschooler and other children would be dealing with more demands on a daily basis and might rate their preschooler’s behaviour as more problematic” (Campbell et al., 1986, p. 225) than women with few children. This is similar reasoning to that of Crnic and Greenberg (1990), who suggested that mothers’ level of stress could ultimately impact the frequency of the perceived behaviour problems among their children.

Another reason why the participating parents may score their children high on the Conners behaviour scales is because “parents generally rate children this age [seven years old] higher on oppositional subscales than teachers do; this pattern perhaps occurs because, unlike teachers, parents are not exposed to large numbers of children” (Conners, 2000, p. 43).

According to the Conners’ manual, these can only be offset by skilled clinical judgment and with the combination of other data. It would be interesting to include the perspectives of clinicians, teachers or daycare workers on the target children’s behaviour in addition to those of the parents. On the other hand, since parents react not to the objective behaviour of their children but on the basis of their perception of their children’s behaviour, these apparent inaccuracies may, in fact, be an accurate reflection of the perceptions that underlie their reactions to their children’s behaviour.

Within this study, only the mothers’ interpretations of the target child and family climate were included. There were a few fathers who completed the measures package. However, for consistency, only mothers’ interpretations were used. It would be useful in future to have the opportunity to compare the perceptions of mothers and fathers on these factors.

Strengths, Future Studies and Implications

The results of this study and its limitations discussed above suggest many prospects for future studies. One of the strengths of this study is the fact that data were collected

longitudinally, although over only two points in time. There are very few longitudinal studies which focus on preschool children and mothers' reports of stress. Replication of this study with a larger sample would allow for analysis of group effects and would provide a more accurate depiction of the population. Therefore, a recommendation would be increasing the sample size, specifically for the community group, to allow for inclusion of a between groups analysis.

Availability of children's specific speech and language diagnoses would allow for inclusion of diagnostic category as a variable in future studies. It might also be useful to replicate this study including a group of preschool children at the service intake stage who have had no speech and language therapy. The clinical group in the present study had completed at least one block of therapy before data collection was initiated. This introduces the possibility that the effect of their originally diagnosed communication delay may have been mitigated by intervention before they began the study. Just as a theoretical link has been established between language problems and child behaviour (Carr et al., 1994), it may be that, if the language delay has been reduced, then so too could the behaviour challenges. A final recommendation would be to continue testing the model using a different outcome variable: either conflict or child behaviour. Based on the literature, there is a strong case for pursuing further relationships suggested in this model. In addition, an examination of the possibility of reciprocal relationships among the variables could be productive given the literature on previously established unidirectional relationships (Deater-Deckard, 1998) and correlational relationships (Marin, 2007; Goldstein et al., 2007)

Conclusion

Overall, this study has established that the change in mothers' reports of stress are predicted by the change in their children's behavioural challenges and by change in family

conflict. An implication of this study is the need for service providers to be aware of and to consider the impact of children's behaviour and family conflict on mothers' levels of stress. The added stress of having children with behaviour challenges and dealing with family conflict while also participating in intervention programs with their children may be overwhelming for some. However, as demonstrated by the results of the Parent-Child Interaction Therapy Program (Matos et al., 2009), a family-centred intervention approach can reduce both child behaviour problems and mothers' stress. It is hoped that the results of this research project will inspire service providers and others to see not just the behavioural needs of young children, but also the challenges faced by their mothers. Therefore, a final recommendation is for those who work with the behavioural needs of preschool children to see services from a family-centred perspective.

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Appendix A

Brock University Research Ethics Board Approval

Senate Research Ethics Board

Extensions 3205/3035, Room C315

DATE: May 27, 2002**FROM:** David Butz, Chair

Senate Research Ethics Board (REB)

TO: Linda Rose-Krasnor, Psychology

Diane Dupont, Economics

Jackie Van Lankveld, Speech Services Niagara

Frances Owen, Child and Youth Studies

Anthony Ward, Economics

Shelly Phipps, Dalhousie

Teena Willoughby, Child and Youth Studies

FILE: 01-275, Rose-Krasnor/Dupont/Van Lanveld/Owen/Ward/Phipps/Willoughby**TITLE:** Family Resources Project

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: Accepted as is. (Please provide written confirmation that Speech Services of Niagara has agreed to be involved in this research.)

This project has been approved for the period of May 27, 2002 to December 30, 2002, subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The approval may be extended upon request. ***The study may now proceed.***

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and approved by the REB. The Board must approve any modifications before they can be implemented. If you wish to modify your research project, please refer to www.BrockU.CA/researchservices/forms.html to complete the appropriate form REB-03 (2001) Request for Clearance of a Revision or Modification to an ongoing Application.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects, with the exception of undergraduate projects, upon completion of the project. Researchers with

projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form REB-02 (2001) Continuing Review/Final Report is required.

Please quote your REB file number on all future correspondence.

Deborah Van Oosten
Research Ethics Officer
Brock University <http://www.brocku.ca/researchservices/>
phone: (905)688-5550, ext. 3035 fax: (905)688-0748

Appendix B

Conners' Parent Rating Scale – Short form – Revised

Tell us about your child...

Below are a number of common problems that children have. Please rate each item according to your child's behaviour in the **LAST MONTH**. For each item ask yourself, "How much of a problem has it been in the last month," and indicate the best answer for each one. Please respond to each item.

1. Inattentive, easily distracted	1	2	3	4
	never	occasionally	quite a bit	very frequent
2. Angry and resentful	1	2	3	4
	never	occasionally	quite a bit	very frequent
3. Difficulty doing or completing homework	1	2	3	4
	never	occasionally	quite a bit	very frequent
4. Is always "on the go" or acts as if driven by a motor	1	2	3	4
	never	occasionally	quite a bit	very frequent
5. Short attention span	1	2	3	4
	never	occasionally	quite a bit	very frequent
6. Argues with adults	1	2	3	4
				very

	never	occasionally	quite a bit	frequent
7. Figets with hands or feet or squirms in seat	1	2	3	4
	never	occasionally	quite a bit	very frequent
8. Fails to complete assignments	1	2	3	4
	never	occasionally	quite a bit	very frequent
9. Hard to control in malls or while grocery shopping	1	2	3	4
	never	occasionally	quite a bit	very frequent
10. Messy or disorganized at home or school	1	2	3	4
	never	occasionally	quite a bit	very frequent
11. Loses temper	1	2	3	4
	never	occasionally	quite a bit	very frequent
12. Needs close supervision to get through assignments	1	2	3	4
	never	occasionally	quite a bit	very frequent
13. Only attends if it is something he/she is very interested in	1	2	3	4
	never	occasionally	quite a bit	very frequent
14. Runs about or climbs excessively in situations where it is inappropriate	1	2	3	4
	never	occasionally	quite a bit	very frequent
15. Distractibility or attention span a problem	1	2	3	4
	never	occasionally	quite a bit	very frequent
16. Irritable	1	2	3	4
				very

	never	occasionally	quite a bit	frequent
17. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	1 never	2 occasionally	3 quite a bit	4 very frequent
18. Restless in the "squirmy" sense	1 never	2 occasionally	3 quite a bit	4 very frequent
19. Gets distracted when given instructions to do something	1 never	2 occasionally	3 quite a bit	4 very frequent
20. Actively defies or refuses to comply with adults' requests	1 never	2 occasionally	3 quite a bit	4 very frequent
21. Has trouble concentrating in class	1 never	2 occasionally	3 quite a bit	4 very frequent
22. Has difficulty waiting in lines or awaiting turn in games or group situations	1 never	2 occasionally	3 quite a bit	4 very frequent
23. Leaves seat in classroom or in other situations in which remaining seated is expected	1 never	2 occasionally	3 quite a bit	4 very frequent

	1	2	3	4
24. Deliberately does things to annoy other people	never	occasionally	quite a bit	very frequent
25. Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions)	1 never	2 occasionally	3 quite a bit	4 very frequent
26. Has difficulty playing or engaging in leisure activities quietly	1 never	2 occasionally	3 quite a bit	4 very frequent
27. Easily frustrated in efforts	1 never	2 occasionally	3 quite a bit	4 very frequent

Do you have any additional comments regarding any item on this scale or on this topic in general?

Appendix C

Parenting Daily Hassles Scale

Parent Hassles

The statements below describe lots of events that routinely occur in families with young children. These events sometimes make life difficult. Please read each statement and indicate how often it happens to you, and then indicate how much of a "hassle" you feel it is to you. If you have more than one child, these events can include any or all of your children.

	How Often				How Much of a Hassle				
	1	2	3	4	1	2	3	4	5
	rarely	sometimes	a lot	constantly	No Hassle				Big Hassle
1. Continually cleaning messes of toys or food	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
2. Being nagged, whined at and/or complained to	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
3. Mealtime difficulties (picky eaters, complaining, etc.)	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
4. The kids do not listen-won't do what they are asked without being nagged	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
5. Babysitters are difficult to find	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
6. The kids' schedules (e.g., preschool, school naps, other	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle

activities) interfere with your own or household needs

7. Sibling arguments or fights which require a referee	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
8. The kids demand that you entertain or play with them	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
9. The kids resist or struggle over bedtime with you	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
10. The kids are constantly underfoot, interfering with other chores	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
11. The need to keep a constant eye on where the kids are and what they are doing	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
12. The kids interrupt adult conversations	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
13. Having to change your plans because of an unpredicted child need	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
14. The kids get dirty several times a day requiring changes of clothes	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle
15. Difficulties getting privacy	1	2	3	4	1	2	3	4	5

(e.g., like in the bathroom)	rarely	sometimes	a lot	constantly	No Hassle					Big Hassle
16. The kids are hard to manage in public (grocery store, shopping center, restaurant)	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle	
17. Difficulties in getting kids ready for outings and leaving on time	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle	
18. Difficulties in leaving kids for a night out or at school or daycare.	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle	
19. The kids have difficulties with friends (e.g., fighting, trouble getting along, or no friends available)	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle	
20. Having to run extra errands to meet the kids' needs	1 rarely	2 sometimes	3 a lot	4 constantly	1 No Hassle	2	3	4	5 Big Hassle	

Do you have any additional comments regarding any item on this scale or on this topic in general?

Appendix D

The Family Environment Scale

Family Environment

This survey includes statements about families. You are to decide which of these statements are true of your family and which are false. If you think that the statement is True or Mostly True of your family, indicate this by placing an "X" in the box beside True. If you think that the statement is False or Mostly False of your family, indicate this by placing an "X" in the box beside False.

You may feel that some of the statements are true for some family members and false for others. Indicate True if the statement is true for **most** family members. Indicate False if the statement is false for **most** family members. If the members are evenly divided decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to **you**. So do not try to figure out how other members see your family, but do give us your general impression of your family for each statement.

- | | | |
|--|-------------------------------|--------------------------------|
| 1. Family members really help and support one another | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 2. We fight a lot in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 3. Activities in our family are pretty carefully planned | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 4. Family members are rarely ordered around | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 5. We often seem to be killing time at home | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |

- | | | |
|---|-------------------------------|--------------------------------|
| 6. Family members rarely become openly angry | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 7. We are generally very neat and orderly | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 8. There are very few rules to follow in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 9. We put a lot of energy into what we do at home | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 10. Family members sometimes get so angry they throw things | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 11. It is often hard to find things when you need them in our household | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 12. There is one family member who makes most of the decisions | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 13. There is a feeling of togetherness in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 14. Family members hardly ever lose their tempers | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 15. Being on time is very important in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |

16. There are set ways of doing things at home
17. We rarely volunteer when something has to be done at home ☐ TRUE ☐ FALSE
18. Family members often criticize each other ☐ TRUE ☐ FALSE
19. People change their minds often in our family ☐ TRUE ☐ FALSE
20. There is a strong emphasis on following rules in our family ☐ TRUE ☐ FALSE
21. Family members really back each other up ☐ TRUE ☐ FALSE
22. Family members sometimes hit each other ☐ TRUE ☐ FALSE
23. Family members make sure their rooms are neat ☐ TRUE ☐ FALSE
24. Everyone has an equal say in family decisions ☐ TRUE ☐ FALSE
25. There is very little group spirit in our family ☐ TRUE ☐ FALSE
26. If there's a disagreement in our family, we try to smooth things over and keep the peace ☐ TRUE ☐ FALSE

- | | | |
|---|-------------------------------|--------------------------------|
| 27. Each person's duties are clearly defined in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 28. We can do whatever we want to in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 29. We really get along well with each other | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 30. Family members often try to one-up or out-do each other | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 31. Money is not handled very carefully in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 32. Rules are pretty inflexible in our household | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 33. There is plenty of time and attention for everyone in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 34. In our family, we believe you don't ever get anywhere by raising your voice | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 35. Dishes are usually done immediately after eating | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |
| 36. You can't get away with much in our family | <input type="checkbox"/> TRUE | <input type="checkbox"/> FALSE |

Appendix E

Contact Script

“Brock University has asked SS Niagara [Speech Services Niagara] to join them in a research study aimed at improving the speech services that we offer to our families. The research project is looking at the way that families use the resources that are available to them. First, is there a difference in decision making and resource usage for families with a child with a communication delay as compared to families with children with no communication delay? Second, on what basis does a parent decide to start or stop treatment? We are randomly asking parents if they wish to participate. Your decision to participate or not is totally up to you and has no bearing whatsoever on your therapy services. There is a \$50 honorarium available to you. The study involves an interview with a parent interviewer, (at either NPCC or your home), a questionnaire, and a developmental screen for your child. In addition, you will be asked to participate in a follow up visit in two years for which you would receive another \$50”