Family dynamics during the transition to parenthood: A longitudinal study of the influences of co-parenting alliance, parenting efficacy, parenting, and infant temperament on child adjustment.

by

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B.A., University of Manitoba 2009
M.Sc., University of Victoria 2013

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Supervisory Committee

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Abstract

This longitudinal study investigated how parent, child, and family characteristics influence each other during the transition to parenthood. Participants were 98 cohabiting couples who were expecting their first child. Couples participated in data collection during the third trimester of pregnancy and again when their children were one and two years old. This study aimed to understand how family dynamics and individual characteristics of parents and children influence child adjustment during the first years after the transition to parenthood, to explore the relationship between mothers' and fathers' parenting, and to clarify how mothers' and fathers' perceptions of important family constructs are related during this important time. Key constructs are introduced including co-parenting alliance, parenting efficacy, temperament, ineffective parenting, and child adjustment. A review of literature aims to provide conceptual clarity among these interrelated constructs that are instrumental in early family life. Drawing from the literature review, a conceptual model grounded in family systems theory is introduced in which co-parenting, parenting competence, and child temperament predict parenting practices, which in turn interact with child temperament to predict child adjustment. Child adjustment was measured in terms of internalizing and externalizing behaviours as rated by parents. Ineffective parenting was measured in terms of self-reported lax and over-reactive parenting strategies. To investigate the relationships among mothers' and fathers' perceptions of these variables, confirmatory factor analyses were used to test whether parents' individual ratings on measures were indicators of a broader couple level construct. To explore the impact of parenting on child outcomes, models were tested looking at lax parenting, over-reactive parenting, and 'see-saw parenting', which occurs when parents use both lax and over-reactive strategies. Temperament was tested as a

moderator of the effects of each of these parenting styles on child outcomes. Regarding significant findings, low parenting efficacy, difficult temperament, and over-reactive parenting were found to be the most important predictors of later behaviour problems for children, with some differences in predictors of internalizing and externalizing behaviours and some different risk factors for mothers and fathers. Ineffective parenting occurred more often for parents who perceived their infants to have difficult temperaments and for parents who felt less confident about their parenting skills. Some results were inconsistent with previous research findings. These discrepant findings are discussed. Additional exploratory analyses found that parenting efficacy mediated the relationship between difficult temperament and over-reactive parenting. Implications for research and clinical applications are discussed.

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Chapter 1: Theory and literature review

This project aimed to investigate the changes that occur during this transition period to inform prevention and intervention efforts to promote healthy families and child development. A family systems informed perspective was taken to examine how different components of a family system influence each other during these transitional years. In order to better understand what helps new families to be successful over the transition to parenthood, key variables were selected from previously collected data, including co-parenting, parenting efficacy, maladaptive parenting, infant temperament, and child maladjustment. Goals of this project included examining how characteristics and behaviours of parents and children influence each other during the first years after the transition to parenthood, exploring the relationship among mothers' and fathers' parenting, and clarifying how mothers' and fathers' perceptions of these key variables are related.

A review of relevant literature aims to clarify how these constructs have been conceptualized and defined, what qualities or attributes contribute to these constructs, and what known antecedents and outcomes are associated with each variable. Variables that look at parent or couple constructs are reviewed first, including co-parenting, parenting efficacy, and maladaptive parenting. This is followed by a review of the variables that reflect child characteristics or behaviours, including temperament and child maladjustment. The goal of this review is to state how these terms have been conceptualized and measured, as well as to identify how each construct impacts and is impacted by other areas of family functioning.

Following the review of each variable, I describe how the variable is used in this study in italicized text.

In the next chapter, a model is presented that shows the proposed relationship among variables. Each connection in the model is described, with a rationale for the predicted relationship and specific hypotheses based on past research and identified gaps in the literature.

Systems theories

Family systems theories consider the dynamic relationships between family members, between subsystems of family members, as well as the family as a whole. Rather than representing a single theory of how families function, family systems theories are actually diverse in how they conceptualize and predict families' behaviours (McHale & Sullivan, 2007). These theories are unified by the tenet that any individual behaviour needs to be examined in terms of a larger relational context. Minuchin's (1985) description of systems theory outlines basic principles of systems theories as follows:

1. Any system is an organized whole, and elements within the system are necessarily interdependent
2. Patterns in a system are circular rather than linear.
3. Systems have homeostatic features that maintain the stability of their patterns.
4. Evolution and change are inherent in complex adaptive systems.
5. Complex systems are composed of subsystems.
6. The subsystems within a larger system are separated by boundaries, and interactions across boundaries are governed by implicit rules and patterns.

Understanding how family interactions contribute to early child development is an important endeavor of psychological research. Family systems theories have been useful for understanding how behaviours and characteristics of parents and children contribute to adaptive and maladaptive child development. The field of child development has seen a similar trend towards conceptualizing development as a process that occurs dynamically over time. In these developmental systems theories, relational frameworks are applied to understand the ongoing and reciprocal interactions between children and their parents (Bornstein, 2015). From a systems perspective, it is important to consider the individual characteristics of parents and children, the relationship between parent and child, and the way that parent-child relationships are embedded in and impacted by other individuals and relationships that make up the family system (McHale & Sullivan, 2007). Systems theories are not only interested in the interactions between parents and children, but embed this relationship in a larger family system that influences these interactions.

Disruptions to the family system that occur during transitions provide an opportunity to develop new patterns of interactions in families that can have a long lasting impact (Holmes, Cowan, Cowan, & Hawkins, 2012). The marital relationship tends to change over the transition to parenthood. A number of longitudinal studies of couples during the transition to parenthood have found that many couples experience a decline in relationship satisfaction following the birth of their first child (Doss, Rhoades, Stanley & Markman, 2009; Lawrence, Rothman, Cobb, Rothman & Bradbury, 2008). As the marital relationship changes, it also evolves to include the relationships of each parent with their child, and to include triadic interactions in two-parent families. The changes in family functioning that occur during the transition to parenthood suggest that it is an ideal time

to study how family dynamics interact during this period in order to inform appropriate interventions to support new families.

Systems theories of family functioning and child development emphasize that a child's behaviour occurs in the context of a larger family system (e.g. McHale & Sullivan, 2007). Using a systems perspective, identifying children who are at-risk for developing behaviour problems involves identifying how interactions of different subsystems over time contribute to maladaptive psychological development. The overarching goal of this project is to consider how characteristics of family members and family systems interact during the transition to parenthood, to identify gaps in the existing literature, and to contribute to these areas by examining the responses of participants over a four-year period during the transition to parenthood.

Co-parenting

Defining co-parenting. The concept of co-parenting emerged from family systems theories that describe the interactions among subsystems within the family (e.g. Minuchin, 1985). A frequently used definition of co-parenting is "the ways parents work together in their roles as parents" (Feinberg, 2003). A more inclusive definition of co-parenting is "an enterprise undertaken by two or more adults working together to raise a child for whom they share responsibility" (McHale, Lauretti, Talbot, & Pouquette, 2002), which recognizes that a co-parenting relationship can exist between dyads other than parents, for example between a parent and grandparent who are raising a child together. While the broad definition of co-parenting seems to be shared amongst researchers, efforts to define co-parenting as a construct conceptually distinct from both the romantic relationship

and parenting practices have resulted in a few different conceptualizations of co-parenting.

Feinberg (2003) aimed to develop an ecological model of co-parenting. This model was informed by and consistent with family systems theories in that it considered reciprocal and dynamic relationships among constructs within at the level of individual characteristics, family characteristics, and broader contextual influences. Feinberg proposed that co-parenting consists of four components: agreement or disagreement, division of labour, support and undermining, and the joint management of family interactions. He theorized that these factors would be interrelated, though this was not an empirical paper and did not test these hypotheses. His efforts to clarify the definition of co-parenting included noting what is *not* a part of the co-parenting relationships (including "the romantic, sexual, compassionate, emotional, financial, and legal aspects of the adults' relationship that do not relate to childrearing" (p. 2)). This ecological model placed co-parenting at the centre of family functioning, with reciprocal influences on parents, children, and broader systemic stresses and supports. . In a later paper, Feinberg, Brown and Kan (2012) stated that after qualitative interviews with new parents, they felt that a fifth factor of 'parenting-based closeness' should also be considered. This refers to the emotional relationship between caregivers related to caregiving, including how caregivers share enjoyment in watching the child develop.

Similarly, Van Egeren and Hawkins (2004) aimed to clarify the concept of co-parenting by developing "rules to assist in the development of a comprehensive but

precise characterization of co-parenting" (p.166). In their paper, they discuss the problem of ambiguity in defining what constitutes a co-parenting relationship, and identify a number of boundaries to define co-parenting, including that co-parenting requires a child and a partner, and that it is a dyadic and bidirectional process. Their model was also informed by family systems theories, and emphasized that co-parenting is reciprocally and dynamically related to other family processes. They suggest four distinct components comprise the co-parenting relationship, which incorporate the definitional rules they outline: Co-parenting solidarity, co-parenting support, undermining co-parenting, and shared parenting. In their conceptualization, solidarity refers to the extent to which co-parents are unified and feel that they are growing together as parents. Shared parenting refers to a broader definition of division of parenting tasks, including household tasks related to parenting as well as limit setting and discipline. Whereas Feinberg (2003) viewed undermining and supportive co-parenting as opposing poles on a spectrum, Van Egeren and Hawkins work describe support and undermining as related but distinct components of co-parenting. They define co-parenting support as "strategies and actions that support and extend the partner's efforts to accomplish parenting goals" (p.169), and note that these actions must be effortful rather than passive. They define undermining co-parenting as "strategies and actions that thwart the partner's attempts to accomplish parenting goals, or reports of criticism and lack of respect for parenting decisions" (p.169). They note that undermining actions include overt (e.g. criticizing) as well as more subtle behaviours (e.g. interrupting).

More recently, Hock and Mooradin (2013) reviewed and synthesized existing theoretical models of co-parenting. They reviewed articles that included both theoretical models and empirical reports of correlates, predictors, and outcomes. They identified six theoretical models in the literature, including the models of Feinberg (2003) and Van Egeren and Hawkins (2004). Using a qualitative review process, they synthesized information from these six models to look for commonalities in how co-parenting is defined, resulting in four components: parental harmony, boundary preservation, reciprocal caregiving, and parental connection. Parental harmony refers to a sense of unity between caregivers, and includes demonstrations of support and undermining. Boundary preservation refers to how parents preserve the co-parenting relationship as a distinct subsystem within the family, which can occur overtly when both caregivers are present or covertly when a caregiver is alone with a child. Examples of this include following through on the other caregiver's rules and limits. Poor boundary preservation can contribute to coalitions between one parent and a child. Reciprocal caregiving is similar to Van Egeren and Hawkins idea of shared parenting, and refers to the degree to which caregivers are satisfied with division of caregiving labor and parenting tasks. Practical support (e.g. coming home early to relieve the other parent) also falls in this component. Finally, parental connection refers to the bond between co-parents and their perceptions of how they have grown together as parents. This does not necessitate that co-parents are in a romantic relationship.

Cultural context of co-parenting. Systems theories have emphasized the importance of placing family functioning in a broader social context. In terms of co-parenting, it is

interesting to consider how conceptualizations of co-parenting are related to cultural and historical context, and how co-parenting varies across cultures. It is worth considering that the co-parenting relationship emerges in the historical and cultural context, which influences the expectations that are placed on mothers and fathers and the way that couples negotiate their co-parenting roles.

Most research on co-parenting has focused on middle-class Western cultural groups. However, some differences in families' structure and in expectations for parents' roles have been demonstrated across cultures. In East and Southeast Asian countries, for example, roles and authority within the family are often determined by sex, age, and birth order, and the immediate family includes the husband's parents and son's wives and children, and grandparents and extended family are often important caregivers (McHale, Dinh & Rao, 2014). One study of Japanese families found that children develop more empathy when they have fathers who are involved in their daily activities (Ogata & Miyashita, 2000). Consistent with findings from American samples, McHale, Rao, and Krasnow (2000) found that a supportive co-parenting relationship predicted adjustment in preschool aged children in a sample of Chinese families. In this study, the authors compared the factor loadings of the Co-parenting Scale (McHale, 1997) between the Chinese sample and a previous sample of American mothers. They found that the factor loadings were similar except that two factors that emerged in the Western sample, representing overt and covert undermining behaviours, were clustered together in the Chinese sample. The authors note some unique characteristics of co-parenting within Chinese families. For example, discipline and care are often provided by several

caregivers, rather than exclusively by the mother and father. The authors also note that differences exist in expectations for fathers, as fathers in traditional Chinese families have tended to have less contact with their very young children and to serve as a disciplinarian, though these traditional gender roles are also shifting. Shwalb and colleagues noted that their review of fathering in East Asia from 2003 focused on the image of "strict father, kind mother", while the review for their 2010 chapter indicated that this traditional ideology has shifted towards an emphasis on both parents making sacrifices to support educational opportunities for their children. The authors also note that changes in government policies aim to influence parental roles. In Korea, for example, paternal leave policies and the implementation of a 5-day work week aim to increase fathers' involvement in parenting.

Gendered parenting expectations are also shifting in Western culture. Fathers' roles in the family and their investment in parenting has increased in modern Western families due to changes in cultural understanding of fatherhood (Pleck, 2012), though mothers are often expected to be more intensively involved in raising children (Johnson & Swanson, 2006). Co-parenting is often associated with father involvement, and may be especially important in families where parents have separated (Fagan & Palkovitz, 2011). In a review of research on the changing role of fathers, Roy (2014) discusses new expectations for fathers to provide "nurturance and caregiving" in addition to more traditional expectations to provide financially for their family. McHale, Dinh, and Rao (2014) note that increased physical and social mobility, delayed marriage and delayed parenthood, changing values and attitudes about gender roles, marriage, and parenting, and changes in divorce rates

and an increase in the number of single-parent families have each contributed to cultural shifts in family functioning, family structure, and roles within families.

Antecedents and consequences. Co-parenting has been studied as a predictor and outcome variable, and has been found to have mediating and moderating effects on other family interactions. Feinberg (2003) noted that the reason co-parenting is such an important construct to understand is that it is central to family functioning, influencing and being influenced by a wide range of factors. The co-parenting relationship is influenced by individual characteristics, like personality (Zwahr-Castro & Dicke-Bohmann, 2014) and expectations (Kuersten-Hogan, 2017), family characteristics like the existing relationship between caregivers (Christopher, Umemura, Mann, Jacobvitz, & Hazen, 2015; Holland & McElwain, 2013), parenting stress (Belsky, Crnic, & Gable, 1995), and extra-familial influences including support and stress (Riina & McHale, 2012).

Relationship adjustment has consistently been found to predict a number of areas of family functioning, including successful co-parenting (Fincham & Hall, 2005). A number of studies have found that co-parenting is a mechanism by which relationship quality influences parenting (e.g. Fincham & Hall, 2005; Floyd, Gilliom, & Costigan, 1998; Margolin, Gordis, & John, 2001), and that the direct effects of relationship adjustment on parenting are eliminated or reduced when the mediating effect of co-parenting is accounted for (e.g. Margolin, Gordis, & John, 2001).

The co-parenting relationship has influences throughout the family system that are consistently found in empirical studies. New mothers' support from their partners has been found to influence subsequent parenting practices more than other sources of support (Belsky 1984; Simons et al. 1993), while poor co-parenting is

associated with higher parenting stress (Camisasca, Miragole & Di Blasio, 2014), reduced parental resources (Schoppe Sullivan et al., 2007), and differences in parenting style (e.g. Holloway et al, 2005; Suzuki, 2010). Co-parenting has also been found to mediate the link between relationship satisfaction and child outcomes (Abidin & Brunner, 1995) and father involvement (Holland & McElwain, 2013, Varga et al, 2014), and parenting (Fincham & Hall, 2005; Floyd et al., 1998; Margolin et al., 2001). Co-parenting has been found to moderate the effect of risk, for example, a supportive co-parenting relationship can lessening the impact of a caregiver's depression on a child (Floyd et al, 1998). Similarly, a positive co-parenting relationship can buffer against risk factors, for example limiting the spillover of relationship stress to parenting stress for new mothers (Camisasca, Miragole, & Di Blasio, 2014).

The current study focuses on the co-parenting alliance, which is comprised of the following components: "(a) each parent is invested in the child, (b) each parent values the other parent's involvement with the child, (c) each parent respects the judgments of the other parent, and (d) each parent desires to communicate with the other" (Weissman & Cohen, 1985, p.25). The co-parenting alliance represents the factors outlined by Van Egeren and Hawkins (2004) and Feinberg (2003), as well as by the review by Hock and Mooradin (2013), and emphasizes support and respect, which were found to be centrally important to marital and family outcomes (Van Egeren & Hawkins, 2004). Because the co-parenting relationship is developing during the first few years of parenthood, this project focuses on understanding how the co-parenting relationship interacts with other individual and family characteristics as couples

transition to parenthood. Because there is some overlap between relationship adjustment and co-parenting that has been found to influence parent and child outcomes, I control for relationship adjustment in all analyses.

Parenting Efficacy

Defining parenting efficacy. Parenting efficacy is a type of parenting cognition, which are thoughts, beliefs, and attitudes related to parenting, and which have been found to be important predictors of parenting behavior (Bornstein & Putnick, 2007). Whereas there are a number of conceptualizations of co-parenting and different views about the components that make up the co-parenting relationship, there is more agreement about the definition of parenting efficacy. A frequently used definition of parenting efficacy is "expectations that parents hold about their ability to parent successfully" (Coleman & Kauraker, 2003). Parenting efficacy is most often understood and studied in the context of self-efficacy theory (Bandura, 1997), which describes efficacy beliefs more broadly as well as in specific domains like parenting. Drawing on the broader self-efficacy literature, efficacy beliefs are effectively a measure of confidence in one's skills. Parenting efficacy beliefs are specific to the domain of parenting, and refer to the confidence parents have in their ability to parent well. Because parenting efficacy is a belief that parents hold, measuring parenting efficacy typically involves asking parents about their perceptions of parenting skills, rather than assessing actual skills or abilities.

Vance and Brandon (2017) wrote a review paper that aimed to clarify the similarities and differences between parenting confidence, parenting efficacy, and parenting competence. They reviewed papers that used these terms, and found that

parenting efficacy and parenting confidence were interchangeable in terms of predicting outcomes, while parenting competence more often referred to an objective measure of parenting skills. Based on self-efficacy theory, they listed three attributes of parenting efficacy, which were identical to the three defining attributes of parenting confidence: knowledge, self-perception of abilities, and strength of belief. In order to feel efficacious, parents must have some knowledge about what makes a successful parent, as well as a judgment about their own skills. The authors found that the most commonly used scale to measure parenting efficacy was the Parenting Competence Scale (PSC, Johnson & Mash, 1989).

Antecedents and consequences. Self-efficacy theory (Bandura, 1997) can also be used to understand how parenting efficacy develops in new parents. Bandura outlined several factors that contribute to positive efficacy beliefs. He stated that having successful experiences is the most important determinant of positive efficacy beliefs, and noted that having tasks that are excessively difficult can contribute to the development of negative efficacy beliefs. Bandura also discussed the positive influence of vicarious experience, or modeling, and of verbal persuasion, or praise. Finally, Bandura discussed that efficacy in one domain can transfer to another area. In their review, Vance and Brandon (2017) note one qualitative study with fathers found that the way that parenting efficacy develops in new fathers was consistent with Bandura's broader theory of self-efficacy.

Parenting efficacy is impacted by other family processes. Any individual family process that influences mastery experiences or vicarious learning can influence efficacy beliefs. For example, new parents who have had previous successful experience with

young children are more likely to have positive efficacy beliefs about parenting their own children. Parenting efficacy may also be passed down in families, as children who observe their parents feeling efficacious and parenting effectively may internalize these ideas about parenting being a positive and successful experience. Infant characteristics including sociability and activity level are related to parenting efficacy (Grady & Karakker, 2017), as some infants are easier to parent than others and are more likely to give new parents a sense of mastery. Parents' personality can also contribute to parenting efficacy. People who are higher in conscientiousness and extraversion, and lower in negative emotionality, tend to have more positive efficacy beliefs about themselves (Hoyle & Gallagher, 2015; Grady & Karakker, 2017). Couple characteristics can also predict parenting efficacy. Co-parenting has consistently been found to impact parenting efficacy. Poor co-parenting can result in parents having lower parenting efficacy (Kershaw et al, 2014), and having a positive co-parenting relationship can buffer parents against low parenting efficacy (Merrifeld & Gamble, 2013).

Parenting efficacy has consistently been found to predict a range of outcomes, including better parenting (e.g., Dumka et al, 2010), caregiver wellbeing (Magaletta and Oliver, 1999), and positive child development (Coleman & Karakker, 2003). There is evidence that improving parenting self-efficacy in new mothers results in positive changes to parenting behaviours. Roskam and Meunier (2012) demonstrated that parenting self-efficacy and parenting behaviours are not fixed, but rather that they fluctuate over time, suggesting that interventions for enhancing parenting self-efficacy help to promote adaptive parenting strategies. Mouton and Roskam (2014) found that mothers who received positive feedback about their parenting felt more efficacious and

demonstrated more positive parenting behaviours in subsequent interactions with their children.

Although parenting efficacy has typically been conceptualized as a predictor of adaptive parenting skills, a transactional relationship, in which each influences the other over time, is also feasible (Jones & Prinz, 2005). To help clarify this relationship, Dumka and colleagues (2010) conducted a longitudinal study that examined the interaction between parenting efficacy and parents' positive control strategies over time. In this study, 189 families with children at the beginning of seventh grade were recruited to participate in a longitudinal study that lasted two and a half years; Parental monitoring, discipline, and parenting efficacy were each assessed at four time points. The authors tested transactional effects of parenting self efficacy and parenting over time by testing the fit of four models and then comparing the fit indices of the models, and found that the model that best fit their sample was one in which parenting efficacy predicted later parenting practices. A longitudinal design and thoughtful statistical analyses were strengths of this study. Rather than assess cross-sectional data, the authors measured parenting efficacy and parenting practices at multiple time-points, which allowed the authors to infer a causal relationship between self-efficacy and parenting. Consistent with a systems perspective, they acknowledged that there are also reciprocal influences between parenting efficacy and parenting practices by controlling for the concurrent relationship among variables in order to look more closely at causal predictive relationships. A limitation of this study is that is looked specifically at parental control in terms of monitoring and discipline. Given that parenting is a complex construct with multiple facets, it is possible that other aspects of parenting may have a different relationship with parenting efficacy. Similarly, the study was conducted with parents of

children in middle school. The relationship between parenting efficacy and parenting practices may be different for new parents.

As a mediator, parenting efficacy has found to be one reason that parenting programs lead to better parenting. (Trifan & Stattin, 2014). Programs that target parenting efficacy are especially effective. Parenting efficacy has been found to mediate the relationship between multiple risk factors and outcomes, including the influence of both maternal depression and social-marital supports on parenting behaviour (Teti & Gelfand, 1991), the impact of maternal fatigue on the incidence of harsh discipline (Lesniowska, Gent, & Watson, 2015), and the impact of parental alliance and social support on parental engagement and psychiatric symptoms (Ponomartchouk & Bouchard, 2014).

Given that parenting efficacy has been found to predict later parenting practices and is a potential target for intervention, a goal of this paper is to understand how co-parenting, parenting efficacy, and parenting practices are related during the transition to parenthood and into early childhood. The current study assesses parenting efficacy using the Parenting Sense of Competence Scale (Johnson & Mash, 1989), which focuses on focus on an individual's efficacy beliefs about their own parenting skills. This scale is the most widely used measure of parenting efficacy (Vance & Brandon, 2017).

Ineffective parenting.

Defining ineffective parenting. Psychology as a discipline, from psychodynamic theories to behaviourism, has strong roots in seeking to understand how parents influence their children. Early approaches to understanding and assessing parenting focused on three components that make up parenting style: the quality of the parent child relationship, specific parenting practices, and parents' belief systems, with different schools of thought emphasizing different components (Darling & Stienberg, 1993).

Because different aspects of parenting are measures across studies, it is a challenge to compare and integrate findings and to draw broad conclusions about the impact of parenting (Kiff, Lengua & Zalewski, 2011). It is also a challenge to determine how to define ineffective parenting, what measurable indicators to study, and whether to study parenting in terms of specific behaviours or broader parenting style.

The current study conceptualizes ineffective parenting as parenting that leads to more behavioural and emotional problems in children, and relies on taxonomies of parenting behaviours to delineate specific, measureable parenting behaviours. One taxonomy of parenting behaviour that has informed decades of parenting literature is from Schafer (1965), who highlighted dimensions of parenting that are key constructs in the parenting literature – behavioural control and warmth or hostility (Schaefer, 1965). Each of these constructs can be operationalized using a number of behavioural indicators: for example, hostility is indicated by over-reactivity, verbal punishment, and criticism, while behavioural control is indicated by monitoring, supervision, and low levels of laxness (McKee et al., 2008). In the current study, behavioural control is operationalized as lax parenting, while warmth or hostility is operationalized as over-reactive parenting.

Behavioral control has been defined as parents' attempts to control their children's behavior "via expectations, guidelines, limits, clear and consistent rules, restrictions, and structures (e.g. Barber, Stoltz, & Olsen, 2005). Lax discipline refers to parenting strategies that reflect low levels of behavioural control. Parents who use lax discipline strategies tend to avoid setting limits, enforcing rules, and put less emphasis on controlling their children's behaviour in general. Inconsistency in lax parenting can include setting consequences that are enforced only some of the time and giving in to children who escalate their demands (Arnold et al., 1993).

Behavioral control is distinguished from psychological control, which refers to parents efforts to control children through psychological tactics, for example making the child feel guilty or withdrawing affection (Barber & Harmon, 2002), and physical control, which refers to actual or threatened physical punishment or restraint (Akcinar & Baydar, 2014). In toddlerhood, parents may rely on all of these strategies given that young children are still developing the capacity for self-regulation and rely on their parents for frequent direction (Akcinar & Baydar, 2014).

Antecedents and consequences. Baumrind (1967, 1971) identified four prototypical approaches to parenting that include aspects of each of these components. She described four prototypes of parenting styles that have since been used extensively in empirical work and that have been found to consistently predict developmental outcomes for children. The four prototypes of parenting styles in her conceptualization are authoritative, authoritarian, permissive, and uninvolved parenting, each representing different combinations of warmth and behavioural control. Baumrind defined authoritative parents as "direct(ing) the child's activities but in a rational, issue-oriented manner' (Baumrind, 1968, p.261). These parents are high in warmth and high in behavioural control. Authoritarian parents, who are high in behavioural control and low in warmth, are described as "not encourage(ing) verbal give and take, believing that the child should accept their word for what is right" (Baumrind, 1968, p.261). Permissive parents are high in warmth and low in behavioural control, and are described as avoiding "the exercise of control" and "us(ing) reason but not overt power to accomplish ends" (Baumrind, 1968, p. 256). Finally, uninvolved parents are low in warmth and low in behavioural control.

There is evidence supporting the link between warm parenting and positive child outcomes. Research has consistently found that Baumrind's authoritative parenting style tends to predict positive child outcomes (e.g. Sweet, Bumpass, & Call, 1988; Amato & Fowler, 2002), whereas a harsh parenting style low in warmth tends to be associated with poorer child outcomes (Miller-Lewis et al, 2006). Harsh parenting has also been found to contribute to a self-perpetuating cycle of increasing escalation between children and parents (Granic & Patterson, 2006). Behavioural control tends to have a u-shaped relationship with child adjustment, such that either lax or over-controlled parenting contributes to problems (Barber et al, 2005). Lax parenting may be detrimental to child adjustment because of its influence on children's developing capacities for self-regulation (Maccoby & Martin, 1983).

A classic model of parenting is Belsky's (1984) process of parenting model, which describes parenting as being determined by multiple sources including influences from parent characteristics, child characteristics, and family context. His model included maternal personality and mental health, child temperament, marital quality, social support, and parents' employment and work habits. In a recent paper, Taraban and Shaw (2018) systematically reviewed empirical articles that tested Belsky's process of parenting model. They included articles that focused on children ages 0-5 due to Belsky's initial focus on early childhood as well as stronger associations between parenting and child outcomes during this early period (Padilla-Walker & Nelson, 2012). The aims of their review included reviewing research support for Belsky's proposed predictors of parenting, as well as reviewing research on interactions among parent, child, and social influences, in order to offer an updated process model. Taraban and Shaw concluded that overall, the direct links proposed in Belsky's model continue to be empirically supported.

They recommended that parents' developmental histories and personalities be included in the model, and that moderating pathways be added to the model in concordance with the growing awareness of the complex interrelationships among parent characteristics, child characteristics, and contextual factors. They also included studies with fathers to extend Belsky's initial model, which was formed at a time when empirical studies with fathers was extremely limited.

For parent characteristics, the most empirical work has been done in the areas of maternal depression and parent personality. In a meta-analysis by Prinzie and colleagues (2009), parent personality consistently produced small but significant effects on parenting for both mothers and fathers. Similarly, a meta-analysis on the effects of maternal depression found consistent moderate effects of depression on harsh parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). A meta-analysis by Wilson and Durbin (2010) that looked at depression in fathers found similar effects. There is also an emerging literature on the intergenerational transmission of parenting (e.g. Serbin & Karp, 2003), though this research has focused mainly on mothers. Parenting cognitions have also been found to predict how parents behave. Bornstein, Putnick, and Suwalsky (2018) had mothers complete a questionnaire when their children were two years old, which looked at causal attributions to explain parenting successes and failures. They also observed mothers interacting with their four-year-old children, and rated them on supportiveness, helpful instruction, intrusiveness, and hostility. They found that mothers who attribute parenting successes to internal factors (i.e. their own ability, effort, and mood) were more likely to use positive parenting strategies (i.e. more supportiveness and helpful instruction along with less intrusiveness and hostility.

For child characteristics, Belsky (1984) focused mainly on temperament in terms of negative emotionality, which is a child's tendency to respond to the environment with high levels of anger, sadness, and fear. In their review, Taraban and Shaw note that this continues to be the most widely studied aspect of temperament and a consistent predictor of later behaviour problems in children (Rothbart & Bates, 2006) and harsher parenting (Paulussen-Hoogeboom et al, 2007). There is some evidence for a bidirectional relationship between difficult temperament and harsh, over-reactive parenting (Scaramella et al, 2008), though there are too few longitudinal studies in this area to speak definitively about causal relationships between over-reactive parenting and negative temperament (Kiff et al 2011). More recently, research on physiological child characteristics (e.g. cortisol, respiratory sinus arrhythmia) have also been linked to early parenting behaviour (Blair et al, 2011; Appelhauns & Luecken, 2006).

Finally, Belsky (1984) stressed the importance of considering parenting in a wider social context. Taraban and Shaw (2018) found that social support tended to have a stronger impact for high-risk families (i.e., families who are experiencing significant stressors such as poverty or mental health problems), suggesting support helps to buffer parents against the negative impact of other stresses. They note that there are few longitudinal studies in this area, and that some conflicting results in terms of the benefit of social support suggest that the context and quality of social support is important. Marital quality is also conceptualized as a social support for parents. In a meta-analysis, Krishnakumar and Buehler (2000) found that couples with more conflict had less sensitive parenting.

The current study assesses two dimensions of parenting: self-reported use of over-reactive parenting strategies and self-reported use of lax parenting strategies. Over-

reactive parenting is a style of parenting that is often based in impatience towards children, criticism, threats, and that relies heavily on the power imbalance between parents and children (Lesniowska, Gent, & Watson, 2015). Over-reactive parenting exists on a continuum, with low use of over-reactive strategies at one end and frequent use of over-reactive strategies at the other. Frequent use of over-reactive parenting strategies is an indicator of low parental warmth. Lax parenting is a style of discipline characterized by permissiveness and inconsistency. Lax parenting also exists on a continuum, with frequent lax parenting at one end and infrequent lax parenting at the other. Frequent use of lax parenting strategies is an indicator of low levels of behavioural control. These parenting dimensions are measured using the Parenting Scale (Arnold, O'Leary, Wold, & Acker, 1993). This scale is a self-report measure that assesses parents' perceptions of how they respond to their children in challenging parenting situations. It has subscales that measure lax parenting and over-reactive parenting.

Child Adjustment: Internalizing and externalizing behaviours

Defining internalizing and externalizing. In clinical psychology, levels of internalizing and externalizing behaviours are considered to be important indicators of psychopathology and psychological health across the lifespan. Internalizing and externalizing problems are defined as "broad band groupings of behavioural, emotional, and social problems" (Achenbach et al, 2016). Internalizing behaviours represent a behavioural presentation with predominant anxiety, depression, and somatic symptoms. Externalizing behaviours fall in the categories of impulsive and disruptive conduct. Internalizing and externalizing are categories in a hierarchical dimensional model. The dimensions in this hierarchical model are specific behaviours (e.g., hitting), which represent syndromes or clusters of behaviour that tend to fall

together (e.g., oppositional defiant disorder). These syndromes are categorized as internalizing or externalizing, which is the broadest dimension in the hierarchical model. Internalizing and externalizing behaviours are not based in any theory of behaviour, rather they are atheoretical and driven by factor analysis.

Achenbach and colleagues (2016) systematically reviewed published papers that refer to internalizing and externalizing behaviours. They noted that many empirical studies refer to internalizing and externalizing behaviours even though they have not used measures that correspond to the hierarchical model of internalizing and externalizing. The authors note that measuring a specific behaviour (e.g., shyness or aggression) should not be used to infer conclusions about the broader category of internalizing or externalizing. They recommend that measures of internalizing and externalizing include specific behaviours that indicate syndromes, which in turn reflect the broader categories of internalizing and externalizing behaviours. The most widely used scale that follows these guidelines is the Child Behaviour Checklist (CBCL; Achenbach, 1979). Items for this scale were selected because they discriminate between referred and non-referred children, load onto a syndrome, or are consistent with diagnostic criteria for psychological disorders. Quantitative scores on this measure are obtained by summing parents' ratings on questions that fall under a given subscale. These continuous scores have been found to have small to medium effect sizes in predicting whether a child needs clinical intervention (Achenbach & Rescorla, 2000). Categorical scores can also be used, which classify children as falling into one of three descriptive categories. Scores below the 95th percentile fall in the normal range, scores between the 95th and 98th percentile fall in the subclinical range, and scores above the 98th percentile fall in the clinical range.

Although quantitative and categorical scores are helpful in identifying symptoms and screening for emotional and behavioural problems, additional information is necessary to determine whether or not a child meets criteria for a disorder or would benefit from intervention, as the Child Behaviour Checklist does not perfectly map on to diagnostic criteria (Kasius et al., 1997). Additional information from multiple sources about symptoms, level of impairment, and contextual factors like medical history and family dynamics are necessary to effectively interpret information obtained from standardized rating scales (Achenbach, Rescorla, & Maruish, 2004). Children below the clinical or subclinical threshold may meet criteria for a disorder and/or benefit from clinical intervention (Jensen et al., 1993), while children in the clinical range may not have enough symptoms or impairment to meet criteria for a disorder, or may have symptoms that are better explained by another condition.

Antecedents and consequences. There is a very large body of literature that has looked at risk factors for internalizing and externalizing disorders. Unlike research that looks at risk factors for specific diagnostic categories, empirical studies of internalizing and externalizing problems use both clinical and community samples, and most often use the continuous quantitative scales rather than using the categorical system to identify children who are in the normal, subclinical or clinical range. Risk factors specific to the child, the environment, and the interaction between the child and environment have been identified. For preschool children, some of the risk factors that have been identified include genetic risk factors, infant temperament (Cote et al, 2009), parent mental health (Bureau et al, 2011), family conflict (Davies & Cummings, 1994), socioeconomic status (Rijlaardam et al, 2013, Fanti & Henrich 2010), and negative life events (Shaw et al, 1997).

Parenting has also been studied extensively in relation to internalizing and externalizing problems. Lax parenting has been found to predict both internalizing and externalizing behaviours in young children (e.g. Williams et al, 2009; Rinaldi & Howe, 2012). Over-reactive parenting is consistently associated with externalizing problems in children (Miller-Lewis et al, 2006). The combination of lax and over-reactive parenting has been found in one study to be particularly detrimental to child adjustment (Parent, McKee & Forehand, 2016**).**

The current study measures internalizing and externalizing using the Child Behaviour Checliskt (Achenbach, 1979). This measure follows the hierarchical model of internalizing and externalizing behaviours in that it asks about specific behaviours that represent syndromes, which in turn are categorized as internalizing and externalizing.

Temperament

Defining temperament. During the neonatal period, the individual differences between infants are typically conceptualized as differences in *temperament,* defined by Rothbart (1991) as "individual differences in reactivity and self-regulation that are assumed to have a constitutional basis" (p. 61). In other words, temperament consists of an infant's physiological and behavioral responses to internal and external cues, as well as their ability to regulate these responses. Although there is not total agreement in the field about the exact definition of temperament, three broad characteristics of temperament are generally accepted: negative emotionality, self-regulation, behavioural inhibition/sociability (Sanson et al., 2004). Self-regulation is defined by Rothbart as "the ability to inhibit a dominant response to perform a subdominant response" (p. 137), for example by managing their attention or refraining from acting on impulse. Behavioural inhibition and sociability each refer to an infant's overall activity level and tendency to

approach or avoid new stimuli. Negative reactivity refers to how susceptible infants are to feeling distressed, or how easily they display anger, sadness, and fear. There is evidence that early indications of negative emotionality are fairly stable from the newborn period into toddlerhood.

Antecedents and consequences. The antecedents of child temperament are largely biologically based rather than a result of early experiences (Zeannah & Fox, 2004), with a large heritable component (e.g. Bokhorst et al, 2003). Although temperament is thought to be largely biologically based, there is some evidence supporting a model of temperament interacting with environment over time. Researchers have argued that early on in development, caregivers play a prominent role in helping infants to develop self-regulatory skills, and that as infants grow, self-regulation becomes an increasingly important modulator of reactivity (e.g., Rothbart & Posner, 1985). Along these lines, there is some evidence that harsh parenting predicts later negative emotionality (Scaramella et al, 2008), though there are few longitudinal studies looking at this relationship.

Temperament consists of traits that are closely linked with how children perceive and respond to their environment, and as such has far reaching implications for family functioning (Nigg, 2006). Negative emotionality is thought to be at the core of the concept of "difficult temperament", is one of the most widely studied aspects of temperament, and has the strongest empirical support for later behaviour problems in children (Rothbart & Bates, 2006). Early ratings of difficult temperament not only predict behaviour problems in children, they also predict emotion regulation into adulthood (Kubzansky, Martin & Buka, 2004, Matheny, Riese & Wilson, 1985). In terms of the impact on the family system, negative emotionality has also been found to predict harsher

and more restrictive parenting in meta-analytic studies (Paulussen-Hoogeboom et al, 2007).

Temperament has also been studied as a moderator of the impact on parenting practices on child outcomes. Slagt and colleagues (2016) conducted a meta-analysis that looked at 235 empirical studies of children 0 to 18 years old that included temperament-by-parenting interactions in predicting child adjustment, including internalizing, externalizing, and social and cognitive skills. They found that infants with high difficult temperaments are more sensitive to both positive and negative parenting.

This study looks at negative emotionality, or 'difficult temperament', as a moderator of other family processes, including how the co-parenting relationship influences parenting practices, and how parenting influences child outcomes. Negative emotionality is measured using the difficult temperament subscale of the Infant Characteristics Questionnaire (Bates, 1979).

Chapter 2: Introduction

Studying the ways that family functioning impacts child development provides professionals and families with the information they need to foster strong families and to raise healthy, well-adjusted children. A crucial time for developing healthy families happens when couples have their first child and make the transition from partners to parents. This transition time is often characterized by significant change, as men and women form their new roles as mothers and fathers, and as the relationship between partners grows to be not only a romantic relationship but a parenting relationship. These changes take place for new parents as their child undergoes the rapid changes of early development.

Between the toddler and preschool years, internalizing and externalizing behaviours emerge in young children (Campbell, Shaw, & Gilliom, 2000). Externalizing behaviours typically peak in the second year of life and then decline, while internalizing behaviours typically increase into school-age (Fanti & Henrich 2010). For most children, these behaviours do not cause significant impairment. However, for children who have internalizing or externalizing behaviours that are more severe in frequency or intensity, these behaviours can develop into significant behavioural and emotional problems (Moilanen Shaw & Maxwell, 2010). A child's vulnerability to developing impairing levels of internalizing and externalizing behaviours is influenced by temperamental and environmental risk and protective factors (Campbell, Gilliom & Shaw, 2000). It is important to understand which family processes contribute to a child's early behaviour problems in order to be able to effectively intervene with families in ways that will be effective in preventing early behaviour problems from growing into lifelong challenges for children and families.

The current study has two broad goals. The first is to review the literature in order to provide conceptual clarity about constructs relevant to family functioning over the transition to parenthood. A second goal is to use Structural Equation Modeling to test whether these constructs are best conceptualized as occurring at an individual, couple, or family level. Finally, this study uses a family systems perspective to look at how family subsystems interact to predict outcomes for parents, children, and families over the transition to parenthood and early childhood.

In order to understand how family processes contribute to child behaviour outcomes, this chapter presents a model for understanding the relationships among the constructs defined in the previous section. The overall model is presented below. Each connection in the model is reviewed with the aim of discussing existing research, identifying gaps, and stating a hypothesis about how the variables are related in the current study.

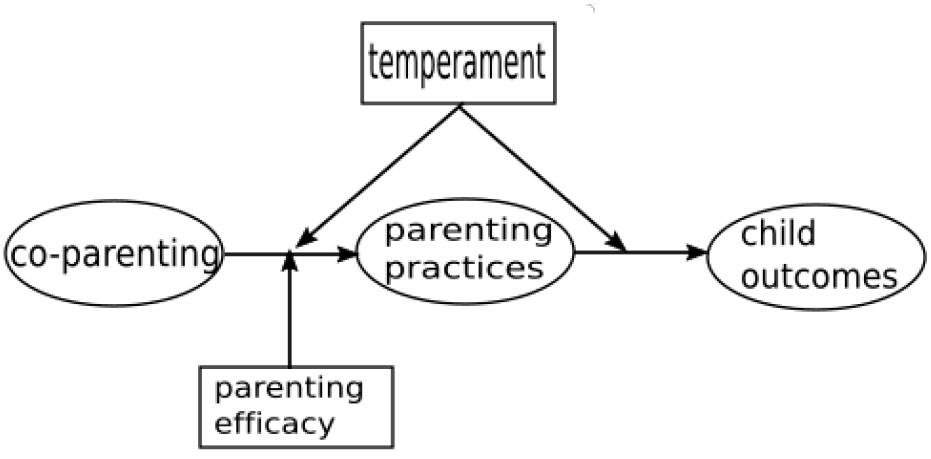

Figure 1. Overall model depicting the predicted relationships among variables.

Connection 1. Co-parenting, self-efficacy, and effective parenting

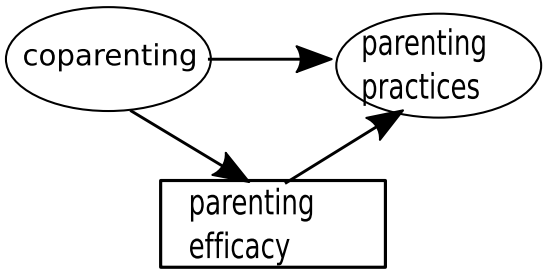

Figure 2. Model in which Parenting Efficacy mediates the relationship between Parenting Alliance and Ineffective Parenting

The co-parenting relationship influences parenting through a number of mechanisms. Poor co-parenting is associated with diminished parental resources (Schoppe-Sullivan et al., 2007) and how mothers experience parenting, (e.g. Belsky, 1984; Holloway et al, 2005; Simons et al. 1993, Teti & Gelfand, 1999). One potential mechanism by which co-parenting may influence parenting is by influencing how parents think about parenting; more specifically, parenting efficacy may play a role in linking the co-parenting alliance with parents' reliance on adaptive and maladaptive parenting strategies.

Co-parenting alliance may impact parenting efficacy in several ways. Bandura (1977) outlined factors that contribute to positive efficacy beliefs. Mothers and fathers with a supportive co-parenting relationship may be more likely to attain positive parenting outcomes and to have fewer challenges raising their children, thus developing more favourable parenting efficacy beliefs through mastery experiences. Individuals with a good co-parenting alliance may be more likely to view their partner's parenting as favourable and benefit from opportunities to learn from their co-parent's behaviour. They may also benefit from praise from their partner regarding their parenting. Parents who

feel efficacious in their co-parenting may also come to feel more efficacious about their parenting skills.

Parenting efficacy has been found to mediate the relationship between a number of risk factors and outcomes (Lesniowska, Gent & Watson, 2015; Ponomartchouk & Bouchard, 2014), but to my knowledge has not been examined as a mediator between co-parenting alliance and parenting practices. Because parenting efficacy is associated with parenting practices and shows promising change following intervention (e.g. Mouton & Roskam, 2014), a goal of this project is to test whether parenting efficacy mediates the relationship between co-parenting alliance and adaptive parenting for couples in our sample.

Hypothesis 1: I predict that individuals who have a stronger co-parenting alliance (T2) use more adaptive parenting strategies (T3), and that parenting efficacy (T2) partially mediates the relationship between poor co-parenting alliance and maladaptive parenting strategies.

While efficacy beliefs are thought to mediate the relationship between parenting alliance and parenting practices for all new parents in this study, it is also the case that not all new parents in face the same challenges. The next connection in the model addresses how infant temperament interacts with parenting alliance to predict parenting outcomes.

Connection 2. Co-parenting, temperament, and ineffective parenting

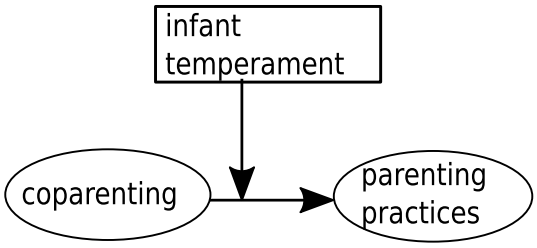

Figure 3. Model in which Difficult Temperament moderates the relationship between Parenting Alliance and Ineffective Parenting

Whether the co-parenting relationship reveals underlying relationship difficulties or brings couples closer together can depend in part on what challenges the couple faces and whether they feel equipped to manage these challenges. The couple's functioning in the marital relationship is one important predictor of how the couple will navigate parenting together. Another element that influences the development of the co-parenting relationship is the challenges presented by different children. Despite growing emphasis on bidirectional relationship among family members, previous research has been limited in exploring how infant temperament interacts with the co-parenting relationship. Some research has examined the impact of infant temperament on marital quality over the transition to parenthood, and tends to find that couples show greater declines in relationship quality during this transition when they have infants with difficult temperaments (Belsky & Rovine, 1990; Levy-Shiff, 1994).

Consistent with both the diathesis-stress and differential susceptibility hypotheses, difficult infant temperament tends to result in negative outcomes when these infants are exposed to risk factors. This may also be true regarding the interaction between difficult temperament and maladaptive co-parenting. Feinberg (2002) described that due to

domain specificity, characteristics of children may have more of an impact on the co-parenting relationship than on the marital relationship overall.

Crockenberg and Leerkes (2003) propose a transactional model of infant temperament. They note that because infant temperament tends to influence outcomes only in the face of multiple risk factors, "we should anticipate interactive effects of infant negative reactivity in relation to the marital and co-parental relationships as well" (Crokenberg & Leerkes, 2003; p.70). They suggest that when partners feel prepared for parenthood, a difficult temperament may bring partners together and promote a positive co-parenting relationship, whereas when partners feel unprepared, a difficult temperament may negatively impact family functioning. Schoppe-Sullivan and colleagues (2007) tested this model, using prenatal marital quality as an indicator of the couples' preparedness for parenting, and examined how marital quality during pregnancy and infant temperament at 3.5 months interacted to influence the quality of the co-parenting relationship. They found that couples who rated their marital quality as being positive developed more positive co-parenting when faced with the challenges of an infant with a difficult temperament. However, researchers have not examined co-parenting as an indicator of couples' preparedness for parenting, despite its role as a predictor and mediator of multiple family outcomes.

To reflect the relational nature of parent-child interactions (e.g., Lerner et al., 2002), infant temperament is assessed to determine children's influence on their parents. Despite the trend in both family systems and developmental literatures towards considering relational influences of development, there has been limited research on how infant temperament might influence the developing co-parenting relationship.

Hypothesis 2: I predict that for couples with a weak co-parenting alliance, infant temperament elicits more maladaptive (i.e. lax or harsh/over-reactive) parenting strategies, whereas couples with a strong co-parenting alliance are resilient to the challenges posed by infants with difficult temperaments and show similar levels of adaptive parenting strategies as parents who have children with easy temperaments.

Connection 3. Infant temperament, ineffective parenting, and child adjustment.

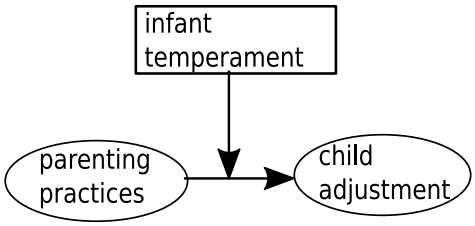

Figure 4. Model in which Over-reactive Parenting moderates the relationship between Difficult Temperament and Child Behaviour Problems

Parenting and temperament.

Three models that consider the interacting effects of parenting behaviour and infant temperament are the goodness-of-fit model (Thomas & Chess, 1977, 1980, 1981), the Differential Susceptibility Hypothesis (Belsky, Bakerman-Kranenburg & van Izendoorn, 2007), and the Diathesis-Stress model (Monroe & Simons, 1991; Zuckerman, 1999). Each of these models proposes that child temperament and parenting must be considered together when considering risk for adverse outcomes, rather than looking at temperament on its own as a risk factor. The goodness-of-fit model emerged from the idea that children impact their parents' behaviour and that children can be impacted in different ways by the same parental behaviour. This theory proposes that a child's temperament determines how they interact with the demands of their environment. When

the characteristics of a child are well matched to the demands of their environment, the child is expected to show adaptive development. Alternatively, when the child's individual characteristics are not well matched to the demands of the setting the child is not expected to achieve optimal developmental outcomes (Thomas & Chess, 1977, 1980, 1981). For example, infants are considered temperamentally difficult because their biological predispositions toward negative affect and irregular sleeping patterns are not well matched to the demands of most caregivers in the current sociological and historical context. However, research examining the goodness-of-fit model has identified contexts in which "difficult" temperaments support optimal development (e.g. Thomas, Chess, Sillen & Mendez, 1974).

Research supporting the goodness-of-fit model has mostly come from the New York Longitudinal Study (NYLS; Thomas & Chess, 1977), which followed two samples of families: 133 mostly European-American middle SES children with mostly professional parents, and 98 Puerto Rican children with mostly blue collar parents. The goodness-of-fit model is useful in interpreting the finding that although the two samples had similar distributions of infant temperament, the impact of different temperamental attributes differed between the two groups of families. Although there were similarities across samples in terms of children's temperamental sleep rhythmicity, differences between Puerto Rican and European-American caregiver demands resulted in differences in whether sleep arrhythmicity was a poor fit (Thomas, Chess, Sillen & Mendez, 1974). For the European-American families, there was a strong demand for sleep rhythmicity. For these children, difficulty establishing regular sleeping patterns was associated with problem behaviours through the preschool years. However, Puerto Rican parents had fewer demands for regular sleep patterns, and were more likely to shift their schedules to

match their infant's. For these children, sleep arrhythmicity was not a poor fit, and was not associated with problem behaviours.

The Differential Susceptibility Hypothesis (Belsky, Bakerman-Kranenburg & van Izendoorn, 2007) draws on evolutionary biology to propose that temperamental differences reflect differences in susceptibility to environmental differences. This hypothesis predicts that children who are highly reactive are more sensitive to environmental influences overall, and should therefore be more receptive to the impact of both positive and negative parenting. Belsky and colleagues (2007) identified a series of empirical steps for establishing evidence of differential susceptibility to environmental influence, and emphasized the importance of determining whether an at-risk group functions more poorly in adverse environments and functions better in positive environments, as compared to individuals who are not at risk.

In terms of temperament, the differential susceptibility hypothesis posits that children who have difficult temperaments are considered to be an at-risk group of children who are especially susceptible to the environmental influence of parenting. Children with difficult temperaments would be expected to fare worse than children with easy temperaments when their parents use maladaptive parenting strategies. However, these same children would be expected to do better than children with easy temperaments when raised in a positive environment with high quality parenting (Belsky et al., 2007). Pluess and Belsky (2009) found support for the differential susceptibility hypothesis in a study of students and their families. The authors measured temperament and parenting quality prior to school entry. Adaptive parenting was measured in terms of parental responsiveness, low intrusiveness, and positive regard. The authors found that children with difficult temperaments benefitted from high quality parenting, and performed better

academically and socially in elementary school than their peers without difficult temperaments. These children with difficult temperaments also performed more poorly academically and socially when their parents used less adaptive parenting.

In contrast, the diathesis-stress model (Monroe & Simons, 1991; Zuckerman, 1999) proposes certain individuals possess behavioural, physiological, or genetic vulnerabilities that lead to an increased likelihood of being affected by an environmental stressor. This model emphasizes the interaction between individual risk factors and environmental stressors. According to this model, children with difficult temperaments are more vulnerable to the negative impact of maladaptive parenting, and that it is a combination of difficult temperament and negative parenting that places children at risk for maladjustment.

A literature review of infant temperament and parenting conducted by Kiff and colleagues (2011) concluded that different dimensions of parenting interact with temperament in different ways. The authors reviewed studies of parenting and infant temperament and compared the fit of theories that predict how temperament and parenting interact. The authors found that overall, the interactions between temperament and parenting are complex. However, the Differential Susceptibility Hypothesis tends to be supported in studies that examine affective qualities of parenting like parental warmth, hostility, and over-reactivity, and that the diathesis stress model tends to be supported when considering parenting practices related to behavioural control, like lax or over-controlling parenting.

Slagt and colleagues (2016) published a more recent meta-analysis of the interaction between parenting and temperament. This meta-analysis included 84 longitudinal studies that included associations between parenting and temperament. This

review found support for the differential susceptibility hypothesis. Children with difficult temperaments were more sensitive to negative parenting and benefited more from positive parenting. Outcomes for children included internalizing and externalizing behaviours as well as social and cognitive development. Interestingly, the authors found that effect sizes for temperament-parenting interactions were larger when parenting was assessed using observation rather than by parent self-report questionnaires.

Over-reactive parenting, temperament, and child outcomes.

Over-reactive parenting has consistently found to be associated with negative outcomes in children (e.g. Calkins, 2002, Maccoby, 2000, Rothbaum & Weisz, 1994; Shaw et al., 2003; Tremblay et al., 2004), including problems regulating emotions and more externalizing behaviours in early childhood (Miller-Lewis et al, 2006; Aken et al, 2006). Deficits in emotion regulation and social competency in toddlers are predictive of a range of maladaptive outcomes throughout childhood (Chen, 2010; Stacks, 2005), and many children do not outgrow early behavioral problems (Campbell, Shaw, & Gilliom, 2000), particularly when parents use negative parenting strategies (Miller-Lewis et al, 2006). Further, as family patterns become more entrenched over time, early behavior may become increasingly difficult to alter (Briggs-Gowan et al., 2006).

One theory that is used to explain how these behaviours become entrenched over time is the coercion hypothesis (for a review, see Granic & Patterson, 2006), which proposes that a high degree of coercion in the parent-child relationship tends to be self-perpetuating and contributes to children's risk for externalizing behaviours. According to this hypothesis, adaptive parenting strategies help infants to learn social skills that replace a reliance on the aversive social behaviours that infants rely on to communicate (e.g. crying). When less adaptive parenting strategies are used, children are more likely to

continue to rely on aversive social behaviours, which over time include externalizing behaviours. As children's aversive behaviours escalate, so do parents' ineffective parenting strategies, including an increasing reliance on harsh parenting strategies in an effort to control escalating acting-out behaviour in their children. The escalating cycle of coercive interactions between parents and children has been demonstrated in a number of longitudinal studies of children and their parents at a range of ages (McMahon & Forehand, 2003).

Although the coercion hypothesis emphasizes the initial importance of ineffective parenting, infant temperament also contributes to early parent-child interactions and to how these interactions evolve over time. Infants with difficult temperaments may have more difficulty learning to regulate emotions and may evoke harsher parenting. The combination of harsh parenting and difficult temperament has been found to result in high susceptibility to developing externalizing behaviour problems in toddlerhood, compared to infants with difficult temperaments whose parents do not use harsh parenting strategies, or to infants with non-difficult temperaments with parents who use harsh parenting strategies (e.g. Crockenberg, 1987).

Lipsomb and colleagues (2011) examined the interrelationship between the rates of change in negative emotionality in children and over-reactive parenting. Results were consistent with the coercion hypothesis: Higher levels of harsh parenting were associated with more of an increase in negative emotionality. The authors noted that these findings support the idea that the processes that regulate harsh parenting and negative emotionality in children begin to influence each other very early in development. In a subsequent study, Lipscomb and colleagues (2012) aimed to clarify how harsh parenting and genetic predisposition to negative emotionality each contribute to negative emotionality and

externalizing problems in toddlerhood. In this longitudinal study, 361 families with adopted children answered questions about the biological mother's negative affect, child's negative emotionality, and adoptive parents' over-reactive parenting when the children were 9, 18, and 27 months. Genetic predisposition to negative emotionality was measured by assessing the biological mother's negative affect, and harsh parenting was measured by assessing the adoptive mother's over-reactive parenting. The authors found that early negative emotionality predicted externalizing problems at 27 months, and that biological predisposition and over-reactive parenting interacted to predict negative emotionality in the children, which in turn predicted externalizing behaviour.

Lax parenting, temperament, and child outcomes.

Parents' approaches to behavioural control exist along a continuum, with low behavioural control on one end and over-controlled parenting on the other. In a review of the literature on the associations between parenting dimensions and adolescent outcomes, Barber and colleagues (2005) considered whether these associations tend to be linear. They note that some studies have found that moderate levels of behavioural control are associated with adaptive functioning, with either too little or too much control contributing to problems, and that behavioral control is most often studied as a predictor of adolescent conduct problems and antisocial behaviour. In terms of adaptive development in young children, Akcinar and Baydar's (2014) findings were consistent with a u-shaped association between behavioral control and child adjustment, in that parents who provided either too much or too little behavioural control had children with more externalizing behaviours.

Inconsistent parenting has been examined as a contributing factor to adolescent externalizing, antisocial, and delinquent behaviours in adolescence (e.g. Edens et al.,

2008; Halgunseth et al. 2013), and with internalizing behaviour in middle childhood (Lengua & Kovacs, 2008). Lax parenting, which consists of both low behavioral control and inconsistent discipline, has been found to be associated with internalizing (Williams et al, 2009; Akhter, Hanif, Tariq & Atta, 2011) and externalizing (Rinaldi & Howe, 2012) behaviours in children. However, there are some inconsistencies in the literature on behavioural control and child outcomes. For example, Laukkanen and colleagues found that parents' behavioural control was not related to children's negative affect, which was predicted by psychological control. Ecological and cultural context also determines what constitutes 'appropriate' levels of behavioural control; children who are raised in high-risk environments tend to benefit from high levels of behavioural control along with high levels of affection (e.g. Dornbusch et al., 1987).

The link between appropriate behavioural control and child outcomes may occur through several mechanisms. The link between behavioural control and antisocial behaviour in adolescents may be explained in part in that adolescents with less supervision and less structure may have more opportunity to be influenced by peers, including peers who engage in antisocial and deviant behaviour (Scaramella, Conger, Spoth, & Simons, 2002; Hinnant, Erath, Tu, & El-Sheikh, 2015). The impact of behavioural control on adjustment in early childhood likely relates to the development of self-regulatory skills that help toddlers learn to inhibit disruptive behavior and to engage in more socially appropriate behavior (Maccoby & Martin, 1983). This is especially important for very young children, as disruptive or acting-out behaviours are normative in early childhood and typically decline after the age of two as young children learn regulatory skills and social expectations (Gilliom & Shaw, 2004). Akcinar and Baydar (2014) argue that optimal levels of behavioural control benefit children "because having

reasonable and developmentally appropriate limits for children allow them to learn self-regulation" (p. 124).

Social learning theory (Bandura, 1977) helps to explain why low levels of behavioural control are detrimental to children's adjustment. According to social learning theory, inappropriate behavioural control contributes to adjustment problems in two ways: first, children are not provided with opportunities to develop problem solving and self-regulation, and second, children are provided with maladaptive behavioral models. Several studies have found links between low levels of parental behavioural control, self-regulation, and externalizing problems (Aunola & Nurmi, 2005; Barber et al., 1994; Baumrind, Larzelere & Owens 2010). Nathanson and colleagues (2009) examined the impact of dimensions of parenting on teacher-rated kindergarten readiness, and found that mother's self-reported lax parenting was associated with more problems adjusting to school. The authors noted that laxness in parenting was the only dimension of parenting that was associated with difficulty adjusting to school, and linked lax parenting to children's success in exhibiting effortful control to regulate their behaviour.

I did not find studies that linked parental behavioural control and internalizing problems in childhood. However, it is plausible that internalizing problems would be more likely to develop when children do not have sufficient behavioural control from parents, as emotion-regulation is an aspect of self-regulation that has been found to be associated with internalizing problems (Shaw, Keenan, Vondra, Leilliquadi, & Giovannelli, 1997; Eisenberg, Spinrad & Eggum, 2010). Less work has been done to clarify the relationship between difficult infant temperament, lax parenting, and adjustment problems. Although temperamental differences have been found to contribute to differences in internalizing and externalizing disorders (e.g. Eisenberg et al, 2001), it

can be challenging to disentangle the relative contributions of temperamental regulation and regulation learned through socialization.

There is some evidence for a reciprocal relationship between difficult infant temperament and parenting behaviours. For example, Calkins and colleagues (2003) found that mothers responded less sensitively to difficult infants, that difficult infants displayed more negative affect as observed by the researchers, and that when the infants' negative affect was controlled for the difference between mothers' responsiveness was eliminated. In other words, mothers may be less likely to respond appropriately to infants and young children who display more negative affect. Eisenberg and colleagues (2010) point out the additional challenge that difficult temperament consists of features of emotionality but also of poor self-regulation. Given that difficult temperament contains aspects of emotionality and of self-regulation, some overlap in parents' report of temperament and internalizing and externalizing problems is to be expected, especially at young ages. Given this overlap between temperament and internalizing and externalizing behaviours, it is a challenge to disentangle the relative contributions of temperament and parenting in determining behaviour problems in young children.

Despite these challenges, some evidence exists to support the combined effects of temperament and parenting in determining outcomes in children, though research examining the interaction between parents' levels of behavioral control and infant temperament has tended to focus on children's 'behavioral inhibition' rather than difficult temperament. Behavioral inhibition is an aspect of temperament related to children's tendency to withdraw from novel situations**.**

Researchers have found that children who are high in behavioural inhibition may be especially sensitive to whether their parents are controlling or permissive, as they have

been found to be more susceptible to the effects of ineffective parental control strategies (e.g. Van Leuwan, Braet, & Bosmans, 2004). Shaw and colleagues (1997) found that ratings of difficult temperament at age 2 in conjunction with conflict exposure predicted internalizing behaviours at age 5. The authors concluded that early regulatory difficulties, as indicated by difficult temperament, interact with socializing experiences to predict maladjustment. In their review of interactions between temperament and parenting, Kiff and colleagues (2011) found that inconsistent discipline and irritability were reciprocally related, though the study they reference involved pre-adolescent participants rather than young children **(**Leguna, 2006**).** Interestingly, their review found little support for differential responding to behavioral control for infants with difficult as opposed to easy temperaments. In their study of kindergarten readiness and parenting, Nathanson and colleagues (2009) found that lax parenting contributed to more difficulty adjusting to kindergarten, and that lax parenting moderated the association between children's inhibitory control and school adjustment. They found that children with poor inhibitory control and lax parenting had the most difficulty adjusting to kindergarten.

Concurrent lax and over-reactive parenting.

Both lax and over-reactive parenting have been found to contribute to problems in family functioning, including increased risk for children to develop internalizing and externalizing problems. There is also evidence that adaptive parenting practices tend to co-occur: Conger et. al. (2012) determined that parenting behaviors that promote adaptive development tend to cluster together, such that parents who set appropriate behavioral limits also tend to show less hostility towards their children. However, limited research has examined the combined effects of these two styles of discipline.

Parent, McKee, and Forehand (2016) examined the consequences of what they called 'seesaw' discipline, which they described as "differentiated from inconsistent parenting in that it is typified by parenting that is both harsh… *and* lax…. Such an approach to parenting is likely to produce an unpredictable and chaotic rearing environment" but note that "the current lack of empirical data precludes such conclusive statements" (p.397). The authors drew on attachment and schema theories (Bowlby, 1969; Beck & Haigh, 2014), and hypothesized that the experience of oscillation and unpredictability in parenting style would contribute to higher levels of internalizing and externalizing behaviours in children than either lax or harsh parenting styles in isolation. They examined the effect of seesaw discipline on internalizing and externalizing behaviours for the following age groups: young childhood (3-7 years), middle childhood (8-12), and adolescence (13-17). Their operationalization of lax and harsh parenting is in line with the current study's conceptualization of lax and over-reactive parenting, respectively, with lax parenting referring to low levels of behavioural control, and harsh/over-reactive parenting referring to low levels of parental warmth and high levels of parental hostility. However, it is worth noting that the measure of harsh discipline used in this study included harsh discipline strategies beyond the range of normative over-reactivity assessed in the current study, for example the use of physical punishment.

The authors found that given average levels of lax discipline, harsh discipline was associated with more internalizing behaviours in children, but not in adolescents. Given average levels of harsh discipline, lax discipline was associated with more internalizing behaviours for all age groups. Consistent with their hypothesis, they found that the effect of high levels of harsh discipline on internalizing problems was significant when parents also used high levels of lax discipline, but was not significant when parents used low

levels of lax discipline, for all age groups. For externalizing problems, harsh discipline at average levels of laxness was predictive for young and middle childhood and marginally significant for adolescents; lax discipline at average levels of harshness was predictive for all age groups. The interaction of lax and harsh discipline was not a significant predictor of externalizing behaviour for any age group. As I am looking at children at ages 2 and 4, the summary of the findings pertaining to young childhood are most relevant.

In summary, internalizing behaviour was predicted by harsh discipline, by lax discipline, and by seesaw parenting; Externalizing was predicted by harsh discipline and by lax discipline. Seesaw parenting did not contribute additionally to predicting externalizing behaviours in young children. There were no interactions between any variables and gender, suggesting the models were similar for mothers and fathers. The authors suggest that possible mechanisms by which seesaw discipline influences the development of internalizing disorders include the importance of consistency and predictability as outlined in attachment theory, and negative cognitive attributional styles. The authors noted that externalizing behaviour was associated with lax *or* over-reactive discipline, and that these associations may result from reinforcement contingencies as explained by coercion theory (Granic & Patterson, 2006).

Despite the growing emphasis on bidirectional and relational effects of children and parents on each other's behaviour, I was not able to find any study that examined the impact of infant temperament on the combined effect of lax and over-reactive discipline strategies. This is not surprising, given that empirical investigations into the combined effects of lax and over-reactive discipline have been limited. The review of the relationship between temperament on parenting (Kiff et al., 2011) found support for the differential susceptibility hypothesis for parenting strategies related to affect and support

for the diathesis stress hypothesis for parenting strategies related to control, but did not examine findings on the combination of affective and control strategies (perhaps because there have not been empirical studies to review). Although this review did not summarize findings on how temperament moderates different combinations of affect and control in parenting, research using Baumrind's taxonomy based on affect and control has consistently found evidence that warm parenting with moderate levels of control, i.e. authoritative parenting, is related to positive child outcomes (e.g. Sweet, Bumpass, & Call, 1988; Amato & Fowler, 2002). It has not been established whether this finding varies for children who have difficult or easy temperaments.

The limited empirical research on the combined effects of lax and over-reactive discipline (Parent, McKee, & Forehand, 2016) used attachment theory and schema theory to account for the combined effect of lax and over-reactive discipline. The challenge of integrating attachment theory with infant temperament was described by van IJzendoorn and Bakermans-Kranenburg (2012) as follows: "at one side of the border, followers of temperament theory basically reduced attachment to temperamental inhibition in the strange situation. At the other side, adherents of attachment theory declared temperament obsolete because of its outmoded emphasis on inherited or constitutional individual differences" (p. 403). In their chapter, the authors suggest that differential susceptibility provides an excellent model for integrating temperament and attachment theory, and that overall the differential susceptibility hypothesis fits well with research on the influence of temperament on the development of attachment schemas.

Hypothesis 3: I predict that the differential susceptibility hypothesis best fits the relationship between difficult infant temperament and maladaptive parenting, such that children who have difficult temperaments (T2) *and* parents who use lax or over-reactive

parenting strategies (T3) will have more internalizing and externalizing problems (T3), children who have difficult temperaments (T2) *and* parents who do not use lax or over-reactive parenting strategies (T3) will have fewer behaviour problems, and infants with easy temperaments show less sensitivity to ineffective parenting. The expected pattern of results for over-reactive parenting is displayed in Figure 5. A similar pattern of results is expected for lax parenting.

Hypothesis 4: I predict that high levels of both over-reactive and lax parenting ("see-saw parenting") are especially detrimental to infants with difficult temperament. The expected pattern of results is displayed in Figure 6.

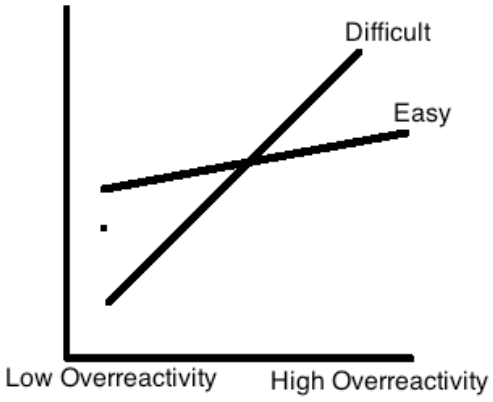

Figure 5. The expected interaction between Difficult Temperament and Over-reactive Parenting, with Child Behaviour Problems on the Y-axis.

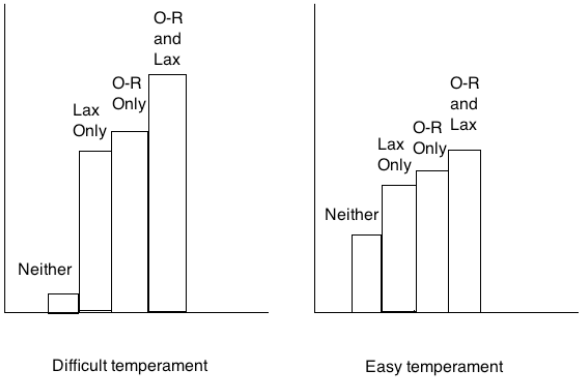

Figure 6. The expected three-way interaction between Difficult Temperament, Over-Reactive Parenting, and Lax Parenting, with Child Behaviour Problems on the Y-axis.

Exploratory Analyses

An additional aim of this study is to explore how these interrelated subsystems of family functioning operate at individual and family levels for mothers and fathers. Two models of co-parenting, lax and over-reactive parenting, and child outcomes were each tested and compared. The first set of models looked at individual parents' reports of each variable (i.e. separately for mothers and fathers). The second set of models included both parents' responses as indicators of functioning at a family level. Given the conflicting and inconclusive nature of the existing research examining the relative contributions of parents, these comparisons are exploratory in nature.

Proposed Study and Summary of Hypotheses:

This study aims to clarify the relationships among individual and family level predictors of internalizing and externalizing behaviours in children, including co-parenting alliance, parenting self-efficacy, parental laxness and over-reactivity, and infant temperament. This study is unique in that it integrates research on co-parenting, parenting practices, parenting self-efficacy, child temperament, and child adjustment using a longitudinal design.

This study builds on existing literature and address the following gaps: (1) considering whether parenting self-efficacy mediates the relationship between co-parenting alliance and parenting practices, (2) examining interaction effects between co-parenting and infant temperament, and (3) assessing goodness-of fit and differential susceptibility models of temperament for specific parenting behaviours as well as the combination of lax and over-reactive parenting. Furthermore, research has typically focused on the impact of parenting on either internalizing or externalizing behaviours, with intervention studies almost exclusively focusing on improving externalizing behaviours. By considering multiple predictors of both internalizing and externalizing behaviours in children, this study clarifies how individual, parental, and family risk factors operate differently in promoting internalizing and externalizing behaviours.

The goal of the current study is to use a longitudinal design to provide clarification about how relationship quality, co-parenting alliance, and parenting self-efficacy develop over the transition to parenthood. I predict that co-parenting and parenting efficacy predict parenting practices, and that parenting practices in turn interact with infant temperament to predict future maladaptive behaviours in children. Based on the literature review above, I suggest the following hypotheses:

Hypothesis 1.

I predict that individuals who have a stronger co-parenting alliance (T2) use more adaptive parenting strategies (T3), and that parenting efficacy (T2) partially mediates the relationship between poor co-parenting alliance and maladaptive parenting strategies (see Figure 2).

Hypothesis 2.

I predict that for couples with a weak co-parenting alliance (T2), infant temperament (T2) elicits more maladaptive (i.e. lax or over-reactive) parenting strategies (T3), whereas couples with a strong co-parenting alliance are more resilient to the challenges posed by infants with difficult temperaments and show similar levels of adaptive parenting strategies as parents who have children with easy temperaments (H2). See Figure 3.

Hypothesis 3.

I predict that the differential susceptibility hypothesis accounts for the relationship between difficult infant temperament and ineffective parenting, such that infants with difficult temperament (T2) *and* parents who use lax or over-reactive parenting strategies (T3) have the highest levels of internalizing and externalizing behaviours (T3). Infants with difficult temperament and parents who do not use lax or over-reactive strategies have the lowest levels of internalizing and externalizing behaviours, and infants with easy temperaments show less sensitivity to ineffective parenting. See Figures 4 and 5.

Hypothesis 4.

I predict that high levels of both over-reactive and lax parenting (T3) are especially detrimental to children with difficult temperaments (T2) (H4). The expected pattern of results is presented in Figure 6.

Exploratory analyses.

Finally, exploratory analyses consider the fit of the overall model and whether the model is similar for mothers and fathers and for internalizing and externalizing disorders. The overall model is tested for fit using latent variables composed of indicators from both partners. This model is compared with separate models for men and women. The fit of

the overall model is also tested for internalizing, externalizing, and overall adjustment. The overall model is displayed in Figure 1.

Methods

Participants and Procedure

This study used archival data from a larger SSHRC funded study on the transition to parenthood. Measures were selected for the larger project on the transition to parenthood, not specifically for the current study. 98 cohabiting couples that were expecting their first child were recruited for the larger study, using brochures distributed to maternity-related resources. Couples attended a laboratory visit at the University of Victoria in the third trimester of pregnancy (T1) during which they completed questionnaires on marital quality, co-parenting alliance, and parenting competence. Couples were informed that the study was about how different couples make the transition from partners to parents. Partners completed questionnaires at the same time on computers in different rooms. For follow up at T2 and T3, participants were contacted by telephone and interested participants completed questionnaires online. Participants attended the laboratory at the University of Victoria again at T4.

Efforts were made to contact all participants for follow up surveys. Of the 98 couples who participated at T1, 79 men and 88 women participated in a second survey approximately one year after having their child (T2), and 74 men and 76 women participated in a third survey approximately two years after having their child (T3). Men and women did not need to be in a relationship with their child's other parent to continue in the study. For men, dropping out of the study was not associated with levels of relationship satisfaction, parenting efficacy, co-parenting, lax or over-reactive parenting, child temperament, or behaviour. Women who rated their relationship satisfaction as higher at T1 were less likely to drop out at T2. Women who rated their parenting alliance

as lower and infant temperament as more difficult at T2 were more likely to drop out at T3. No other variables were associated with dropping out of the study for women.

At T2, 91% of men and 99% of women who participated were still in a relationship with the child's other parent. Surveys at T2 and T3 included the same questionnaires on marital quality, co-parenting alliance, and parenting competence, as well as questionnaires about infant temperament at T2, and an additional questionnaire about parenting practices at T3. Participants answered questions about their child's adjustment at T3 and T4. To thank them for their participation, all participants received an honorarium of fifty dollars at T1 and T4, and of twenty-five dollars at T2 and T3.

Of the 98 couples who participated, 71% were legally married. Couples had been cohabiting for an average of 4.3 years (SD = 3.3), regardless of marital status. At time 2, men in this sample were an average of 33.32 years old (SD = 5.51), with an average length of education of 14.87 years (SD = 2.35) and an average income of $ 47, 600 (SD = 25 800). Women in this sample were an average of 31.19 years old (SD = 5.32), with an average length of education of 15.38 years (SD = 2.37) and an average income of 27, 900 (SD = 23, 800). Eleven percent (11%) of participants self-identified as visible minorities. Demographic characteristics of participants are presented in Table 1.

Table 1. Demographic characteristics of participants

	Mean	SD	Mean	SD
Age	33.32	5.51	31.19	5.32
Income	$47,600	25,800	$27, 900	$23,800
Years of education	14.87	2.35	15.38	2.37
	N	%	N	%
Education				
< High school	6	6.1	5	5
High school	18	18.4	10	10.2
College/university	39	39.8	49	50
Some graduate school	4	4.1	9	9.2
Graduate/professional degree	20	20.4	25	25.5
	8	8.2	13	13.3
Minority group				
African	0	0.0	1	1.0
Asian	2	2.0	2	2.0
Chinese	2	2.0	2	2.0
East Indian	0	0.0	1	1.0
Filipina	0	0.0	1	1.0
First Nations	2	2.0	3	3.0
Japanese	0	0.0	2	2.0
Latin American	0	0.0	1	1.0
Sikh	1	1.0	0	0.0
Legally married	71	72.4	70	71.4

Note. SD = Standard deviation

Measures

Relationship Quality. All participants completed the Dyadic Adjustment Scale at T1 (Spanier, 1976; α = .88-.94), a widely used and well-validated 32-item scale that measures relationship adjustment. This scale assesses four areas or marital quality: Dyadic consensus, dyadic satisfaction, affectional expression, and dyadic cohesion. *Dyadic consensus* is measured by asking participants to indicate how often they disagree with their partner about various relationship issues using a 6-point likert scale (e.g. finances, sexual relations; 0 = Always Disagree, 5 = Always agree). *Dyadic satisfaction*

assesses the degree to which participants are satisfied with their partner using a 6-point likert scale (e.g. “Do you ever regret that you are together”; 0 = All the time, 5 = Never). *Affectional expression* measures the degree to which partners agree regarding expressing affection by asking them to indicate “yes” or “no” regarding whether they had disagreed about affectional expression during the last few weeks (e.g. “Being too tired for sex”). *Dyadic cohesion* measures how much partners participate in activities together (e.g. “Having a stimulating exchange of ideas”) using a 6-point likert scale (0 = Never, 5 = More [than once a day]).

Co-Parenting Alliance. Participants completed the Co-parenting Alliance Inventory at T2 (Abidin & Brunner, 1995; α = .89 - .96). This is a 20-item scale that assesses whether participants believe they have a strong parenting relationship with their partners. This measure focuses specifically on aspects of the partnership related to parenting, rather than assessing overall relationship satisfaction and adjustment. Evidence for convergent and predictive validity has been demonstrated, and men and women do not respond differently to this measure (e.g. Abidin & Brunner, 1995). Individuals respond to items using a 5-point likert scale (1 = strongly agree, 5 = Strongly Disagree; e.g. “My partner and I are a good team”).

Parenting Efficacy. Participants completed the Parenting Sense of Competence Scale at T2 (Johnson & Mash, 1989 α = .84 - .90), a scale that measures *Parenting Satisfaction* (e.g. “Being a good parent is a reward in itself“) and *Parenting Efficacy* (e.g. “Being a parent is manageable, and any problems are easily solved”). An examination of the factor structure and validity found that these subscales assess distinct aspects of parenting competence, and convergent validity between subscales and other measures of parenting functioning and child adjustment outcomes (Ohan, Leung, & Johnson, 2000). This

measure also provides a total score for total *Parenting Efficacy* by summing the two subscales. Participants respond to items using a 6-point likert scale (1 = Strongly Agree, 6 = Strongly Disagree). Mothers and fathers completed this measure by reporting their perceptions of their own parenting.

Parenting Practices. Participants completed the Parenting Scale at T3 (Arnold, O'Leary, Wold, & Acker, 1993), a 30-item scale that measures participants parenting style by having parents indicate how they would respond in hypothetical parenting situations. Parenting style is measured in terms of *Laxness*, which refers to permissive or inconsistent parenting, and *Over-reactivity*, which refers to harsh or punitive parenting. The two-factor structure of this scale has been replicated in some studies (e.g. Prinzie, Onghena & Hellinck, 2007), although a third factor of *hostility* has been found in other samples (Arnold, O'Leary, Wolff, & Acker, 1993). Evidence for convergent validity includes parenting characteristics, for example expression of anger and relationship adjustment, as well as children's behaviour (Rhoades & O'Leary, 2007), as well as observed parenting behaviour (Locke & Prinze, 2002). Participants respond to items by indicating on a 7-point scale where their parenting style falls between two dichotomous responses to a hypothetical situation (e.g. "At meal time… I let my child decide how much to eat vs. I decide how much my child eats"). Parents responded to this measure about their own parenting.

Temperament. Mothers and fathers each completed the Infant Characteristics Questionnaire at T2 and T3 (ICQ; Bates, 1979 $\alpha = .80 - .81$), a 24-item scale that has parents rate their children on a 7-point likert scale (1 = very easy, 7 = very difficult). In this study, I am interested in participants' ratings of their children on the *Fussy/Difficult* subscale (e.g. "How easy or difficult is it for you to calm or soothe your child when

he/she is upset?"). Infants who score high on this subscale show more problems at different ages throughout childhood (Guerin & Gottfried, 1994).

Child Adjustment. Mothers and fathers each completed the Child Behaviour Checklist at T3 and T4 (Achenbach, 1979 α = .91 - .96). Each parent provided separate reports of how often their children exhibited different *Internalizing Behaviours* (e.g. "cries a lot") and *Externalizing Behaviours* (e.g. "temper tantrums or hot temper") over the last two months on a 3-point likert scale (0 = absent, 2 = occurs often). This is the most widely used and extensively researched measure of internalizing and externalizing problems in children (Achenbach et al, 2016). The preschool version for children ages 18 months to 5 years was used for this study. All items have been found to discriminate between referred and non-referred children and/or were evaluated by experienced clinicians to be very consistent with DSM diagnostic criteria for this age group (Achenbach et al, 2000).

Planned Analyses

Confirmatory factor analysis (CFA) was used determine whether men and women's reports of relationship adjustment, co-parenting alliance, parenting practices, and children's maladaptive behaviour contribute to latent factors of these constructs that operate at the level of a relationship. CFA models were fit with full information likelihood estimation and evaluated using the chi-square goodness-of-fit test (Loehlin, 1998), chi-square/degrees-of-freedom (Bollen, 1989), the comparative fit index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Steiger, 1990). Error terms for mothers and fathers on each measure were correlated to account for interdependence in the data.

The first and second halves of the Parenting Alliance Inventory were used to create indicators for a couple level variable of 'co-parenting alliance' (see Figure 7). CFA

was also used to explore whether lax and over-reactive parenting are indicators of an overall construct of ineffective parenting. Mothers' and fathers' ratings of laxness and overreactivity were used as indicators of a latent parenting practices variable. Finally, mothers' and fathers' ratings of child internalizing and externalizing behaviours were used as indicators of a latent factor of Child Adjustment. For models that did not support latent couple level factors, data were analyzed separately for mothers and fathers.

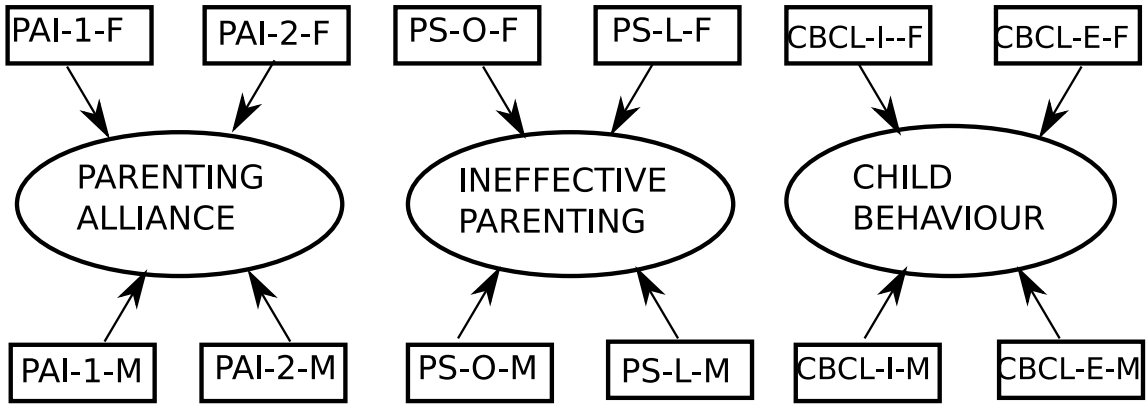

Figure 7. Confirmatory factor analyses latent variables and indicators.
Note. PAI-1-F = Parenting Alliance Inventory, first half, female; PAI-2-F = Parenting Alliance Inventory, second half, female; PAI-1-M = Parenting Alliance Inventory, first half, male; PAI-2-M = Parenting Alliance Inventory, second half, male; PS-O-F = Parenting Scale, Overreactive, female; PS-L-F = Parenting Scale, Lax, female; PS-O-M = Parenting Scale, Overreactive, male; PS-L-M = Parenting Scale, Lax, male; CBCL-I-M = Child Behaviour Checklist, Internalizing – male; CBCL-I-F = Child Behaviour Checklist, Internalizing – female; CBCL-E-M = Child Behaviour Checklist, Externalizing – male; CBCL-E-F = Child Behaviour Checklist, Externalizing – female.

Following Confirmatory Factor Analyses, structural equation modeling was used to test the different connections in the overall model. Path analyses were used to test models where latent variables were not a good fit for the data. To test interactions, regression analyses were used with centred predictor variables. Significant interactions were probed by creating groupings of high and low levels of the variable in question and fitting regression lines for each group.

Results

Preliminary Analyses

In order to examine the impact of outliers on analyses, univariate outliers greater than three standard deviations from the mean were identified. Each of the outliers was evaluated to be representative of the variables of interest and not an error in responding. Outliers were transformed so that the raw score of each outlier is one unit more than the next most extreme score – for example, if a score of 24 on a scale was an outlier and the highest score that was not an outlier was a 17, the 24 would be transformed to be 18 (Tabachnick & Fidell, 2001). Multivariate outliers were detected using Mahalanobis' distance, which is a statistical measure used to identify unusual combinations of scores (Fidell & Tabachnick, 2003). Values were compared to the χ^2 distribution, and cases with values greater than the critical value were omitted from analyses. One female and one male participant were removed from analyses at each time point due to multivariate outliers.

Zero-order correlations between continuous demographic variables and variables of interest were examined separately for men and women to identify covariates. Demographic information included age, education, income, relationship status, years living together, and whether participants self-identified as belonging to a visible minority group. Correlations between demographic information and predictor and outcome variables are presented in Table 2.

For women, education was negatively correlated with parenting laxness and with ratings of their infants' difficult temperaments; women with more years of education used fewer lax parenting strategies and rated their infants as less difficult. The time that partners had lived together was negatively correlated with women's ratings of their

children's externalizing behaviours, such that women who had lived with their partners for longer endorsed fewer externalizing behaviours. For men, age was positively correlated with parenting laxness and ratings of their infants' difficult temperaments; older men used more lax parenting strategies and rated their infants as more difficult. Income was negatively correlated with parenting alliance, such that men who earned more money reported lower co-parenting alliance. In accordance with these findings, education, time living together, age, and income were controlled for in subsequent analyses.

Means and standard deviations were calculated separately for men and women, and are reported in Table 3. Standardized norms were not available for any of the scales used with the exception of the Child Behaviour Checklist (Achenbach 1979). Means and standard deviations for this sample were similar to means and standard deviations in other community samples for the Parenting Alliance Inventory (Abidin & Brunner, 2010) and Parenting Sense of Competence Scale (Ohan, Leung & Johnson, 2000; Gilmore & Cuskelly, 2008). On the Parenting Scale, means were lower in the current sample than have been found in other community samples (Arnold, O'Leary, Wolff & Acker, 1993; Rhoades & O'Leary, 2007), indicating that parents in the current sample used ineffective parenting strategies less often than in other samples. Parents' ratings of difficult temperament on the Infant Characteristics Questionnaire were similar to ratings of 'moderate criers' and 'evening criers', and lower than ratings of 'persistent criers' in a study by St. James, Conroy, and Williams (1998). Although norms are available for the CBCL, these norms are used to differentiate between clinic-referred and non-referred children rather than to provide comparisons among children without extreme levels of internalizing and externalizing problems.

To examine gender differences between men and women, t-tests were conducted. No gender differences emerged for any variable. Bivariate correlations among all variables are reported in Table 4. As expected, relationship satisfaction at Time 1 was correlated with parenting efficacy at Time 2. Parenting alliance at Time 2 was correlated with parenting efficacy at Time 2. Consistent with past research findings, parenting efficacy was correlated with ratings of infant difficult temperament at Time 2 and with over-reactive parenting at Time 3. As expected, ratings of infant difficult temperament at Time 2 were correlated with over reactive parenting at Time 3. Contrary to expectations, men's relationship satisfaction at Time1 was not correlated with parenting alliance at Time 2, and parenting alliance was not correlated with ineffective parenting or child outcomes at Time 3. Surprisingly, there were no correlations among parenting variables (lax or over-reactive parenting) and child outcomes at T3.

For women, relationship satisfaction at Time 1 was correlated with parenting alliance at Time 2, as expected. Relationship satisfaction was also correlated with over-reactive parenting at Time 3. Women's ratings of parenting alliance at Time 2 were correlated with parenting efficacy at Time 2, ratings of infant temperament at Time 2, and lax parenting at Time 3. As expected, parenting efficacy at Time 2 was correlated with ratings of infant temperament at Time 3 and with over-reactive parenting at Time 3. Consistent with past findings, women's ratings of difficult infant temperament at Time 2 were correlated with over-reactive parenting at Time 3. Contrary to expectation, parenting alliance at Time 2 was not correlated with either lax or over-reactive parenting at Time 3, and was also not correlated with child outcome variables at Time 3. Lax parenting at Time 3 was not correlated with child outcomes at Time 3.

All variables were examined for normality separately for men and women using

the D'Agnostino-Pearson test of normality (D'Agnostio and Stephens, 1986). For men, lax parenting, parenting efficacy, and difficult temperament were normally distributed at each time point. Variables that were positively skewed included T3 over-reactive parenting and T3 ratings of both internalizing and externalizing problems. In order to make the data more normal, the natural log of these variables is used in analyses. T2 parenting alliance was negatively skewed, and the square root of these scores was used in analyses. For women, ratings of difficult temperament were normally distributed. All other variables were skewed. T3 Lax and Over-reactive parenting and T3 ratings of both internalizing and externalizing problems were positively skewed and the natural log of these variables is used in analyses. Parenting alliance and parenting efficacy were negatively skewed for women, and so the square roots of these scores were used in analyses to improve normality.

Table 2. Correlations Between Demographic Variables, Predictors, and Outcomes

Variable	Men						Women					
	Age	Inc	Educ	YLT	Rel Stat	Minority	Age	Inc	Educ	YLT	Rel Stat	Minority
DAS T1	-.014	.162	-.042	.040	.071	-.106	-.017	.103	**.297****	.025	**.212***	-.029
PAI T2	.152	**-.334****	-.073	.060	.120	.060	-.028	.031	.145	.038	.135	-.070
PSC T2	-.014	-.053	.051	.149	.112	.135	-.200	.109	-.079	-.153	.047	-.016
ICQ T2	-.140	.042	-.194	-.055	.052	.121	.124	-.147	**-.226***	.066	-.108	.078
PS L T3	.077	.079	.060	**-.269***	-.256	-.146	**-.263***	-.238	-.190	-.110	-.148	.165
PS O T3	.003	-.072	-.058	-.217	-.044	-.179	.019	-.212	-.147	-.165	-.195	.170
CBCL I T3	**.309***	-.096	-.027	**.392***	-.055	.177	.017	-.189	**-.274***	-.136	-.220	.126
CBCL E T3	**.313***	-.038	.104	.253	-.034	**.273***	-.133	-.211	-.149	-.154	-.192	.009

Note. Educ = Education, Inc = Income, YLT = Years Living Together, Rel Stat = Relationship status, DAS = Dyadic Adjustment Scale, T1= Time 1, PAI = Parenting Alliance Inventory, T2 = Time 2, PSC = Parenting Sense of Competence, ICQ-D = Infant Characteristics Questionnaire, Difficult Temperament; T3 = Time 3; PS-L = Parenting Scale – Laxness; PS-O = Parenting Scale – Overreactivity; CBCL-I = Child Behaviour Checklist – Internalizing; CBCL-E = Child Behaviour Checklist - Externalizing, * = $p < .05$, ** = $p < .01$.

Table 3. Means and Standard Deviations

	Men		Women	
	M	SD	M	SD
Dyadic Adjustment Scale, T1	119.39	14.39	123.47	12.37
Parenting Alliance Inventory, T2	84.97	8.24	85.51	8.11
Parenting Sense of Competence, T2	77.79	10.12	79.35	12.12
Infant Characteristics Questionnaire, T2	18.26	4.24	18.06	4.68
Parenting Scale, Lax, T3	2.30	.70	2.38	.80
Parenting Scale, Over-reactive, T3	2.25	.85	2.20	.85
CBCL Internalizing, T3	39.65	3.69	39.95	3.45
CBCL Externalizing, T3	30.65	5.94	31.15	5.74

Note. M = Mean, SD = Standard Deviation, T1= Time 1, T2 = Time 2, T3 = Time 3; PS-L = Parenting Scale – Laxness; CBCL = Child Behaviour Checklist.

Table 4. Bivariate correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) DAS T1	**.41****	**.42****	**.27****	**-.37****	-.23	**-.42****	**-.38****	**-.34****
(2) PAI T2	.14	**.21****	**.53****	**-.27***	-.16	-.18	-.17	-.15
(3) PSC T2	**.31****	**.50****	.16	**-.27***	.07	**-.41****	**-.33***	**-.36****
(4) ICQ T2	**-.26***	-.18	**-.31****	**.25****	.26	**.32***	**.37****	**.31***
(5) PS L T3	-.10	-.20	-.26	.11	.16	**.35****	.12	.23
(6) PS O T3	-.07	-.17	**-.56****	**.43****	**.45****	.09	**.53****	**.57****
(7) CBCL I T3	**-.30***	-.08	-.19	.23	.15	.01	.19	**.70****
(8) CBCL E T3	**-.34****	-.19	-.19	.17	.08	.02	**.83****	.16

Note. Women's scores are presented above the diagonal; men's scores are presented below the diagonal; bivariate correlations between men and women's scores are presented along the diagonal. DAS = Dyadic Adjustment Scale, Satisfaction T1= Time 1, PAI = Parenting Alliance Inventory, T2 = Time 2, PSC = Parenting Sense of Competence, ICQ = Infant Characteristics Questionnaire, Difficult Temperament; T3 = Time 3; PS L = Parenting Scale – Laxness; PS O = Parenting Scale – Overreactivity; CBCL I = Child Behaviour Checklist – Internalizing;; CBCL E = Child Behaviour Checklist – Externalizing.

Measurement models: Confirmatory Factor Analysis (CFA)

SEM software AMOS for SPSS was used to perform CFA for each of the proposed latent variables. Maximum likelihood estimation was used. I hypothesized that CFA would confirm couple-level variables consisting of indicators from participants and their partners on the same measurements. For each of the CFAs tested and described below, latent variables were created using indicators from each participant and their partner's score on the same indicator. Complete data were available for 73 pairs of couples. In order to maximize statistical power Maximum Likelihood Estimation was used to fill missing data, bringing the total sample size to 98 pairs of participants (Anderson & Gerbing, 1988). To account for interdependence of data among partners, error terms for mothers and fathers on each measure were correlated for each model.

CFA models were fit with full information likelihood estimation and evaluated using the chi-square goodness-of-fit test (Loehlin, 1998), chi-square/degrees-of-freedom (Bollen, 1989), the comparative fit index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Steiger, 1990). Thresholds of greater than .90 for the CFI and less than .08 for the RMSEA were used, in accordance with the recommendation of Hu and Bentler (1999).

For parenting alliance, items from the first and second halves of the Parenting Alliance Inventory from time 2 were summed separately to give two indicators of parenting alliance for each participant and two indicators for that participant's partner, for a total of four indicators per pair. When examining men and women's parenting alliance separately, the models were unidentified and no probability level could be computed. For couple level parenting alliance, χ 2 indicated that the model was not a good fit for the

data (χ 2 = 69.68, p<. 01). The χ 2 goodness of fit test is sensitive to small sample size and is more likely to indicate poor model fit for small sample sizes than other fit indices such as the comparative fit index (CFI), Lewis-tucker index (TLI), and root mean square error estimate (RMSEA). These indices were examined, and also indicated a poor fit between the model and the observed data (CFI = 0.605, TLI = 0.974, RMSEA = 0.594). Testing the model with separate but correlated latent variables for men and women did not improve model fit. (χ 2= 136.43, p< .01; CFI =.875, TLI = .864, RMSEA = .132).

Exploratory post hoc analyses for parenting alliance included adding additional indicators to see whether additional information would help to capture the complexity of parenting alliance. Coded observational data from an oral history interview at the prenatal period was added as an indicator. Specifically, coders rated the couple's bond and connectedness. PAI scores from t3 were also added to the model. For men, this model was a good fit for the data (χ 2 = 2.55, p = .28, CFI = .996, TLI = .981, RMSEA = .053). For women, the model was not a good fit for the data (χ 2 = 8.45, p = .02, CFI = .905, TLI = .572, RMSEA = .183). At the couple level, the model did not fit the data. Overall, CFA models of parenting alliance suggest that mothers' and fathers' ratings of parenting alliance do not reflect a broader couple-level construct.

For ineffective parenting, indicators included individual and partner scores on two subscales of the parenting practices questionnaire that looked at over-reactive and lax parenting. χ 2 indicated that the model was not a good fit for the data (χ 2 = 8.36, p = .02). Additional indices were examined. These also indicated a poor fit between the model and observed data (CFI = 0.588, TLI = .072, RMSEA = .182).

Post hoc exploratory analyses were conducted to test alternate models. Testing the model with separate but correlated latent variables for men and women did improve

model fit (χ 2= 1.038, p = .308; CFI = .998, TLI = .975, RMSEA = .020). Separating the model into one latent variable for laxness and one for over-reactivity, with indicators from both parents, did not improve model fit (χ 2= 8.85, p = .03; CFI = .621, TLI = .263, RMSEA = .143). In summary, lax and over-reactive parenting were related within each parent, but were not related between parents.

Child adjustment was hypothesized to be composed of mother and fathers ratings on different subscales on the CBCL. Internalizing and externalizing behaviours were hypothesized to be distinct but correlated latent variables. Indicators for internalizing behaviour included mothers and fathers ratings of their children on subscales looking at anxiety, sleep problems, and affective problems. Indicators for externalizing behaviours included mother and father ratings of hyperactivity, oppositional behaviour, and developmental problems. χ 2 indicated that the model was not a good fit for the data (χ 2 = 8.36, p = .02). The comparative fit index (CFI) = .557, the Tucker-Lewis fit index (TLI) = .349, and the RMSEA = .177. These values indicate a poor fit between the model and the observed data.

Post hoc exploratory analyses were conducted to look for alternative models to fit the data. A model that looked at overall child adjustment by using mother and father ratings on each of the six CBCL subscales to get an overall couple level latent variable for child maladjustment was not a good fit (χ 2=213.57, P <.01; CFI = .555, TLI = .357, RMSEA = .175).

Testing the model with separate but correlated latent variables for men and women's ratings of internalizing and externalizing did not improve model fit (χ 2= 113.25, p<.01; CFI = .824, TLI =.725 , RMSEA = .115).

Because all CFAs indicated that couple level latent variables do not fit the data, models were tested using path analysis separately for mothers and fathers rather than using full SEM using couple level latent variables.

Table 5. Summary of Confirmatory Factor Analysis Findings

Model	Latent variables Indicators	Fit	χ 2	p	CFI	TLI	RMSEA
MODEL 1							
couple-level latent variable	(1) Parenting Alliance	No	69.68	.001	0.61	0.95	0.59
	(1a) T2 PAI first half, men (1b) T2 PAI second half, men (1c) T2 PAI first half, women (1d) T2 PAI second half, women						
MODEL 2							
Separate correlated latent variables for men and women	(1) Men's Parenting Alliance	No	136.43	.001	0.88	0.86	0.13
	(1a) T2 PAI first half, men (1b) T2 PAI second half, men						
	(2) Women's parenting alliance						
	(2a) T2 PAI first half, women (2b) T2 PAI second half, women						
MODEL 3 – post hoc							
Men's parenting alliance	(1) Men's parenting alliance	Yes	2.55	0.28	0.99	0.98	0.05
	(1a) T2 PAI, men (1b) T3 PAI, men (1c) OHI, men						
Model 4 – post hoc							
Women's parenting alliance	(1) Women's parenting alliance	No	8.45	.02	0.91	0.57	0.18
	(1a) T2 PAI, women (1b) T2 PAI, women (1c) OHI, women						

Model	Latent variables Indicators	Fit	χ 2	p	CFI	TLI	RMSEA
MODEL 1							
couple-level latent variable	(1) Ineffective parenting	No	8.36	.02	0.59	0.07	0.18
	(1a) T3 PS lax scale, men (1b) T3 PS overreact scale, women (1c) T3 PS lax scale, men (1d) T3 PS overreact scale, women						
MODEL 2							
Separate correlated latent variables for men and women	(1) Men's Ineffective parenting	Yes	1.04	.31	0.99	0.98	0.02
	(1a) T3 PS lax scale, men (1b) T3 PS overreact scale, men						
	(2) Women's Ineffective parenting						
	(2a) T3 PS lax scale, women (2b) T3 PS overreact scale, women						
MODEL 3 – post hoc							
Separate correlated latent variables for lax and overreactive parenting	(1) Lax parenting (1a) T3 PS lax scale, men (1b) T3 PS lax scale, women (2) Overreactive parenting (2a) T3 PS overreact scale, men (2b) T3 PS overreact scale, women	No	8.85	.03	0.62	0.26	0.14

Model	Latent variable Indicator	Fit	χ 2	p	CFI	TLI	RMSEA
MODEL 1 Separate correlated latent variables for internalizing and externalizing	(1) Internalizing	No	8.36	.02	0.56	0.35	0.18
	(1a) T3 CBCL anxiety, men's rating						
	(1b) T3 CBCL sleep, men's rating						
	(1c) T3 CBCL affective, men's rating						
	(1d) T3 CBCL anxiety, women's rating						
	(1e) T3 CBCL sleep, women's rating						
	(1f) T3 CBCL affective, women's rating						
	(2) Externalizing						
	(2a) T3 CBCL hyperactive, men's rating						
	(2b) T3 CBCL oppositional, men's rating						
	(2c) T3 CBCL developmental, men's rating						
	(2d) T3 CBCL hyperactive, women's rating						
	(2e) T3 CBCL oppositional, women's rating						
	(2f) T3 CBCL developmental, women's rating						
MODEL 2 Overall child adjustment	(1) Child adjustment	No	213.57	.001	0.56	0.36	0.18
	(1a) T3 CBCL anxiety, men's rating						
	(1b) T3 CBCL sleep, men's rating						
	(1c) T3 CBCL affective, men's rating						
	(1d) T3 CBCL hyperactive, men's rating						
	(1e) T3 CBCL oppositional, men's rating						
	(1f) T3 CBCL developmental, men's rating						
	(1g) T3 CBCL anxiety, women's rating						
	(1h) T3 CBCL sleep, women's rating						
	(1i) T3 CBCL affective, women's rating						
	(1j) T3 CBCL hyperactive, women's rating						
	(1k) T3 CBCL oppositional, women's rating						
	(1l) T3 CBCL developmental, women's rating						

Model	Latent variable Indicator	Fit	χ 2	p	CFI	TLI	RMSEA

MODEL 3							
Separate correlated latent variables for men and women	(1) Men's ratings of overall child adjustment (1a) T3 CBCL anxiety, men's rating (1b) T3 CBCL sleep, men's rating (1c) T3 CBCL affective, men's rating (1d) T3 CBCL hyperactive, men's rating (1e) T3 CBCL oppositional, men's rating (1f) T3 CBCL developmental, men's rating	No	113.25	.001	0.82	0.72	0.12
	(2) Women's ratings of overall child adjustment (2a) T3 CBCL anxiety, women's rating (2b) T3 CBCL sleep, women's rating (2c) T3 CBCL affective, women's rating (2d) T3 CBCL hyperactive, women's rating (2e) T3 CBCL oppositional, women's rating (2f) T3 CBCL developmental, women's rating						

Note. CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root mean squared error of approximation, PAI = parenting alliance inventory, T2 = Time 2, OHI = Oral history interview, PS = parenting scale, T3 = Time 3, CBCL = child behaviour checklist

Path Analysis

Diagrams of the structural models tested with path analyses are included below. Following the AMOS user guide (Arbuckle, 2010), observed variables are enclosed in rectangles and measurement errors are enclosed in ellipses. To achieve model identification, regression coefficients of all error terms were fixed to 1 (Byrne, 2016). Significant findings are presented using tables and figures. Nonsignificant findings are presented in text only.

Hypothesis 1

To test hypothesis 1, a structural model was created looking at the three parenting variables (parenting alliance, parenting self-efficacy, and self-reported ineffective parenting practices). Separate analyses were performed for over-reactive and lax parenting. For men, χ 2 indicated that the model was not a good fit for the model of over-reactive parenting (χ 2 = 5.08, p = .02) or lax parenting (χ 2 = 264.78, p <.01). Similarly, the model was not a good fit for women's lax parenting (χ 2 = 273.61, p < .01) or over-reactive parenting (χ 2 = 270.87, p < .01).

Hypothesis 2

To test hypothesis 2, a structural model was created looking at how parenting alliance, infant temperament, and the interaction between the two predict maladaptive parenting practices. Models were tested separately for men and women and for over-reactive and lax parenting. For men, the model was not a good fit for over-reactive parenting (χ 2 = 263.19, p < .01) or lax parenting (χ 2 = 276.93, p < .01). For women,

the model was not a good fit for over-reactive parenting (χ 2 = 288.59, p <.01) or lax parenting (χ 2 = 279.82, p < .01).

Parenting alliance did not predict self-reported parenting practices in our sample (see results for Hypothesis 1). Parenting efficacy did predict self-reported parenting practices, therefore exploratory analyses were run to test whether temperament moderated the relationship between parenting efficacy and ineffective parenting. Models were tested separately for over-reactive and lax parenting, with parenting efficacy and difficult temperament entered at Step One and their interaction term added at Step Two. For both men and women, only parenting efficacy had a direct effect on overreactive parenting. Infant temperament and the interaction between temperament and parenting efficacy did not add to the model. No significant predictors of lax parenting emerged. Significant results are presented in Tables 6 and 7.

Table 6. Hierarchical Multiple Regression Analyses of Parenting Efficacy and Infant Temperament Predicting Ineffective Parenting in Mothers

Predictor	Over-reactive Parenting				Lax Parenting			
	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1								
Parenting Efficacy T2	.01	**-.65****	-5.74	.00	.01	-.17	-1.13	.27
Infant Temperament T2	.02	.03	.24	.81	.02	-.04	-.29	.77
Step 2								
Parenting Efficacy T2	.01	**-.64****	-5.37	.02	.01	.15	.95	.35
Infant Temperament T2	.02	.01	.09	.93	.02	-.06	-.41	.68
Parenting Efficacy x Infant Temperament T2	.01	-.07	-.594	.56	.01	-.08	-.54	.59

Note. SE = Standard Error, * = p < .05, ** = p < .01.

Table 7. Hierarchical Multiple Regression Analyses of Parenting Efficacy and Infant Temperament Predicting Ineffective Parenting in Fathers

Predictor	Over-reactive Parenting				Lax Parenting			
	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1								
Parenting Efficacy T2	.01	**-.63****	-4.92	.00	.01	-.23	-1.50	.13
Infant Temperament T2	.02	-.06	-.45	.65	.02	.11	.72	.47
Step 2								
Parenting Efficacy T2	.01	**-.64****	-4.94	.00	.01	.24	-1.52	.14
Infant Temperament T2	.02	-.06	-.44	.66	.02	.11	.72	.47
Parenting Efficacy x Infant Temperament T2	.01	-.07	-.67	.50	.01	.04	-.27	.79

Note. SE = Standard Error, T2 = Time 2, * = p < .05, ** = p < .01.

Finally, a mediation model was tested in which parenting efficacy mediated the relationship between difficult temperament and overreactive parenting. Difficult temperament predicted parenting efficacy for men (β = -.518, SE = .244, p < .001) and women β = -.501, SE = .278, p < .001), and parenting efficacy was a significant predictor of overreactive parenting for men (β = -.597, SE = .008, p < .001) and women (β = -.668, SE = .006, p < .001). Difficult temperament was no longer a significant predictor of overreactive parenting after controlling for parenting efficacy for men (β = -.057, SE = .021, p = .654) or women (β = .027, SE = .091, p = .810). A Sobel Test (Sobel, 1982) found that this mediation was significant for both men (z = 3.526, SE = .014, p < .001) and women (z = 3.472, SE = .016, p < .001). Results are presented in Figures 8 and 9.

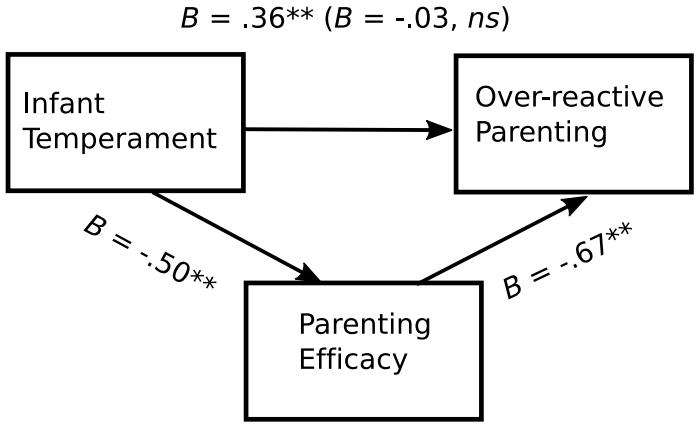

Figure 8. Mediation Analyses of Parenting Efficacy Mediating the Relationship between Temperament and Over-reactive Parenting in Mothers. ** = significant at **α = .01**

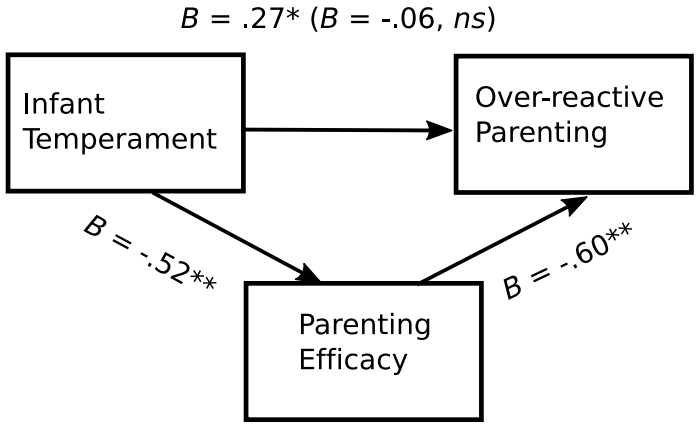

Figure 9. Mediation Analyses of Parenting Efficacy Mediating the Relationship between Temperament and Over-reactive Parenting in Fathers. * = significant at **α = .05;** ** = significant at **α = .01**

Hypothesis 3

Hypothesis 3 stated that infants with difficult temperaments would be more sensitive to ineffective parenting than children with easy temperaments. To test hypothesis 3, a structural model was created to look at how difficult temperament, ineffective parenting, and the interaction between the two predicted internalizing and externalizing behaviours. Models were run separately for men and women, over-reactive and lax parenting, and internalizing and externalizing disorders.

For men, all models had good fit, including models that looked at infant temperament along with over-reactive and lax parenting in predicting both internalizing (χ 2 = 1.95, p = .16, CFI = .994, TLI = .936, RMSEA = .05; χ 2 = 1.346, p = .25, CFI = .998, TLI = .978, RMSEA = .05) and externalizing behaviours (χ 2 = .091, p = .76, CFI = 1.00, TLI = 1.06, RMSEA = .; χ 2 = .874, p = .87, CFI = 1.00, TLI = 1.06, RMSEA =

.00; figs 5-8). For models that were a good fit, estimates were examined to determine which variables were significant predictors. For fathers, the only significant predictor in each model was infant temperament. Post hoc analyses examined models in which infant temperament along with lax and over-reactive parenting predicted overall CBCL scores. Infant temperament was the only significant predictor in each of the additional models tested. Significant results for fathers are presented in Tables 8 and 10.

Models looking at the interaction of infant temperament and over-reactive parenting in predicting internalizing and externalizing behaviours were each a good fit for women (χ 2 = 1.95, p = .16, CFI = .994, TLI = .936, RMSEA = .05; χ 2 = 1.346, p = .25, CFI = .998, TLI = .978, RMSEA = .05). Over-reactive parenting was the only significant estimate for both internalizing and externalizing behaviours. Results are presented in Results are presented in Tables 9 and 11. The model where lax parenting and difficult temperament predicted internalizing behaviours was also not a good fit for the data (χ 2 = 5.08, p = .02).

The model where lax parenting and difficult temperament predicted externalizing behaviours was a good fit for women (χ 2 = .766, p = .38, CFI = 1.00, TLI = 1.01, RMSEA = .000). The interaction between temperament and lax parenting was the only significant estimate. Cohen and Cohen's (1983) recommended method for testing interactions was used. Two groups were created to separate children with difficult temperaments from children with easier temperaments. Scores one standard deviation or more above the mean were classified as 'high difficulty' while scores one standard deviation or more below the mean were classified as 'low difficulty'. Regression lines were then created for each group. The pattern of results is depicted in figure 10 below: for low difficulty children, lax parenting did not impact externalizing behaviour. Contrary

to expectation, lax parenting was associated with fewer behaviour problems for children with difficult temperaments.

The same post hoc analyses were run for women's scores. These tested models in which infant temperament along with lax and over-reactive parenting predicted overall CBCL scores. The model that looked at difficult temperament, lax parenting, and their interaction in predicting overall CBCL scores was not a good fit. The model that looked at difficult temperament, over-reactive parenting, and the interaction between the two in predicting overall CBCL scores was a good fit (χ 2 = 2.019, p = .16, CFI = .994, TLI = .935, RMSEA = .10). Over-reactive parenting emerged as a significant estimator in the overall model. Looking at regression analyses, over-reactive parenting and difficult temperament were each significant predictors at Step One, but only over-reactive parenting remained significant when their interaction term was added at Step Two. The interaction between infant temperament and over-reactive parenting did not add to the model. Results are presented in Table 9.

Table 8. Hierarchical Multiple Regression Analyses of Infant Temperament and Fathers' Overreactive Parenting Predicting Behaviour Problems in Children.

Predictor	Internalizing				Externalizing				Overall Behaviour Problems			
	SE	ß	*t*	*p*	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1												
Infant Temperament T2	.08	**.59****	5.04	.00	.13	**.60****	5.22	.00	.20	**.62****	5.49	.00
Over-reactive Parenting T3	.50	-.16	-1.34	.19	.80	-.14	-1.24	.22	1.22	-.154	-1.36	.18
Step 2												
Infant Temperament T2	.25	**.94****	2.66	.01	.40	**.78***	2.22	.03	.61	**.87****	2.55	.01
Over-reactive Parenting T3	.54	-.11	-.86	.40	.87	-.12	-.949	.347	1.32	-.12	-.97	.34
Infant Temperament x Over-reactive Parenting	.11	-.38	-1.05	.30	-.18	-.19	-.53	.60	.27	-.28	-.78	.44

Note. SE = Standard Error, T2 = Time 2, T3 = Time 3, * = $p < .05$, ** = $p < .01$.

Table 9. Hierarchical Multiple Regression Analyses of Infant Temperament and Mothers' Over-reactive Parenting Predicting Behaviour Problems in Children.

Predictor	Internalizing				Externalizing				Overall Behaviour Problems			
	SE	ß	*t*	*p*	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1												
Infant Temperament T2	.08	**.29****	2.54	.02	.11	**.45****	4.41	.00	.17	**.42****	4.19	.00
Over-reactive Parenting T3	.46	**.40****	3.50	.01	.70	**.39****	.39	.00	1.02	**.43****	4.26	.00
Step 2												
Infant Temperament T2	.19	.09	.30	.77	.28	.34	1.3	.19	.41	.26	1.05	.30
Over-reactive Parenting T3	.49	**.38****	3.18	.00	.72	**.38****	3.58	.00	..057	**.41***	3.94	.00
Infant Temperament x Over-reactive Parenting	.08	.23	.80	.43	.12	.13	.49	.64	.17	.18	.71	.48

Note. SE = Standard Error, T2 = Time 2, T3 = Time 3, * = $p < .05$, ** = $p < .01$.

Table 10. Hierarchical Multiple Regression Analyses of Infant Temperament and Fathers' Lax Parenting Predicting Behaviour Problems in Children.

Predictor	Internalizing				Externalizing				Overall Behaviour Problems			
	SE	ß	*t*	*p*	SE	ß	*t*	*p*	SE	ß	*t*	*p*
Step 1												
Infant Temperament T2	.08	**.54****	4.61	.00	.13	**.58****	4.99	.00	.20	**.59****	5.15	.00
Lax Parenting T3	.55	.05	.39	.70	.97	-.05	-.46	.65	1.49	-.02	-.21	.83
Step 2												
Infant Temperament T2	.29	.53	1.21	.23	.45	**.94***	2.39	.02	.68	**.99***	2.56	.01
Lax Parenting T3	.55	.05	.375	.71	.98	-.04	-.33	.74	1.50	-.01	-.07	.94
Infant Temperament x Lax Parenting	..12	-.10	-.23	.82	.19	-.38	-.97	.34	.29	-.43	-1.09	.28

Note. SE = Standard Error, T2 = Time 2, T3 = Time 3, * = $p < .05$, ** = $p < .01$.

Table 11. Hierarchical Multiple Regression Analyses of Infant Temperament and Mothers' Lax Parenting Predicting Behaviour Problems in Children.

Predictor	Internalizing				Externalizing				Overall Behaviour Problems			
	SE	ß	*t*	*p*	SE	ß	*t*	*p*	SE	ß	*t*	*p*
Step 1												
Infant Temperament T2	.08	**.44****	3.65	.00	.12	**.58****	5.54	.00	.18	**.57****	5.34	.00
Lax Parenting T3	.02	.03	.02	.06	.80	.15	1.47	.15	1.21	.12	1.15	.26
Step 2												
Infant Temperament T2	.01	-.64	.01	.15	.43	.57	1.45	.15	.65	.60	1.51	.14
Lax Parenting T3	.02	.01	.02	.06	.81	.15	1.45	.15	1.22	.12	1.13	.26
Infant Temperament x Lax Parenting	.01	-.07	.01	.08	.179	**-.30***	3.54	.03	.27	-.03	-.08	.94

Note. SE = Standard Error, T2 = Time 2, T3 = Time 3, * = $p < .05$, ** = $p < .01$.

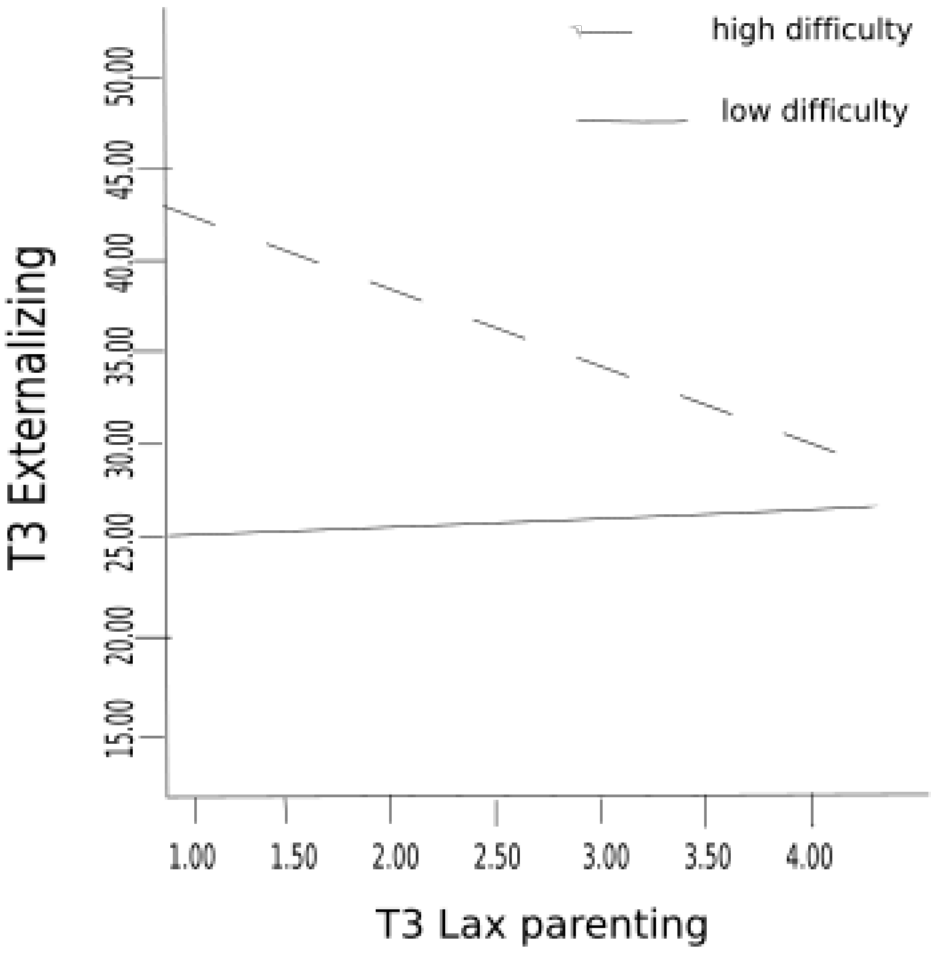

Figure 10. Interaction between mothers' lax parenting and temperament in predicting externalizing behaviours.

Note. T3 = Time 3.

Due to the finding that parenting efficacy predicted ineffective parenting, post hoc regression analyses tested parenting efficacy was tested as a moderator of the impact of infant temperament on internalizing and externalizing behaviours. Parenting efficacy and infant temperament were entered at Step One, and their interaction term was entered at Step Two. Models were tested separately for internalizing and externalizing behaviours.

For women, parenting efficacy emerged as the only unique predictor of internalizing and externalizing behaviours. For men, the interaction of parenting efficacy and infant temperament was the only significant predictor of children's externalizing behaviours. For fathers, higher parenting efficacy was associated with fewer externalizing behaviours for children with difficult temperaments. Results are displayed in Figure 11. No significant predictors of internalizing behaviours emerged for men. Results are presented in Tables 12 and 13.

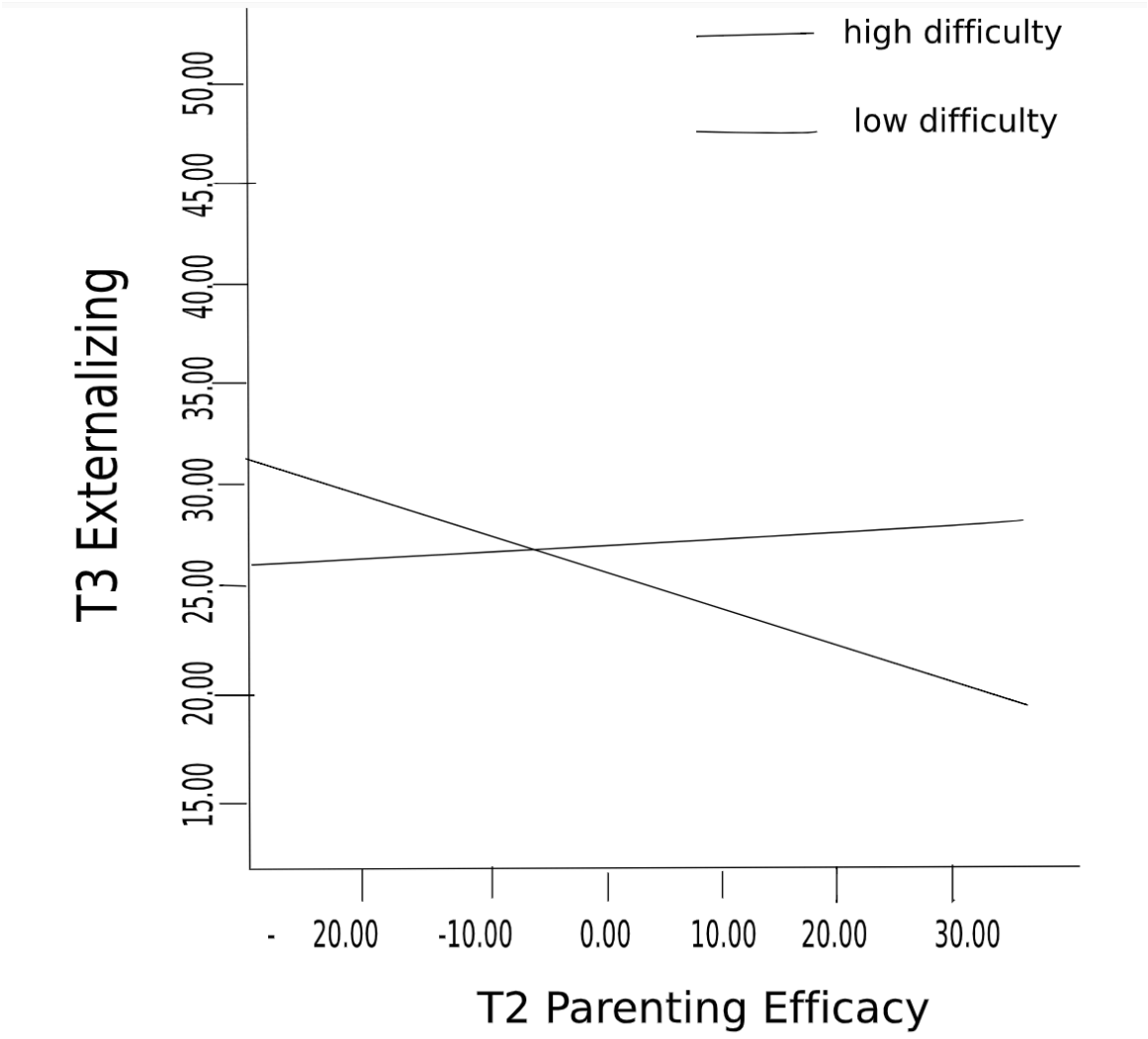

Figure 11. Interaction between father's parenting efficacy and temperament in predicting externalizing behaviours.

Table 12 Hierarchical Multiple Regression Analyses of Temperament and Parenting Efficacy Predicting Child Outcomes in Fathers

Predictor	Internalizing				Externalizing			
	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1								
Parenting Efficacy T2	.06	-.11	-.74	.46	.09	-.14	-.91	.37
Infant Temperament T2	.14	.18	1.2	.23	.23	.11	.75	.46
Step 2								
Parenting Efficacy T2	.06	-.08	-.53	.59	.09	-.07	-.44	.66
Infant Temperament T2	.14	.18	1.21	.23	.22	.12	.78	.44
Parenting Efficacy x Infant Temperament T2	.01	.12	.83	.41	.07	**.28***	2.04	.05

Note. SE = Standard Error, T2 = Time 2, * = p < .05, ** = p < .01.

Table 13. Hierarchical Multiple Regression Analyses of Temperament and Parenting Efficacy Predicting Child Outcomes in Mothers

Predictor	CBCL Internalizing				CBCL Externalizing			
	SE	ß	*t*	*p*	SE	ß	*t*	*P*
Step 1								
Parenting Efficacy T2	.04	**-.27***	-2.11	.04	.06	**-.33****	-2.58	.01
Infant Temperament T2	.10	**.29***	2.25	.03	.16	.20	1.57	.12
Step 2								
Parenting Efficacy T2	.04	**-.24****	-1.85	.03	.06	**-.31***	-2.37	.02
Infant Temperament T2	.11	.21	1.50	.14	.18	.15	1.04	.30
Parenting Efficacy x Infant Temperament T2	.01	-.17	-1.19	.24	.01	-.12	-.84	.41

Note. SE = Standard Error, * = $p < .05$, ** = $p < .01$.

Hypothesis 4.

To test hypothesis 4, a model testing a three way interaction between difficult temperament, over-reactive parenting, and lax parenting in predicting internalizing and externalizing behaviours. Because SEM findings indicated that models combining mothers and fathers responses to parenting questions were not a good fit for the data, analyses were run separately for men and women. Similarly, analyses were run separately for internalizing and externalizing behaviours.

For fathers, the model was a good fit for internalizing (χ 2 = 1.62, p = .20, CFI = .998, TLI = .940, RMSEA = .05; fig 10) and externalizing (χ 2 = .104, p = .747, CFI = 1.00, TLI = 1.06, RMSEA = .000; fig 11). No estimates were significant predictors in either model, therefore although the model is a good fit the results are not meaningful.

For mothers, the model was a good fit for externalizing only (χ 2 = 1.67, p = .20, CFI = .998, TLI = .925, RMSEA = .07; fig 12). Only over-reactive parenting emerged as a significant predictor of externalizing behaviour. The model accounted for 49.1% of the variance in externalizing behaviours. Mothers' results are presented in Table 14.

Table 14. Hierarchical Multiple Regression Analyses of a Three-way Interaction between Temperament, Lax Parenting, and Over-reactive Parenting Predicting Child Outcomes in Mothers.

Predictor	Externalizing Behaviour			
	SE	ß	*t*	*p*
Step 1				
Infant Temperament T2	.11.	**.45****	4.40	.00
Lax Parenting T3	.77	.05	.50	.62
Over-reactive Parenting T3	.73	**.38****	3.51	.00
Step 2				
Infant Temperament T2	.45	.38	.94	.35
Lax Parenting T3	.80	.07	.62	.54
Over-reactive Parenting T3	.79	**.38****	3.25	.00
	.17	-.06	-.15	.88
Infant Temperament x Lax Parenting				
Infant Temperament x Over-reactive Parenting	.12	.14	.50	.62
Over-reactive x Lax Parenting	.85	-.06	-.58	.56
Step 3				
Infant Temperament T2	.48	.37	.86	.39
Lax Parenting T3	.85	.07	.61	.54
Over-reactive Parenting T3	.80	**.38****	3.22	.00
	.20	-.04	-.10	.92
Infant Temperament x Lax Parenting				
Infant Temperament x Over-reactive Parenting	.12	.13	.48	.63
Over-reactive x Lax Parenting	.87	-.06	-.58	.56
Infant Temperament x Over-reactive parenting x Lax Parenting	.18	-.01	-.07	.94

Note. SE = Standard Error, T2 – Time 2, ** = p < .01.

The full model was tested separately for men and women. The data were not a good fit for the model for men (χ 2 = 360.33, $p < .01$) or women (χ 2 = 320.27 $p < .01$).

Discussion

Summary of findings

This project looked at how different components of a family system influence each other over the transition to parenthood, including co-parenting, parenting efficacy, maladaptive parenting, infant temperament, and child maladjustment. Support was found for some but not all of the hypothesized ways these constructs influence each other. Interestingly, some well established findings were not replicated in this study, including the influence of co-parenting on parenting practices, and the influence of over-reactive and lax parenting on child behaviour. Exploratory analyses that looked at how mothers and fathers ratings hang together as a couple level construct found that each parents rating did not reflect a broader couple-level construct.

Parents with more positive co-parenting relationships felt more efficacious as parents, and feeling more efficacious was in turn related to using more adaptive parenting strategies. It was not possible to test whether this helped explain why positive co-parenting leads to using better parenting strategies because in this sample, and contrary to past research, having a positive co-parenting relationship did not have an impact on how parents reported their parenting strategies in difficult situations with their toddlers. Having a child with a difficult temperament and lacking confidence in parenting skills were the only aspects of self-reported family life that were associated with weaker parenting skills. I hypothesized that parenting efficacy would matter most for parents who had a weak co-parenting relationship. Though this was not the case, parenting efficacy was found to predict parenting and child behaviour. Additional exploratory analyses suggested that in our sample, parents with difficult infants had less confidence in their parenting, which in turn was related to more over-reactive parenting. For men,

having a difficult infant and weak parenting efficacy was associated with more behaviour problems for children, whereas for women, having weak parenting efficacy was associated with more behaviour problems for children regardless of their temperament.

Relationships among parents' ratings: individual and family level constructs.

One of the overarching goals of this project was to clarify *how* mothers' and fathers' ratings of their relationship with each other and with their children are interrelated, by looking at whether these parents' perspectives on their co-parenting relationship, approach to parenting in challenging situations, and children's behaviour fit together between mothers and fathers and form a unified construct, or whether it is more conceptually sound to look at mothers and fathers perspectives as separate but related entities. Based on previous research, I proposed that how mothers and fathers reported their co-parenting alliance, ineffective parenting strategies, and children's behaviour would be an indicator of how the family was functioning in each of those areas (Van Egerin & Hawkins, 2004; Conger et al, 2012; Schofield et al., 2009). In other words, if a mother rates the parenting alliance as low, this low rating would suggest that this not only reflects how the mother feels in the relationship, but also reflects the alliance between both partners. Understanding how individual reports of family functioning are interrelated provides important information about how these important constructs should be conceptualized when considering a family's functioning from a systems perspective.

Parenting alliance. Based on previous research, I proposed that whether mothers and fathers rated their parenting alliance as being strong or weak would be a reflection of an overarching couple-level co-parenting alliance. Contrary to what was expected, mothers' and fathers' perspectives on the parenting alliance did not fit together at the couple level. This means that it makes more sense to think about the way mothers and fathers felt

about their co-parenting relationship separately for each individual, rather than that each couple has some amount of alliance between them that each partner will be influenced by. Although parenting alliance seems to be a separate entity for mothers and for fathers, the way each partner felt about their co-parenting relationship impacted the other partner's perceptions. In other words, mothers who had rated their parenting alliance favourably were more likely to have partners who also rated parenting alliance favourably. Conversely, mothers who rate their parenting alliance as lacking were more likely to have partners who gave low ratings. This finding is consistent with research suggesting spillover effects between partners, such that problems for one partner impact the other partner as well (Merrifeld & Gamble, 2013). However, this is different than concluding that parenting alliance scales measure the same underlying construct for men and women.

Ineffective parenting. This study also aimed to explore the relationship among different styles of ineffective parenting in mothers and fathers. Three different models were tested. The first model looked at whether it is conceptually meaningful to combine two styles of ineffective parenting from both the mother and father to get a picture of how effective both parents are overall. The second model looked at separating the construct by parenting style, combining lax parenting from each parent to look at how lax overall the parents are and combining over-reactive parenting from each parent to get an overall measure of over-reactive parenting in the family. The third model separated the construct by parent, combining lax and over-reactive parenting to get a sense of overall ineffective parenting for mothers and fathers.

In our sample, the third model is the only model that fit. Mothers and fathers used similar parenting strategies, and there was no difference between the ineffective strategies

used by mothers and fathers. For both genders, parents who used one ineffective strategy were much more likely to use another. In other words, parents who were over-reactive also tended to be lax. This is consistent with past psychometric research that evaluated the factor structure and validity of the Parenting Scale. For example, Rhoades & O'Leary (2007) that found over-reactive parenting and lax parenting went together for most parents. However, the strategy one parent used was not related to the other parent's behaviour in this sample. Children whose mothers used more lax and over-reactive parenting strategies to manage difficult behaviour, did not tend to have fathers who used these ineffective parenting strategies any more than children whose mothers used more adaptive approaches to parenting.

This finding is not consistent with previous research that has found that similarities in parenting practices between parents is more often the case than not (e.g. Rinaldy & Howe, 2012; Winsler et al, 2005; Gamble et al, 2007). However, these studies have tended to find similarities on some but not all dimensions of parenting. For example, while Rinaldy and Howe (2012) found that authoritative parenting was similar in mothers and fathers, Winsler and colleagues (2005) found that both lax and authoritative parenting styles tended to co-occur. Gamble and colleagues (2007) found that authoritarian approaches were most similar among mothers and fathers. Future research exploring predictors of similarity in parenting practices or behaviours would help to clarify this question.

Tavassoli and colleagues (2016) looked at how differences in parenting styles were related to relationship conflict. They found that smaller differences in parenting practices were related to lower relationship conflict and fewer child behaviour problems. They also found that parent gender influenced how the differences in parenting impacted

the couple and child, for example that when fathers had less lax parenting than mothers there was actually a positive impact on child behaviour. The current study looked at the interaction between lax and over-reactive parenting for each parent, but did not look at whether adverse outcomes were more likely when there was a discrepancy between parents. Although relationship conflict was not measured, relationship satisfaction was a predictor of later child behaviour problems. It is possible that discrepancies in parenting style contributed to child behaviour problems. Given that the most consistent similarity in parenting styles has been authoritative parenting (Rinaldy & Howe, 2012; Winsler et al, 2015), latent parenting constructs in couples may be more highly related to adaptive parenting strategies rather than the ineffective ones explored in this study.

Ratings of child behaviour. The last set of models that were tested looked at how mothers and fathers' ratings of their children's behaviour hung together. At the broadest level, children's behaviour was measured in terms of internalizing and externalizing behaviours. Past research has found that these two constructs are distinct but interrelated. It was hypothesized that mothers' and fathers' ratings of their child's behaviour on each of those broad subscales would come together to represent an overall level of difficult or maladaptive behaviour. Contrary to hypotheses, this was not the case. When parents rated their child's behaviour at age two, mothers and fathers' ratings were not related. Children who were rated as having more internalizing or externalizing behaviours by their mothers were not more likely to be rated as having more internalizing or externalizing behaviours by their fathers.

In a paper addressing issues in conducting research with children, Rapport and colleagues (2011) discussed that inter-rater agreement between parents is often lower than we would expect and can depend on the behaviours being rated. Externalizing

behaviours tend to be more overt and similar across settings and tend to be rated more similarly by parents than internalizing behaviours, which can be more subtle. Some factors that may contribute to discrepancy between how parents perceive their children include how subtle and variable the behaviour is, whether parents spend time with children in different settings, and parent personality and pathology. Differences between mother and father ratings may have to do with differences in parenting roles in early childhood, as well as with differences in socialization to parenting roles between men and women. Walker and Bracken (1996) examined parental agreement on four rating scales of preschool behaviour in order to determine whether inter-parent agreement and disagreement was unique to specific measures. They found that inter-parent agreement was low for most scales, with the exception of the CBCL, which had high, statistically significant correlations between parents for each subscale and the total score. They concluded that CBCL scores may be more highly related because the instrument refers to concrete observable, and extreme behaviours that may be more easily agreed upon. For other measures of child behaviour, Walker and Bracken (1996) found low levels of inter-parent agreement. They recommended that separate norms for mothers and fathers may be more appropriate than combining parents' ratings to create a common norm, which is most the most common approach for behavioural rating scale norms.

Mothers and fathers who rated their children as having a lot of internalizing behaviours also rated their children as having a lot of externalizing behaviours. This is consistent with research that supports internalizing and externalizing behaviours as sharing common temperamental risk factors, most notably high negative emotionality (e.g. Hink et al, 2013). Mothers who reported high levels of these challenging behaviours also reported less relationship satisfaction, lower parenting efficacy, more difficult

temperament, and more use of over-reactive parenting strategies. It may be that at this early age, when mothers tend to take on the majority of caregiving (e.g. Nielson & Stanfors, 2014), it is difficult to differentiate difficult behaviour from difficult temperament or weak parenting skills. This may be especially true in our sample, where all couples were having their first child. New parents may have a harder time identifying internalizing and externalizing behaviours as they do not have a comparison point in terms of infant temperament, overall development, or parenting demands.

By the time the child was four, men and women's ratings of internalizing and externalizing behaviours were in agreement between parents. Internalizing and externalizing continued to be related. For mothers, internalizing and externalizing behaviours were no longer related to relationship satisfaction, parenting efficacy, infant temperament, or over-reactive parenting. This finding suggests that by this age there is more differentiation among these constructs. For fathers, internalizing and externalizing behaviours were no longer related to relationship satisfaction, but were newly related to past ratings of infant temperament. This suggests that over time, fathers' ratings of difficult behaviour shifted from being based in relationship satisfaction to being based in temperament. Previous research has found that parents become more attuned to their children's attempts to communicate through the early period of development, such that they are better at noticing, interpreting, and responding appropriately to their children (Hallers-Haalboom et al, 2017). This may also in part account for the change over time for mothers, moving from an overall stressful experience of caregiving towards a clearer understanding of whether stress is related to parenting, relationship concerns, temperament, or behaviour. Further, childcare tasks in infancy are often less predictable and require immediate attention.

Co-parenting in new mothers and fathers.

The co-parenting relationship is a new family subsystem that emerges over the transition to parenthood. Parenting alliance is a part of the co-parenting relationship that emphasizes support and respect, which are of central importance to family functioning and outcomes (Van Egeren & Hawkins, 2004). Looking at how parenting alliance was related to other variables can help shed some light on some of the similarities and differences in what we are measuring when we ask mothers and fathers about parenting alliance. In other words, what are the qualities that go along with support and respect in a relationship for men and for women? For mothers, the strongest predictor of parenting alliance was relationship satisfaction. This is consistent with past research that found that mothers who had more conflict in their relationships were also less supportive of their partners parenting, whereas men who were less satisfied in their relationships tended to take on less parenting responsibilities overall (Christopher, Umemura, Mann, Jacobvitz, & Hazen, 2015). However, other research has found that poor marital quality has a stronger impact on fathers' parenting than mothers' parenting (e.g. Harold et al, 2012).

For men, the strongest predictor of parenting alliance was how confident they felt in their parenting skills. Part of the reason that men's parenting alliance is impacted most by their parenting efficacy may be that men tend to rely more on their partners in developing their early parenting skills, as women have more early socialization to caregiving roles and tend to take on a primary caregiver role in the early developmental period. Along these lines, parenting alliance has been found to predict father involvement (e.g. Varga et al, 2017), which in turn may help men develop more parenting skills and confidence in these skills by providing fathers the opportunity to spend time parenting their children and to observe their partner's parenting in the context of a supportive co-

parenting relationship. Similarly, one recent study found that new fathers' attachment to their children depended on marital quality, their own attachment style, and their partner's attachment style, whereas mothers' attachment to their children was not affected by marital quality or father's attachment (Luz, George, Vieux, & Spitz, 2017).

Parenting efficacy was also highly related to child temperament for men in our sample. It may be the case that in families who perceive their child as having a more difficult temperament, mothers tend to take on more of the parenting load during this early period of development. This may lead to changes in how women but not men assess parenting alliance: Men who have difficult infants and very involved mothers may be more likely to rate their parenting alliance as high as compared to these same mothers, given that these women may feel more stressed and less supported than mothers who have more equitable distribution of parenting responsibility, or who take on more of the parenting load for other reasons. This is supported by past research which has found that father involvement is more affected by characteristics of their children than mother involvement (Cummings et al, 2000), and that fathers are more responsive to children with easy temperaments (Brown, McBride, Bost, & Shin, 2012). Frankel, Umemura, Jocobvitz, & Hazen (2015) found differences in how difficult temperament influenced distress for mothers and fathers. Mothers in their study were more likely to be distressed and to respond negatively to their child when they had an infant or toddler with a lot of negative affect. Paternal distress was greater only when they had a difficult infant or toddler and high levels of marital conflict. This finding supports the idea that women find it stressful to take on more responsibility than their partners for parenting a difficult child, and may therefore have a more negative view of the co-parenting alliance when they have a difficult infant.

Parenting alliance was not related to parents' self-report of their ineffective parenting or of their child's adjustment. One issue that may have limited the predictive value of parenting alliance is the limited scope of problems with adjustment for both parents and children. The sample of participants was a community sample, with similar mean scores on measures of parenting alliance, ineffective parenting, and child adjustment that have been found in other large community samples (Abidin & Brunner, 1995;). A broader range of functioning might have captured differences in how parenting alliance is related to parenting and child adjustment.

Predictors of family outcomes.

A second broad aim of this study was to use a family systems perspective to look at how subsystems at the parent, couple, and child level interact to predict family outcomes over the transition to parenthood and into early childhood. However, because mothers' and fathers' reports on constructs did not reflect a broader latent construct for any of the factors that were considered, predictors were considered separately for mothers and fathers. This means that it was not meaningful to combine parents perceptions to represent the relationship between them, as mothers and fathers tended to have discrepancies in how they perceived relational qualities like co-parenting, had different perceptions about their child's behaviour and temperament, and did not perceive their parenting behaviour to be similar.

Some differences emerged in how mothers and fathers perceptions of infant temperament, their own parenting, and child adjustment influenced each other. For fathers, their perception of their children's temperament was consistently the only thing that predicted later problem behaviour in children. For mothers, there were differences in

these associations depending on whether the mother was lax or over-reactive, and whether the child's internalizing, externalizing, or overall adjustment was considered.

Fathers and mothers who were less satisfied with their relationships during the prenatal period were both more likely to see high levels of maladaptive behaviours when their children were two. Mothers and fathers who saw their children as having difficult temperaments were also more likely to report more problem behaviours. There were differences in the way problem behaviours and parenting was related for mothers and fathers. Fathers who saw a lot of problem behaviours did not have less confidence in their parenting skills and did not disclose weaker parenting skills in challenging situations, whereas for mothers, weak parenting skills, low confidence in parenting skills, and problem behaviours in children went together. For men, difficult behaviour in young children seems to be related to relationship satisfaction and temperament rather than their own parenting. This may reflect the responsibility placed on mothers for managing their child's behaviour, women's primary caregiving role at this early age generally, and to fathers' tendency to be less active in parenting difficult infants (Brown, McBride, Bost, & Shin, 2012).

Toddlers had more overall adjustment problems when mothers were over-reactive in their parenting. Infants with difficult temperaments responded similarly to over-reactive parenting from their mothers, but had fewer externalizing behaviours when their mothers were more lax. Toddlers had more behaviour problems overall when their mothers used more ineffective parenting overall, including more lax and over-reactive parenting strategies. When mothers used ineffective parenting strategies, toddlers had more adjustment problems regardless of whether or not they had been rated as having a difficult temperament as an infant. This seems to be driven by the relationship between

over-reactive parenting from mothers and more externalizing behaviours in toddlers. These findings are discussed in more detail below.

Temperament and parenting: interactions in early childhood. For mothers, three models that aimed to find out what contributes to difficult behaviour in toddlers were a good fit with the data. The first model showed that infants who had difficult temperaments *or* over-reactive mothers had more problems. Although temperament and over-reactive parenting each contributed to problem behaviours in toddlers, infants with difficult temperaments weren't especially sensitive to having over-reactive mothers. In fact, when the interaction between infant temperament and mothers' over-reactivity were included together, over-reactive parenting emerged as the driving force behind behaviour problems. This suggests that in this sample, either having a difficult temperament or over-reactive parenting may have been sufficient to instigate interactive effects between how mothers parent and difficult behaviour, but that over-reactive parenting has a unique impact on children's behaviour. In other words, this finding supports the coercion hypothesis, which states that adaptive parenting helps children learn more adaptive ways to communicate, whereas maladaptive parenting maintains the more aversive communication strategies that young children use, and contributes to an escalating cycle of disruptive behaviour and ineffective parenting.

The hypothesis that infants with difficult temperaments would be more sensitive to parenting is consistent with the diathesis stress model. Previous research supporting the differential susceptibility hypothesis has found that infants who have difficult temperaments actually do better than their non-difficult peers when their parents use adaptive parenting strategies (Pluess & Belsky, 2009). The current study did not find that infants with difficult temperaments did better than infants with easy temperaments when

mothers were less over-reactive. A measure of positive parenting may have provided more definitive results regarding the differential susceptibility hypothesis in this sample.

Although difficult temperament has been found to predict more sensitivity to positive and negative parenting (Pluess & Belsky, 2010; Kim & Kochanska, 2012), it is not clear from the literature which aspects of difficult temperament underlie this sensitivity. A recent meta-analysis of how different aspects of temperament interact with parenting found that negative emotionality was the most significant temperamental predictor of sensitivity to parenting (Slagt et al, 2016). Other research on differential susceptibility has focused on Sensory Processing Sensitivity, which may be more related to a wider variety of infant characteristics, including sensory sensitivity, behavioural inhibition, cognitive processing, and physiological reactivity, rather than on difficult temperament alone (Aron, Aron, & Jagiellowicz, 2012). New research looking at sensitivity to positive environments, or 'Vantage Sensitivity' (Pluess & Belsky, 2013) posits that inherent qualities and early pre/post-natal experiences result in some people being more affected by positive environments, including adaptive parenting. According to Pluess (in press), an inherent level of environmental sensitivity may develop into a more specific sensitivity to either adverse events or positive events, though he notes that there is more empirical evidence supporting this epigenetic theory when looking at adverse events whereas the development of 'vantage sensitivity', or sensitivity to positive events, remains to be tested. Additional measures looking at a wider range of infant characteristics, in addition to a measure of positive parenting, might have provided a clearer answer to the question of whether some infants are more sensitive to their caregiving environments. Finally, the concurrent ratings of child temperament and child behaviour problems may have confounded results, as it is difficult to distinguish difficult

temperament and maladaptive behaviours when both are measured by self-report scales from parents.

A second model looked at the impact of lax parenting on toddler behaviour. This model found that when you look at the impact of difficult temperament and lax parenting on toddler's externalizing behaviour, lax parenting only had an impact on problem behaviour for children with difficult temperaments. Interestingly, this was in the opposite direction than was predicted. Infants who had difficult temperaments had less disruptive behaviour when they had lax parents. This was not the case for internalizing behaviours. Although this was not part of the hypothesized outcomes, it makes intuitive sense that very young children with difficult temperaments may be less likely to be disruptive or to show problem behaviours when they have fewer restrictions imposed. These children may go on to have more behaviour problems as they get older and there are more demands and restrictions placed on them.

While lax and over-reactive parenting tended to co-occur for both mothers and fathers, lax parenting was not related to how parents rated their parenting alliance, relationship satisfaction, or to how they rated their child's temperament. Interestingly, lax parenting was not related to more adjustment problems for children. In fact, the only impact lax parenting had on child adjustment was that children who have difficult temperaments had fewer externalizing behaviours when their mothers used more lax parenting strategies. The lack of negative impact on child adjustment does not seem to be because of limited variability in responding or an unusual response style, but rather seems to reflect a real difference in our sample compared to previous research, which consistently finds that lax parenting contributes to behaviour problems in children (Rose et al, 2017). Conversely, over-reactive parenting was related to behavioural outcomes for

children, as well as parenting efficacy and infant temperament. For women, it was also related to relationship satisfaction.

In our sample, it seems that over-reactive parenting was more likely to result from stress related to feeling unprepared to parent difficult children. Some research has looked at the relationship between maladaptive parenting and parental flooding, which happens when parents feel overwhelmed by intense negative affect from their children. Lorber and colleagues (2016) described flooding as "the feeling of being overwhelmed by a family member's behavior in a manner that undermines an organized response". Vecchio and colleagues (2016) developed a scale to measure parental flooding, and found that it was correlated with both lax and over-reactive parenting, as well as some negative behavioural outcomes for children. They proposed that parents respond with less effective and more maladaptive strategies to quickly escape from aversive experiences, for example responding to a screaming child by yelling back or giving in to their demands (del Vecchio et al, 2016). New parents may be especially prone to feeling flooded by difficult children as they may feel overwhelmed by the transition to their new roles as parents in addition to their child's negative emotion in the moment.

Limitations and future directions

This study has a number of significant strengths and limitations that are for the most part related to the challenges of addressing the seemingly limitless complexities of family dynamics, interrelated family systems, and change over time. Strengths from a systems perspective include a longitudinal design that allows us to consider how individuals and families change over the transition to parenthood, and the consideration of the interactive nature of child, parent, and couple characteristics.

Although the self report measures used in this study were well validated and showed good internal consistency in our sample, there are some measurement issues worth considering. First, self-report data, though it is widely used in psychological research, has some inherent limitations. These limitations can be summarized by noting the difference between our behaviour and our perceptions of behaviour, which can be distorted by perceptual biases that can limit our capacity to accurately report on our own behaviour.

Additionally, people tend to report their own behaviour as positive, and there is some research suggesting that people who tend to respond in this defensive way will also report their children's behaviour as more favourable (Castagna, Lilly, & Davis, 2017). It may be especially difficult for parents to report on their responses to stressful parenting situations that are a drain on cognitive and emotional resources. Specific challenges to self-report about parenting have been outlined by Morsbach & Prinz (2006), including difficulty recalling information, social desirability in responding, finding questions about parenting intrusive or offensive, and fear that parenting practices will be disclosed or judged.

One approach that could be useful in addressing some of this study's limitations is to use an interview to assess the relational aspects of family life, and to include some behavioural observations in the interview process. This methodological shift would allow researchers to ask directly about relational constructs rather than inferring them from the interactions among characteristics that are ultimately rooted in individuals.

Our analysis in the current study provides valuable information about what relational aspects might be further investigated. A "stress-appraisal-coping" model in line with a relational approach to studying families may be an appropriate lens from which to

approach interview questions. Seifer and colleagues (2014) developed an interview to assess goodness of fit. They discussed the pitfalls of using objective measures of goodness of fit, like behaviour matching or behaviour-expectation matching, as measurement of these objective qualities focus on measuring qualities of the parent and the child but do not explicitly measure the relationship. They proposed a stress-appraisal-coping model, where child characteristics are the stressor, parents make an appraisal of this behaviour by comparing it to their expectations, and parents vary in their success in coping by adapting to mismatches between their child and their expectations. The interview they developed looked at four domains of infant behaviour, including activity/energy, mood, sleep, and relationship with parent. Each of these domains were rated on behaviour quality, parental emotional response, fit with parent, fit with family, coping with mismatch, and expectations for future success. Using an interview to assess relationships may be a more fruitful avenue for exploring family systems at a relational level.

Another way to be more mindful of the relational nature of child development in research is to consider the role of parent personality in family dynamics and child outcomes. Parent personality may be equally important and sometimes overlooked in parenting research, which can focus heavily on behavioural input and outcomes (i.e. parenting practices and child behaviour). A review of the relationship between parent personality, temperament, parenting practices, and children's mental health conducted by Achtergard and colleagues (2015) found that parent personality, child temperament, and the interaction between the two contributed to parenting behaviour. Parent personality has also been found to be associated with differences in parenting stress (Rantanen et al, 2015) and confidence in parenting skills (Eyden et al, 2016).

An additional challenge of working with complex family dynamics evolving over time is the issue of multi-directionality. In this study, data collected at multiple time-points was used to investigate the impact of one variable on another over time. However, these variables are likely bi-directional and continually influencing each other over time. For example, for mothers and fathers in this study, over-reactive parenting and parenting efficacy had bi-directional effects, with each influencing the other regardless of infant temperament. Caution must be taken in interpreting causal relationships.

One limitation of the current study is the limited sample size, particularly in later waves of data when some participants had dropped out of the study. This limited the statistical power and impacts the confidence with which we can interpret findings, as there is risk of type 2 error with smaller samples. Although the current study lacked the statistical power to fully investigate hypotheses that relied on structural equation modeling, it did point to a need to clarify and operationally define constructs that should make conceptual sense to consider at the couple level. Exploratory analyses using more potential indicators for different constructs of interest might reveal some interesting findings around where new mothers and fathers overlap and diverge in their understanding of some ideas central to family research, such as parenting alliance and parenting efficacy. A more comprehensive exploration of how parenting skills emerge for new mothers and fathers might also include adaptive parenting behaviours as well as how parents respond to their children's emotions, which have been found to predict regulatory and coping processes that would likely impact internalizing and externalizing behaviours (Sanders, 2015;Lunkenheimer, Ram, Skowon, & Yin, 2017) A very large sample size would allow for sufficient statistical power to answer these complex questions with more confidence.

Finally, this study used a community sample that generally consisted of low risk families. Low risk is indicated by demographic information about participants, including high levels of education and income, which is a good indicator of SES. Further, the new parents in this study reported low levels of ineffective parenting compared to other community samples (Rhoades & O'Leary, 2007; Arnold, O'Leary, Wolff & Acker, 1993). Stronger effects of parenting on child outcome may be found in samples in which ineffective parenting is more pervasive. Similarly, the Child Behaviour Checklist (Achenbach, 1979) was developed to help identify children whose behaviours warrant clinical attention. The validity of the measure based on its success in discriminating between clinical and nonclinical populations of children, rather than on its success in accurately measuring behaviour within the normal range (Drotar, Stein, & Perrin, 1995). In the current sample, parent reports of CBCL scores was skewed, with few parents reporting that behaviours occur 'often'. In fact, the full range of responses was used for only 36 out of 100 items for men and 46 out of 100 items for women. Although this makes interpretation of CBCL scores challenging in non-clinical populations, there is some evidence that early CBCL scores are predictive of later behaviour problems, even in community samples (Fanti & Henrich, 2010).

Clinical Implications.

The transition to parenthood is an opportune time for health promotion and clinical intervention (e.g. Glade, Bean, & Vira, 2005). Most families are in contact with healthcare professionals during this time. Whereas previous research has found co-parenting to be an important predictor of successfully navigating this transition, the current study's findings support interventions targeted to improving parenting efficacy. Parents who were less confident in their ability to parent also used more over-reactive

parenting strategies in challenging situations. Parents were also more likely to be over-reactive when they perceived their child to be temperamentally difficult. However, high parenting efficacy acted as a buffer to protect new parents from the stresses of having a child with a difficult temperament.

There is evidence that intervention programs for new parents are most effective when services are tailored to families who have some risk factors that make them more likely to have problems during this transition (e.g. Jones, Feinberg, & Hostetler, 2018). Typically these risk factors are identified within the parents, however the current study suggests that early characteristics of the child are important considerations when identifying families who will benefit from intervention. Given that temperament is considered stable over time, early identification of children with difficult temperaments as part of routine postnatal care could be a simple way to screen for parents who may benefit from brief intervention to improve parenting efficacy. This may be especially relevant for new fathers who have difficult infants, given that the way fathers perceived their child's temperament was the single strongest predictor of their perceptions of their child's behaviour problems. Given that temperament is considered to be largely stable over time and not an appropriate target for intervention, it is invaluable clinically to know that improving fathers' self-efficacy around parenting could help improve parenting skills and child outcomes. Mothers seem to benefit from higher parenting efficacy regardless of whether they have children with difficult or easy temperaments. Providing education about temperament to new parents who perceive their children as difficult might help to buffer new parents against the detrimental impact that a difficult child can have on parenting efficacy beliefs.

The way mothers perceived their children's adjustment was more complex. As

with fathers, early temperament was related to problem behaviours. For mothers, parenting strategies also influenced outcomes for their children. Mothers in our sample who were more over-reactive had children with more behaviour problems. A lax approach to parenting actually led to fewer externalizing behaviour problems for toddlers who also had difficult temperaments. Lax parenting may be a strategy mothers use to avoid externalizing behaviours like tantrums in their toddlers. Although this may be effective in the short term, lax parenting has negative impact on school readiness and later behaviour problems, especially for children who have poor inhibitory control (Nathanson, Rimm-Kaufman, & Brock, 2009). For infants who are identified as having difficult temperaments, early intervention to support mothers in developing strategies for using appropriate levels of behavioural control and coping with the resulting conflict with their child, rather than relying on lax parenting that may contribute to more significant problems later in childhood. Further, given that fathers tend to be less involved in parenting difficult infants, interventions to promote father involvement could help to reduce stress on new mothers, potentially increasing parenting alliance and parenting efficacy for both parents, reducing reliance on ineffective parenting and promoting better family outcomes.

Implications for research.

The current study underscores a challenge facing researchers using quantitative methods to study families. In undertaking the challenge of measuring family constructs, researchers often use self-report or observational rating scales that quantify these constructs and assign a numerical value to each participant, couple, or family. For most measurement tools available, interpreting these scores involves making comparisons between participants within the sample. A participant is considered to have high levels of

a construct if they score high on that measure relative to other respondents in the sample. Although it is useful to know where people stand in relation to others within the sample, interpreting scores in the context of a unique sample has its own set of challenges. Establishing normal values for measurement tools used in family research would allow researchers to more accurately identify when participants are high or low on a construct, not only in relation to the study's sample but also in comparison with other sample groups. This would also help researchers to be more accurate in identifying samples that may have restricted variability or unusually high or low levels of a construct, helping facilitate comparison across studies and more meaningful interpretation of results.

For the one scale that did have normal values, the CBCL (Achenbach, 1979), normal values were established by comparing large samples of clinic-referred to non-referred children. This approach means that the instrument may have some inherent weakness at identifying non-referred children with adjustment problems (LeBoeuf, Fantuzzo, & Lopez, 2010). While the creators of the scale suggest using raw scores rather than T-scores to capture the full range of scores in community samples, this limits interpretation of scores in the normal range and eliminates the possibility of comparison across age groupings. Given that this measure is frequently used in family research using community samples, further development of norms and validation in community samples would be an asset to family researchers looking at adjustment problems in non-referred children.

Conclusions.

This study highlights some of the challenges and importance of examining complex family dynamics over time. Using a larger sample and a larger number of measures may have helped to provide better answers to exploratory questions about how

various subsystems are structured and change in families over the transition to parenthood. Observational data, interviews, and measurement of triadic processes are personal areas of interest for further exploration. Although confirmatory factor analyses did not provide the answers to questions about broad family processes, this study does provide some insight into relationships among family members during the first few years after couples become parents. Notably, some of the current findings are discrepant with well established past findings, which serves as a reminder of the "file drawer problem" in psychological research. Discrepant findings also remind us that all measurement must be interpreted in the context of the sample being studied and the research questions being asked. As for the significant findings of this study, low parenting efficacy, over-reactive parenting, and difficult infant temperament were overall the most impactful risk factors for later behaviour problems, though there were some differences in risk factors for mothers and fathers and for internalizing and externalizing behaviours. This underscores the importance of considering child temperament as a covariate in research on child behaviour problems, family dynamics, and parenting.

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Appendix A

Dyadic Adjustment Scale

Instructions: Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list, by circling the appropriate number.

	Always Agree				Always Disagree
1. Handling finances	5	4	3	2	1
0					
2. Matters of recreation	5	4	3	2	1
0					
3. Religious matters	5	4	3	2	1
0					
4. Demonstrations of affection	5	4	3	2	1
0					
5. Friends	5	4	3	2	1
0					
6. Sexual relations	5	4	3	2	1
0					
7. Conventionality (correct or proper behavior)	5	4	3	2	1
0					
8. Philosophy of life	5	4	3	2	1
0					
9. Ways of dealing with parents	5	4	3	2	1
0					
10. Aims, goals, and things believed important	5	4	3	2	1
0					
11. Amount of time spent together	5	4	3	2	1
0					
12. Making major decisions	5	4	3	2	1
0					
13. Household tasks	5	4	3	2	1
0					
14. Leisure time interests and activities	5	4	3	2	1
0					
15. Career decisions	5	4	3	2	1
0					

	All the Time				Never

16. How often do you discuss or have you considered terminating your relationship?	0	1	2	3	4	5
17. How often do you or your partner leave each other after a fight?	0	1	2	3	4	5
18. In general, how often do you think that things between you and your partner are going well?	5	4	3	2	1	0
19. Do you confide in your partner?	5	4	3	2	1	0
20. Do you ever regret that you are together?	0	1	2	3	4	5
21. How often do you and your partner quarrel?	0	1	2	3	4	5
22. How often do you and your partner "get on each other's nerves"?	0	1	2	3	4	5

	Every Day	Almost Every Day	Occasionally	Rarely	Never
23. Do you kiss your partner?	4	3	2	1	0

	All of Them	Most of Them	Some of Them	Very few of Them	None of Them
24. Do you and your partner engage in outside activities together?	4	3	2	1	0

How often would you say the following events occur between you and your partner?

	Never	Less Than Once a Month	Once or Twice a Month	Once or Twice a Week	Once a Day
25. Have a stimulating exchange of ideas	0	1	2	3	4	5
26. Laugh together	0	1	2	3	4	5
27. Calmly discuss something	0	1	2	3	4	5
28. Work together on a project	0	1	2	3	4	5

These are some of the things about which couples sometimes agree and sometimes disagree. Indicate if either item below caused differences of opinions or were problems in your relationship **during the past few weeks**. (CHECK yes or no)

29. Being too tired for sex ☐ yes ☐ no

30. Not showing love ☐ yes ☐ no

31. The numbers on the line represent different degrees of happiness in your relationship. The middle point, "happy", represents the degree of happiness of most relationships. Please **circle the one number** that best describes the degree of happiness, all things considered, of your relationship.

0	1	2	3	4	5	6
Extremely Unhappy	Fairly Unhappy	A little Unhappy	Happy	Very Happy	Extremely Happy	

32. Which of the following statements best describes how you feel about the future of your relationship? (Check only **one** box)

☐ I want desperately for my relationship to succeed, and would go to almost any length to see it does.

☐ I want very much for my relationship to succeed, and will do all I can to see that it does.

☐ I want very much for my relationship to succeed, and will do my fair share to see that it does.

☐ It would be very nice for my relationship to succeed, but I can't do much more than I am doing now to help it succeed.

☐ It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.

☐ My relationship can never succeed, and there is no more that I can do to keep the relationship going.

Infant Characteristics Questionnaire

Please indicate the rating that is most typical of your child. "About average" means how you think the typical child would be scored.

1. How easy or difficult is it for you to calm or soothe your child when he/she is upset?

1	2	3	4	5	6	7
very easy			about average			difficult

4. How easy or difficult is it for you to know what's bothering your child when he/she cries or fusses?

1	2	3	4	5	6	7
very easy			about average			difficult

2. How consistent is your child in sticking to his/her sleeping routine?

1	2	3	4	5	6	7
very consistent; little or no variability			some variability			very inconsistent highly variable

3. How consistent is your child in sticking to his/her eating routine?

1	2	3	4	5	6	7
very consistent; little or no variability			some variability			very inconsistent highly variable

5. How many times per day, on the average, does your child get fussy and irritable—for either short or long periods of time?

1	2	3	4	5	6	7
never	1-2 times per day	3-4 times per day	5-6 times per day	7-9 times per day	10-14 times per day	more than 15

6. How much does your child cry and fuss in general?

1 2 3 4 5 6 7

very little; much less than the average child — average amount; about as much as the average child — a lot; much more than the average child

7. How does your child typically respond to a new person?

1 2 3 4 5 6 7

always responds favorably — responds favorable about half the time, or is always neutral — always responds negatively or fearfully

8. How does your child typically respond to being in a new place?

1 2 3 4 5 6 7

always responds favorably — responds favorable about half the time, or is always neutral — always responds negatively or fearfully

9. How well does your child adapt to new experiences (such as items 7-10) eventually?

1 2 3 4 5 6 7

very well, always likes it eventually — ends up liking it about half the time — almost always dislikes it in the end

10. How easily does your child get upset?

1 2 3 4 5 6 7

very hard to upset-- even by things that upset most children — about average — very easily upset by things that wouldn't bother other children

11. When your child gets upset, how vigorously or loudly does he/she cry and fuss?

1 2 3 4 5 6 7

very mild intensity or loudness	moderate intensity or loudness	very loud or intense, really cuts loose

12. How much does your child smile and make happy sounds?

1	2	3	4	5	6	7
a great deal, much more than most children			an average amount			very little, much less than most children

13. What kind of mood is your child generally in?

1	2	3	4	5	6	7
very happy and cheerful			neither serious nor cheerful			serious

14. How much does your child enjoy playing with you?

1	2	3	4	5	6	7
a great deal, really loves it			about average			very little, doesn't like it very much

15. How much does your child want to be held?

1	2	3	4	5	6	7
wants to be free most of the time			sometimes wants to be held, sometimes not			a great deal-- wants to be held almost all the time

16. How changeable is your child's mood?

1	2	3	4	5	6	7
changes seldom, and changes slowly when he/she does change			about average			changes often and rapidly

17. How excited does your child become when people play with or talk to him/her?

1	2	3	4	5	6	7
very excited			about average			not at all

18. On the average, how much attention does your child require, other than for caregiving (feeding, diaper changes, etc.)?

1	2	3	4	5	6	7
very little—much less than average			average amount			a lot—much more than the average child

19. When left alone, your child plays well by himself/herself?

1	2	3	4	5	6	7
almost always			about half the time			almost never-won't play by self

20. How does your child react to being confined (as in a carseat, infant seat, playpen, etc.)?

1	2	3	4	5	6	7
very well--likes it			minds a little or protests once in awhile			doesn't like it at all

21. How easy or difficult is it to take your child places?

1	2	3	4	5	6	7
easy; fun to take child with me			okay; child may fuss but no real trouble			difficult; child is usually disruptive

22. Does your child continue to go someplace even when told something like "stop", "come here", or "no-no"?

1	2	3	4	5	6	7
rarely or never			sometimes does and sometimes not			almost always

23. When removed from something he/she is interested in but should not be getting into, your child gets upset.

1	2	3	4	5	6	7
never			sometimes does and sometimes doesn't			always gets very upset

24. Please rate the overall degree of difficulty your child would present for the average mother.

1	2	3	4	5	6	7
super easy			ordinary, some problems			highly difficult to deal with

Parenting Alliance Inventory (PAI)

1. My partner enjoys being alone with our child.
2. During pregnancy, my partner expressed confidence in my ability to be a good parent.
3. When there is a problem with our child, my partner and I work out a good solution together.
4. My partner and I communicate well about our child.
5. My partner is willing to make personal sacrifices to help take care of our child.
6. Talking to my partner about our child is something I look forward to.
7. My partner pays a great deal of attention to our child.
8. My partner and I agree on what our child should and should not be permitted to do.
9. I feel close to my partner when I see my partner play with our child.
10. My partner knows how to handle children well.
11. My partner and I are a good team.
12. My partner believes I am a good parent.
13. I believe my partner is a good parent.
14. My partner makes my job of being a parent easier.
15. My partner sees our child in the same way I do.
16. My partner and I would basically describe our child in the same way.
17. If our child needs to be punished, my partner and I usually agree on the type of punishment.
18. I feel good about my partner's judgment about what is right for our child.
19. My partner tells me I will be a good parent.
20. My partner and I have the same goals for our child.

Responses:
5 Strongly agree
4 Agree
3 Neutral
2 Disagree
1 Strongly disagree

Parenting Scale

Child's Name: _____ Today's Date: _____

Sex: Boy _____ Girl _____ Child's Birth date: _____

Instructions: At one time or another, all children misbehave or do things that could be harmful, that are "wrong," or that parents don't like. Examples include:

hitting someone	whining	not picking up toys
forgetting homework	throwing food	refusing to go to bed
having a tantrum	lying	wanting a cookie before dinner
running into the street	arguing back	coming home late

Parents have many different ways or styles of dealing with these types of problems. Below are items that describe some styles of parenting.

For each item, fill in the circle that best describes your style of parenting during the past two months with **the child indicated above**.

SAMPLE ITEM:

At meal time...

0---0---●---0---0---0---0 I let my child decide how much to eat. / I decide how much my child eats.

1.

When my child misbehaves…
Before I do something about a problem…

0---0---0---0---0---0---0

I do something right away. / I do something about it later.

0---0---0---0---0---0---0

I give my child several reminders or warnings — I use only one reminder or warning

2.

3. When I'm upset or under stress…

0---0---0---0---0---0---0

I am picky and on my child's back — I am no more picky than usual

4.

When I tell my child not to do something…

0---0---0---0---0---0---0

I say very little — I say a lot

5.

When my child pesters me…

0---0---0---0---0---0---0

I can ignore the pestering — I can't ignore the pestering

6.

When my child misbehaves…

0---0---0---0---0---0---0

I usually get into a long argument with my child — I don't get into an argument

7.

I threaten to do things that…

0---0---0---0---0---0---0

I am sure I can carry out — I know I won't actually do

8.

I am the kind of parent that…

0---0---0---0---0---0---0

Sets limits on what my child is allowed to do — Lets my child do whatever he/she wants

9.

When my child misbehaves…

0---0---0---0---0---0---0

I give my child a long lecture — I keep my talks short and to the point

10.

When my child misbehaves…

0---0---0---0---0---0---0

I raise my voice or yell — I speak to my child calmly calmly.

11.

If saying "no" doesn't work right away…

0---0---0---0---0---0---0

I take some other kind of action — I keep talking and try to get through to my child

12.

When I want my child to stop doing something

0---0---0---0---0---0---0

I firmly tell my child to stop — I coax or beg my child to stop

13.

When my child is out of my sight

0---0---0---0---0---0---0

I often don't know what my child is doing — I always have a good idea of what my child is doing

14.

After there's been a problem with my child…

0---0---0---0---0---0---0

I often hold a grudge — Things get back to normal quickly

15.

When we're not at home…

0---0---0---0---0---0---0

I Handle my child the way I do at home — I let my child get away with a lot more

16.

When my child does something I don't like…

0---0---0---0---0---0---0

I do something about it every time it happens — I often let it go

17.

Before I do something about a problem…

0---0---0---0---0---0---0

Things build up and I do things I — Things don't get out of hand

don't mean to do

18.

When my child misbehaves, I spank, slap, grab, or hit my child…

0---0---0---0---0---0---0

Never or rarely — Most of the time

19.

When my child doesn't do what I ask…

0---0---0---0---0---0---0

I often let it go or end up doing it myself — I take some other action

20.

When I give a fair threat or warning…

0---0---0---0---0---0---0

I often don't carry it out — I always do what I said said.

21.

If saying no doesn't work…

0---0---0---0---0---0---0

I take some other kind of action — I offer my child something nice

22.

When my child misbehaves…

0---0---0---0---0---0---0

I handle it without getting upset — I get so frustrated or angry that my child can see I'm upset

23.

When my child misbehaves…

0---0---0---0---0---0---0

I make my child tell me why he/she did it — I say "no" or take some other action

24.

When my child misbehaves and then acts sorry…

0---0---0---0---0---0---0

I handle the problem like I usually would — I let it go that time

25.

When my child misbehaves…

0---0---0---0---0---0---0

I rarely use bad language or curse — I almost always use bad language

26.

When I say my child can't do something…

0---0---0---0---0---0---0

I let my child do it anyway — I stick to what I said

27.

When I have to handle a problem…

0---0---0---0---0---0---0

I tell my child sorry — I don't say I'm sorry about it

28.

When my child does something I don't like, I insult my child, say mean things, or call my child names…

0---0---0---0---0---0---0

Never or rarely — Most of the time

29.

If my child talks back or complains when I handle a problem…

0---0---0---0---0---0---0

I ignore the complaining and stick to what I said — I give my child a talk about not complaining

30.

If my child gets upset when I say "no" …

0---0---0---0---0---0---0

I back down and give in to my child — I stick to what I said

Parenting Sense of Competence Scale (PSC)

Please rate how you feel about being a parent.

1. The problems of taking care of an infant are easy to solve once you know how your actions affect a child, an understanding I have acquired.
2. Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.
3. I go to bed the same way I wake up in the morning: feeling I have not accomplished a whole lot.
4. I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.
5. My parents were better prepared to be a good parent than I am.
6. I would make a fine model for a new parent to follow in order to learn what they would need to know in order to be a good parent.
7. Being a parent is manageable, and any problems are easily solved.
8. A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one.
9. Sometimes I feel like I'm not getting anything done.
10. I meet my own personal expectations for expertise in caring for my child.
11. If anyone can find the answer to what is troubling my child, I am the one.
12. My talents and interests are in other areas, not in being a parent.
13. Considering how long I've been a parent, I feel thoroughly familiar with this role.
14. If being a parent of a child were only more interesting, I think I would be motivated to do a better job as a parent.
15. I honestly believe I have all the skills necessary to be a good parent to my child.
16. Being a parent makes me tense and anxious.
17. Being a good parent is a reward in itself.

Strongly agree
Agree
Somewhat Agree
Somewhat Disagree
Disagree
Strongly Disagree