

Intrusive fathering, children's self-regulation and social skills: a mediation analysis

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Abstract

Background Fathers have unique influences on children's development, and particularly in the development of social skills. Although father-child relationship influences on children's social competence have received increased attention in general, research on fathering in families of children with developmental delays (DD) is scant. This study examined the pathway of influence among paternal intrusive behaviour, child social skills and child self-regulatory ability, testing a model whereby child regulatory behaviour mediates relations between fathering and child social skills.

Methods Participants were 97 families of children with early identified DD enrolled in an extensive longitudinal study. Father and mother child-directed intrusiveness was coded live in naturalistic home observations at child age 4.5, child behaviour dysregulation was coded from a video-taped laboratory problem-solving task at child age 5, and child social skills were measured using independent teacher reports at child age 6. Analyses tested for mediation of the relationship between fathers' intrusiveness and child social skills by child behaviour dysregulation.

Results Fathers' intrusiveness, controlling for mothers' intrusiveness and child behaviour problems, was related to later child decreased social skills and this relationship was mediated by child behaviour dysregulation.

Conclusions Intrusive fathering appears to carry unique risk for the development of social skills in children with DD. Findings are discussed as they related to theories of fatherhood and parenting in children with DD, as well as implications for intervention and future research.

Keywords behavioural phenotypes, fathering, intellectual disability, mental health, parents

Introduction

Increased research on fathering over the past few decades indicates that fathers make a unique contribution to children's well-being above and beyond the contributions of mothers (England & Folbre 2002; Palkovitz 2002; Lamb & Lewis 2010). Recent theory on fatherhood holds that the type of rough, physical and stimulating interaction more characteristic of fathers, provided they are warm and responsive, is important as a highly arousing environment in which children build self-regulatory skills, particularly with respect to social competence and non-aggression (Paquette 2004; Flanders *et al.* 2009). Other theoretical models suggest that fathers are

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less sensitive and more demanding in their verbal interactions, serving to aid children in language acquisition and 'bridge' the gap between intimate mother-child communication and competent initiation of social communication with strangers or peers outside the family (Gleason 1975). Research has also demonstrated that fathers are particularly influential in children's development of successful peer relationships (Parke 2002; Parke *et al.* 2004). Specifically, children show improved social skills when fathers are sensitive, supportive and warm (NICHD Early Child Care Research Network 2000; Parke *et al.* 2004), whereas children with fathers who are intrusive and negative in their interactions are likely to experience internalising and externalising problems, aggression and decreased peer acceptance (Youngblade & Belsky 1992; Marsiglio *et al.* 2000).

Children's self-regulatory abilities are one potential mediator of the link between parenting practices and the development of peer-related social competence. Indeed a large body of research has linked parenting with children's self-regulation and, in turn, children's self-regulatory skills have been strongly associated with social functioning (Eisenberg *et al.* 2004; Karreman *et al.* 2006) and externalising problems (Eisenberg *et al.* 2005). Although the research examining the link between parenting, children's self-regulatory skills and social competence has been well investigated in typically developing populations, much less is known about how these processes operate in children with developmental delays.

Current conceptualisations of the development of social skills in children with developmental delays consider that family interactions may be qualitatively different than those of typically developing children, yet suggest that parent-child interactions operate in a similar manner to that of typically developing children in promoting social competence. One influential model, proposed by Guralnick (1992), conceptualised the family as a central influence on the development of social competence for children with developmental delays. Familial contributions to social skills included emphases on (1) building children's social network, (2) parental attitudes, beliefs and knowledge about children's competence, significance of peer relationships, and socialisation strategies, (3) quality of

parent-child interactions, and (4) family risk factors (Guralnick 1999). The current study seeks to focus on the quality of parent-child interactions as an important influence on children's social abilities. Parent-child interactions are especially conceptually important as risk and protective factors when taking into account that developmental progress exhibits considerable heterogeneity across children with early risk for developmental delays from birth to age 5-6. For example, early childhood assessments often show poor ability to accurately predict later IQ, particularly for children with milder impairments in functioning (Goodman & Cameron 1978; Vernon 1979). Indeed, children with early identified developmental delays, encompassing impairments in cognitive, speech, motor and language functioning, may present delayed functioning early on but reach typical levels of functioning by early childhood (Hodapp & Dykens 2003). In addition to developmental variability, children with delays have difficulty establishing relationships with peers, tend to engage in play less frequently, show more negativity during peer interactions and have more restricted social networks than typically developing children (Guralnick 1997, 1999). Thus, parent-child interactions are thought to carry substantial influence that can promote or impede social development in this vulnerable population.

Current knowledge about parenting children with developmental delays suggests that the quality of parent-child interaction serves an important role in the development of self-regulatory abilities and appropriate social skills. Research on Early Head Start data found that children with consistently active and connected fathers had higher levels of self-regulation and lower levels of aggression (Vogel *et al.* 2006). Other research has found early sensitive parenting that does not highly control or restrict child behaviours to be related to faster growth of children's broad cognitive and social development (Landry *et al.* 1997). Improved social competence among children with developmental delays has also been linked to parental scaffolding (Baker *et al.* 2003), and interestingly, even skilful scaffolding by peers (Guralnick *et al.* 2011). In addition, both mother-child and father-child mutual cooperation have been linked to children's improved self-regulatory abilities, cognitive development and socio-emotional competence (Lindsey *et al.* 2009;

Treyvaud *et al.* 2009). However, parents of children with developmental delays also show differences in their parenting practices that may increase the risk for children's maladaptive outcomes. For example, parents of children with developmental delays focus on emotion less in their parenting (Baker & Crnic 2009), which may place more salience on the behavioural aspects of parenting, such as coercive interactions. Parent-child interactions in families of children with developmental delays also tend to lack the synchronicity and positive reciprocity seen in families of typically developing children for both general interaction and specific problem-solving contexts (Crnic *et al.* 1983; Floyd & Phillippe 1993; Costigan *et al.* 1997; Floyd *et al.* 2004).

An important distinction is often made in the literature addressing developmental delays between directive parenting and intrusive parenting. Directive parenting reflects control and structure in interactions and activities, both verbal and non-verbal, typically in conjunction with increased information and less choice. Conceptually, directiveness is a component of high-quality scaffolding utilised when the child is in need of assistance. For example, a parent may instruct a child to 'Put this puzzle piece here' or 'Say thank you' (Landry *et al.* 1997). In contrast, intrusive parenting refers to verbal or non-verbal behaviours that restrict or derail the child's activity, attempts to force the child to engage in an activity despite disinterest or negative reactions, and continuous presentation of toys or overbearing interaction that gives the child no space in which to respond. Although intrusive parenting is directive in nature, a key difference between intrusiveness and directiveness is that intrusive behaviours obstruct the child's activities while directive behaviours do not. Parents of children with developmental delays tend to be more directive in their parenting practices than parents of typically developing children, as may be appropriate to the behaviours displayed by the child, yet being more directive does not mean that these parents display less warmth or affection, or negatively affect children's development (Marfo 1990, 1992; Roach *et al.* 1998). Indeed, studies have shown that parents of preschool-aged children with developmental delays do not significantly differ from parents of typically developing children

in their levels of child-directed positive or negative affect (Crnic *et al.* 2009). Parents may increase their directiveness in part because children with developmental delays tend to be less compliant when parents initiate suggestive requests in unstructured situations, but display better compliance in structured contexts with directive requests (Landry *et al.* 1994). Thus, more directive parenting may be a better match to the child's behaviours in a given context, and result in improved child compliance and therefore less parent-child negative interactions. Intrusive parenting, on the other hand, may undermine the child's autonomy, ability to explore the environment and develop self-regulatory skills.

The present study

Given the apparent links between fathering and social competence in typically developing children, this study seeks to extend those findings to a population of children with developmental delays and investigate whether intrusive fathering serves to increase risk for later child competence. In addition, theories of social competence for children with developmental delays suggest parent-child interactions play an important role in the development of children's self-regulatory abilities and social competence. This study examines the independent contribution of paternal intrusiveness, controlling for maternal intrusiveness, as a risk factor for later children's social skills, as mediated by children's self-regulatory ability. We hypothesise that increased intrusiveness on the part of fathers will be detrimental to children's self-regulatory abilities, which in turn will lead to decreased social skills. We make no specific hypothesis regarding the relation between maternal intrusiveness, children's self-regulation and social skills, as our interest in maternal behaviour is as a potential covariate for fathers' intrusiveness.

Methods

Participants

Participants for this study were drawn from a larger multi-site, longitudinal (ages 3 to 9 years) investigation of the pathways among children's developmen-

tal status, ongoing family processes, emergent regulatory functioning, and the eventual emergence of psychopathology in children. Families resided in either rural Pennsylvania or southern California, and were recruited through community agencies such as family resource centres, early childhood centres, preschools and early intervention programmes. Participants for the present study included 97 families of children (65 boys and 32 girls) with developmental delays as indexed by scores of 85 or less at age 3 years on the Mental Development Index (MDI) on the Bayley Scales of Infant Development (Bayley 1993). Families and children were followed from ages 3 to 6 for the present study. Ethnic distribution of the participants was as follows: 59.8% Caucasian, 24.7% Hispanic, 4.1% African American, 1.0% Asian and 10.3% other/multiracial. Families were excluded from the study if a child had a history of abuse, severe neurological impairment, or was non-ambulatory. During the study timeline from 48 months to 72 months 15 families dropped out of the study. This is an attrition rate of 15.5% across the 2-year period. No differences were found between families who continued participation and families who dropped from the study on any demographic or study variables. Finally, not all children evidenced continued delays from ages 3 to 6. Several children (24) who were initially classified as delayed at 36 months of age were above a score of 85 on the Stanford-Binet Intelligence Scale-IV – SB-IV (Thorndike *et al.* 1986) score when tested at 60 months. Our sample mean on the SB-IV at 60 months was 67.18 (SD = 19.98; scores ranged from 36 to 105). Families were retained in the developmental delay sample because of the potential influences of the early developmental status of the children on family process.

Procedures

Initial assessment

Once identified as potential participants, families were contacted and an initial home visit was scheduled when the child was approximately 36 months of age. A trained graduate student administered the Bayley Mental Scale (Bayley 1993) during this initial visit.

Table 1 Sample characteristics

Variable	(n = 97)
Bayley MDI score*	Mean = 59.97; SD = 12.71
Gender (% male)	65.1%
Race (% Caucasian)	60.5%
Marital status (% married)	79.1%
Mother's race (% Caucasian)	60.5%
Mother education (% college degree)	30.2%
Father's race (% Caucasian)	58.1%
Father education (% college degree)	30.3%
Biological father	83.5%
Median family income	\$35 000–\$50 000

* 36-month Mental Development Index scores.

Data collection

Following the initial visit separate home and laboratory visits were scheduled. Home observations were conducted every 6 months between the child's third and fifth birthday, and 1 year later at age 6; laboratory visits were conducted each year. Laboratory sessions were completed within 2 weeks of the child's third, fourth and fifth birthdays. The present study includes only children with developmental delays (as classified at the initial 36-month visit) and their data on family demographic information collected at the 48-month laboratory visit [gender, race, marital status, parental education level, biological father status and family income (see Table 1)], data collected at the 54-month home visit, 60-month laboratory visit, and from questionnaires completed by teachers at 72 months of child age.

Naturalistic home observation

The home observations were scheduled at a time when the entire family would be present, usually in the evening close to dinner time. Two trained observers went into the home to observe the behaviour of the target child, the behaviour of the mother and father in relation to the child, and the dyadic interactions between the three family members. The family was asked to behave as if the observer was not there and to act as they normally would. Family members' behaviours were coded using the

Parent–Child Interaction Rating System (Belsky *et al.* 1995). This system codes behaviour over six periods of coding, each 10 min in duration. Following each 10-min epoch the observers would take 5 min to rate the family interactions and then return to coding after a full 5-min period. Observers were trained by watching video-taped home observations and attending live home observations with an experienced coder until reliability was established (defined as reaching a criterion over 70% exact agreement and 95% agreement within one scale point with the criterion coder). Once an observer reached reliability, individual observers conducted home observations. To maintain cross-site reliability (Los Angeles, central Pennsylvania), a criterion coder was designated at each site. Reliability was collected regularly within sites and across sites to ensure that acceptable levels were maintained. Kappa for within-site reliability at the two sites was 0.61 and 0.59, respectively, and 0.64 for cross-site reliability.

Laboratory observation

During each annual laboratory visit, mother–child interactions and independent child behaviours were observed during structured laboratory tasks designed to assess child regulatory behaviour as well as parenting characteristics. The 5-year laboratory activities included a 10-min free play, a clean-up task (3 min), three increasingly difficult problem-solving tasks (2, 3 and 5 min respectively), snack time, a waiting task and a cooperative task. The three problem-solving tasks were a series of puzzles of increasing complexity designed to assess children's emotion and behaviour regulatory skills. The 'easy' task was designed to be finished by children with minimal help from their mothers, the 'medium' task was designed to be completed with moderate help from mothers, and the 'difficult' task was designed to be impossible to complete individually and even challenging to complete with substantial help from their mothers. Mothers were instructed to first let the child try the task on his or her own, and subsequently provide whatever help they thought was needed for the child to successfully complete the task. The present study uses only data from the 5-min 'difficult' puzzle task.

Measures

Developmental delay

Child developmental delay status (typical development/developmental delay) was determined according to scores on the MDI sub-scale of the Bayley Scales of Infant Development II (Bayley 1993), measured when the child was 36 months old. The MDI is normed with a mean of 100 and a standard deviation of 15, and has reported high test–retest reliability ($r = 0.91$). A score of 75 or below is indicative of developmental delay, whereas a score between 75 and 85 indicates borderline functioning (Bayley 1993). For this study, children performing at either borderline or developmentally delayed levels were combined to form one group of children with scores at least one standard deviation below the mean ($MDI \leq 85$).

Parental intrusiveness

Ratings of paternal and maternal intrusiveness were taken from the Parent–Child Interaction Rating System (Belsky *et al.* 1995), coded in the home at 54 months. As described above, ratings of individual parent child-directed intrusiveness were made after each of six 10-min observation periods during the home visit, and were coded on a 5-point scale ranging from 1 (low) to 5 (high) noticeable presence of the quality. Intrusiveness was defined as instances where a parent imposes his/her agenda on the child despite signals from the child that a different activity, level or pace of interaction is needed. Specific behaviours characterising intrusive interaction include failing to modulate behaviour that the child turns away from, defends against or expresses negative affect to; offering a continuous barrage of stimulation or toys; not allowing the child to influence the pace or focus of play or interaction; taking away objects while the child still appears interested; not allowing the child to handle toys he/she reaches for; insisting that the child do something (play, eat, interact) in which he/she is not interested; not allowing child to make choices.

Child dysregulation

Videotapes of children attempting a 5-min problem-solving task (difficult puzzle) were scored on a

5-point global rating scale designed to capture children's behavioural reactions that are inappropriate, based on conceptualisations of self-regulation that incorporate duration, intensity, frequency and lability in relation to ongoing contextual demands (Cole *et al.* 1994). Behaviour dysregulation included instances of poor behavioural management by the child that impeded his or her ability to complete the task. This score incorporated expressions of overt noncompliance or defiant behaviour and instances of disruptive and distracted behaviour. Behaviour dysregulation was coded on a scale ranging from 0 (no evidence of dysregulation) to 4 (significant dysregulation). Detailed discussion of the dysregulation coding system (with appendix that includes anchor descriptions) can be found in a previous study (Hoffman *et al.* 2006). The present study uses the behavioural dysregulation scores only.

Child social skills

The Social Skills Rating System, a widely used questionnaire (Gresham & Elliott 1990), was completed by teachers when children were 72 months of age. The Social Skills Standard Score was used in all analyses, which is a broad assessment of social skills, including cooperation, self-control and assertiveness. The Social Skills Scale has high test-retest reliability (parent $r = 0.84$, teacher $r = 0.85$) and internal consistency (parent $r = 0.87$, teacher $r = 0.94$; Gresham & Elliott 1990).

Results

Preliminary analyses

Sample characteristics are reported in Table 1. Parental intrusiveness ratings were measured across six consecutive 10-min periods at the 54-month home visit. Ratings were averaged across all six periods and the composites exceeded acceptable levels of reliability ($\alpha = 0.77$, $\alpha = 0.76$ for mothers and fathers, respectively). Descriptive analyses revealed all variables to be normally distributed, thus no transformations were needed. Means and standard deviations on all variables are reported in Table 2. Although the mean level of intrusiveness was higher for mothers versus fathers, the means were not significantly different ($t(71) = 1.87$, $P = 0.07$). To control for any effects of education on fathering ability, all analyses controlled for levels of paternal education. Father's education degree levels ranged from 1 (none/less than high school) to 7 (PhD/MD/JD). Paternal education is a component of socio-economic status, and can serve as a proxy for risk associated with socio-economic status (Kraemer *et al.* 2001). In addition to controlling for levels of paternal education, we controlled for maternal intrusiveness and child behaviour problems by entering both as predictors of child behaviour dysregulation and child social skills, alongside father intrusiveness. Parental intrusiveness and child behaviour dysregulation are assessed within a mediational model given that they are separate constructs, expressed in two different individuals, which

Table 2 Means, standard deviations and intercorrelations for all variables

	1	2	3	4	5	6
1 Father education	–					
2 Father intrusiveness	0.04	–				
3 Mother intrusiveness	–0.14	0.30**	–			
4 Child behaviour dysregulation	0.06	0.42***	0.22*	–		
5 Teacher SSRS SS	0.06	–0.36**	–0.19	–0.34**	–	
6 Mother report CBCL total	–0.09	0.27*	–0.06	0.19	–0.36**	–
M	3.33	1.48	1.70	2.06	90.75	46.29
SD	1.68	0.53	0.60	1.35	14.73	26.37

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Ns range from 49 to 90 due to missing data.

SSRS SS, Social Skills Rating System Standard Score; CBCL, Child Behavior Checklist; M, mean; SD, standard deviation.

could not reasonably form a latent variable representing a single construct. In addition, father intrusiveness and child behaviour dysregulation were associated ($r = 0.42^{***}$) in our study, a condition necessary for mediation, and contradictory for moderation (Kraemer *et al.* 2008).

Test of mediation

Intercorrelations among all variables are presented in Table 2. As noted above, father intrusiveness was significantly correlated with the proposed mediator (child dysregulation) as well as the dependent factor of interest (child social skills). Our models use three waves of prospective data to take advantage of temporal precedence in measurement which strengthens the inference of causality among variables, yet the improvement in inference is weakened when variables are highly stable across waves. Maternal intrusiveness showed moderate stability (54 months to 60 months $r = 0.44^{***}$; 60 months to 72 months $r = 0.42^{***}$). Paternal intrusiveness was mildly to moderately stable (54 months to 60 months $r = 0.48^{***}$; 60 months to 72 months $r = 0.26^{**}$). Behaviour dysregulation was not measured at 54 months; however, the correlation between 60-month behaviour dysregulation and a similar problem-solving task at 72 months was moderate ($r = 0.25^{**}$). In contrast, child behaviour problem showed a high degree of stability across waves (48 months to 60 months $r = 0.70^{***}$; 60 months to 72 months $r = 0.79^{***}$). Social skills via the Social Skills Rating System was not measured prior to 72 months, thus we were not able to report the stability of this variable. However, without proper experimental design and the establishment of temporal precedence (beyond simply choosing to measure constructs at different time points), any test of mediation is not sufficient to establish causality (Kraemer *et al.* (2001), and claims regarding causation are avoided. Relations among variables were assessed using path analysis in Mplus, analogous to multiple regression when all variables are manifest. However, conducting the analysis in Mplus enables the use of Full Information Maximum Likelihood to handle missing data, which is less biased than listwise or pairwise deletion procedures (Enders & Bandalos 2001). The hypothesised mediation relationship was examined by testing the significance of

the indirect effects of 54-month observed father intrusiveness on 72-month teacher-reported child social skills through 60-month child behaviour dysregulation on the laboratory task. Mplus uses a product of coefficients methodology in the test of indirect effects. Partial mediation is assessed by the partial indirect effect in relation to the z distribution, with the ratio of the product of the (a) and (b) path coefficients over the standard error for that product. In this approach to testing mediation, a z statistic above 1.96 (absolute value) is considered to be statistically significant at the $P < 0.05$ level. However, the distribution of the product of two coefficients is often non-normally skewed and kurtotic, thus, we report confidence limits (MacKinnon *et al.* 2004), and use bootstrapping to estimate the confidence limits. Significance of the indirect effect is indicated if the interval between the upper and lower confidence limits does not contain zero. This approach to testing mediation has higher power and lower type I error rates than other approaches (Sobel 1982; MacKinnon *et al.* 2004). In contrast to the Baron & Kenny (1986) approach to testing mediation, the MacKinnon (2008) product of the coefficients model does not require an association between the predictor and outcome variable (path c) to establish mediation.

Results from the mediation model are presented in Fig. 1. As our models were just-identified, no fit statistics are reported. Child behaviour problem total score, as reported by mothers at 48 months, was correlated with 54-month father intrusiveness (0.28^{**}) but not with 54-month mother intrusiveness (-0.07); father and mother intrusiveness were moderately correlated (0.35^{**}). In addition, 48-month child behaviour problems was directly associated with 72-month social skills but not with 60-month behaviour dysregulation. The path from 54-month father intrusiveness to 60-month child behaviour dysregulation (a1) was significant, whereas the path from 54-month mother intrusiveness to 60-month child behaviour dysregulation (a2) was not [0.10 (0.11)]. As can also be seen in Fig. 1, the path from 60-month child behaviour dysregulation to 72-month teacher-reported social skills (b) was significant, but neither the direct path from 54-month father intrusiveness to 72-month social skills (c1) nor was the direct path from 54-month mother intrusiveness to 72-month social skills

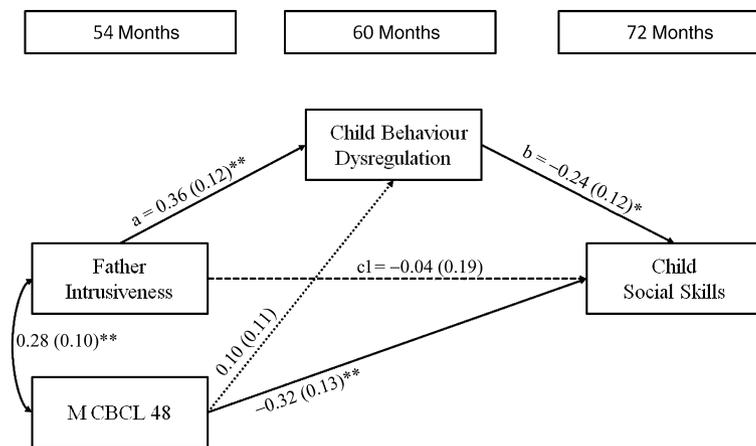


Figure 1 Mediation model. The figure excludes the covariate of paternal education as well as the correlations among variables to avoid clutter, but these were included in tests of the model. Standardised effect coefficients are reported. Mother reported Child Behavior Checklist (CBCL) total sum score at 48 months. Maternal intrusiveness and paternal education variables were included as control in the analysis but are not shown in the figure to aid readability. * $P < 0.05$, ** $P < 0.01$.

$[-0.14 (0.13)]$. Testing for mediation using the product of the coefficients method and bootstrapping to estimate the confidence intervals revealed that the association between 54-month father intrusiveness and 72-month social skills to be partially mediated by 60-month child behaviour dysregulation ($ab = -2.30$, CI $[-5.35, -0.22]$). Although the *c* path was not significant with the mediator included in the model, which presents a stronger case towards full mediation, mediation can only be considered full if the *c* path drops to zero with all possible mediators included in the model.

Discussion

Findings from the present study indicate a particularly salient role of fathers' intrusive behaviour as a risk factor for the development of self-regulatory and social abilities in children with developmental delays. Fathers who were more intrusive when interacting with their children in the home had children who later showed decreased social skills, but the connection appears to be indirect such that intrusiveness leads to more dysregulated behaviour in children, which in turn adversely influences children's subsequent social skills. This particular pathway of influence is noteworthy considering that it occurs above and beyond mothers' intrusive behaviour, suggesting that intrusiveness on the part of fathers carries unique risk for children with developmental delays. Such risk processes have important implications for theory and intervention

alike, although some caution is warranted in assuming a level of causality in these relations.

With the dearth of empirical studies on fathering among children with developmental delay, the present study highlights the unique risk intrusive fathering poses to children's self-regulation and social development for children with early delays. Current developmental conceptualisations of social competence in children with delays regard parent-child interactions as highly influential (Guralnick 1992), yet it is important to extend current conceptualisations to integrate the finding that father intrusiveness carried somewhat greater risk for children than did mother intrusiveness, despite the fact that mothers are generally more primary care providers and spend more time with their children than do fathers. Despite slightly *lower* levels of paternal intrusiveness, mothers and fathers did not meaningfully differ in the degree to which they were intrusive in interactions with their children. Consequently, greater risk associated with fathers cannot be attributed to a simple mean difference in their levels of child-directed intrusiveness.

Several alternative explanations may help understand why paternal intrusiveness proved more detrimental than mothers' intrusiveness. First, evidence has begun to accrue that fathers have increased their time spent in direct engagement with children to about 2/3 of the time mothers spend with children, yet mothers still spend more time in direct engagement with their children (Yeung *et al.* 2001). Increased time spent in father-child interaction may

serve to increase the influence of fathers on their children's development. However, given that fathers' time with children remains significantly less than mothers, it is also possible that any amount of intrusive behaviour on the part of fathers is more salient because it characterises a greater proportion of their more limited interaction time than would the same amount of intrusive behaviour on the part of mothers. In addition to parental differences in the amount of time spent with children, there appear to be stylistic differences in the way in which fathers and mothers interact with their children. Mothers tend to interact in more verbal ways, while fathers tend to be more physical (Power & Parke 1983), which may mean that intrusive fathering manifests itself in a harsher, more coercive, manner that leaves less room for children to develop as competently. The increased physicality of father-child interactions may also cast intrusiveness in a more negative light for children than do verbal interactions. However, any such conclusions are speculative until future research can directly assess qualitative differences in intrusiveness between parents.

Recent theory proposes that fathers play a unique role in exposing children to the world outside the family through interactions characterised by high arousal, physical play and effective limit setting (Paquette 2004). Although yet to be empirically substantiated, such interactions on the part of fathers are thought to activate a specific risk-taking and exploratory system for children (Paquette 2004). Within such conceptualisations, intrusive fathering may create an environment of high arousal in which the child experiences negative affect and coercive control rather than interactions of high arousal that allow the child to explore the environment with positive autonomy support and appropriate limit setting when the child's behaviour becomes too risky or dangerous. Indeed, related empirical efforts show that restrictive and controlling parenting is detrimental to the growth of children's broad cognitive and social development in populations with early developmental risk (Landry *et al.* 1997). Similarly, intrusive and negative father-child interactions have been associated with increased behaviour problems and decreased peer acceptance among typically developing children (Marsiglio *et al.* 2000). However, such associations

may not hold for all types of father-child interactions. For example, during rough and tumble play with children, fathers who were more dominant and set limits on the interaction had children who were less physically aggressive (Flanders *et al.* 2009). Some degree of non-punitive control is proposed to be necessary in conjunction with highly arousing fathering to promote children's social development (Paquette 2004), yet it is unclear whether control is more indicative of directive or intrusive behaviour during play, and whether control during rough play might operate the same way among children with developmental delay.

Currently there is no consensus for a broad theory of fatherhood. While efforts, including Paquette's (2004) theory, often discuss father-child interactions as characterised primarily by physical play, research also indicates that father behaviours beyond rough and tumble play, such as sensitivity and scaffolding skills, can influence important child skills such as problem solving (Easterbrooks & Goldberg 1984; Conner *et al.* 1997). In populations of children at risk, fathering behaviour characterised by positive affect, responsiveness, emotional attunement and didactic interaction has been shown to positively influence children's cognitive development (Shannon *et al.* 2002). However, with the exception of Shannon *et al.* (2002), in which nearly half the sample functioned within a cognitively delayed range on standardised testing, research has predominantly focused on typically developing children. As such, greater explication of fathers' impact on children with developmental delays, across context, situational demand, the range of potentially influential fathering behaviours awaits further investigation.

Children learn self-regulation and social competence skills in interaction with parents who are more emotionally expressive (Eisenberg *et al.* 1998). Interestingly, research with typically developing children suggests that moderate levels of expressed parental negative affect may promote social competence, perhaps because it captures children's attention and raises their arousal (Halberstadt *et al.* 1999; Valiente *et al.* 2004). However, it is unclear whether negative parental emotional expression operates similarly for the development of self-regulation and social skills in children with developmental delays. In general, parents of children with

delays tend to focus less on emotion in their parenting (Baker & Crnic 2009), which may lessen the opportunities for children to learn and practise regulatory skills. Low levels of parental negative affect have also been shown to be more detrimental than beneficial to children with developmental delays (Green & Baker 2011) as well as children who are poor self-regulators (Michalik *et al.* 2007). Perhaps children with developmental delays are less sensitive to low to moderate levels of parental affect, or they may have greater difficulty regulating during arousing situations. Although the present study did not specifically examine negative affect, intrusive parenting does include some dimensions of negative affect or minimally represents interactive qualities more on the negative spectrum.

Limitations

Fathers and mothers interactions with their children were observed as they naturally unfold at home, which added to the ecological validity of the data (e.g. interactions were not constrained by a task or setting). However, a drawback to this type of observation is that we were unable to specify the context in which parental behaviours occurred. Thus, we cannot say whether fathers tended to interact more in physical play, teaching tasks, chores, discipline or other potential contexts of interest. Although this is a minor limitation, future work with children with developmental delays will benefit from both identifying and contrasting fathers' behaviour across different interactive contexts. Additionally, this study was unable to rule out the possibility that early child behaviours may influence parental levels of intrusiveness. We view the family as an early context where children are able to learn and practise social skills before they interact with peers in a preschool or school setting, yet our data cannot rule out child effect. Although our results suggest mediation, we are careful to note that causality cannot be determined in a prospective study without proper randomisation and intervention conditions, which our methods did not allow (e.g. we cannot ethically or practically assign families to be high or low on paternal intrusiveness). This is discussed at greater length in Kraemer *et al.* (2008).

Implications for intervention

Paternal intrusiveness as a specific risk factor fits well within the Developmental Systems Model for early intervention, which highlights the quality of parent-child interactions as a target to improve child developmental outcomes (Guralnick 2001). Previous research with this sample has emphasised the need to include aspects of parenting other than behaviour management and child skill acquisition in interventions focused on children with intellectual or developmental delays. Green & Baker (2011) argue that parental scaffolding, discussion of emotional experiences with children, and parental expression towards and socialisation of emotion with their children may be important constructs to include in intervention. The present study highlights the unique risk associated with intrusive fathering for children with developmental delays. Interventions that make efforts to include fathers, and to target fathers' negative and intrusive interactions with children, may be likely to facilitate improvements in children's self-regulatory abilities and social competence. However, basic research efforts are still necessary to determine whether subtle differences exist between mothers and fathers in their intrusive behaviours (e.g. are fathers more physically intrusive than mothers?) and whether the social context of intrusive parenting differs by parent (e.g. does intrusive fathering occur more in rough and tumble play while intrusive mothering occurs more in cooperative, learning situations?). Additionally, more research is needed to fully determine the direction of effects before it can be assumed that changes in parent intrusiveness will lead to changes in children's dysregulation and social skills.

Conclusion

Paternal intrusiveness appears to be a risk factor for the development of self-regulatory skills and social skills in children with developmental delays, although the effects are indirect and mediated by the extent of children's behaviour dysregulation under conditions of a cognitive challenge. Although research on fathers as caregivers of children with developmental delays is sparse, the present study

suggests that intrusive parenting approaches on the part of fathers carries unique influence over and above that of mothers, at least with respect to this specific parenting behaviour. Results of this investigation strengthen previous findings that negative parental emotion socialisation may have more global detrimental effects for children with developmental delays in contrast to the positive effects of low-level negative affect found in typically developing populations. Efforts to develop intervention components that target intrusive behaviours on the part of the father may improve social outcomes for children with developmental delays. Still, more research is needed to fully explicate the role of fathers in the lives of children with developmental delays and determine whether fathering processes may differ as a function of the presence of developmental risk.

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