Emotionality and internalizing symptoms in families: Concurrent and longitudinal associations with maternal emotion socialization

Ciara Briscoe

A Thesis

In the Department

of

Psychology

Presented in Partial Fulfillment of the Requirements

For the Degree of

Doctor of Philosophy (Psychology) at

Concordia University

Montreal, Quebec, Canada

October 2017

CONCORDIA UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

By: Ciara Briscoe

Entitled: **Emotionality and internalizing symptoms in families: Concurrent and longitudinal associations with maternal emotion socialization**

and submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY (PSYCHOLOGY)

complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____ Chair
Dr. Lisa Kakinami

_____ External Examiner
Dr. Jennifer Connolly

_____ External to Program
Dr. Hariclia Petrakos

_____ Examiner
Dr. Mark Ellenbogen

_____ Examiner
Dr. Erin Barker

_____ Supervisor
Dr. Dale Stack

Approved by _____
Dr. Virginia Penhune
Chair of Department

_____
Dr. André Roy
Dean of Faculty of Arts and Sciences

Date of Defence _December 6, 2017____

ABSTRACT

Emotionality and internalizing symptoms in families: Concurrent and longitudinal associations with maternal emotion

Ciara Briscoe, Ph.D.
Concordia University, 2017

In a series of three studies, the present dissertation was designed to examine the stability of childhood positive emotionality (PE) and negative emotionality (NE) and its relation to child internalizing symptoms. In examining these questions through a developmental psychopathology lens, parent-level factors were included and explored. Parent variables comprised not only emotional well-being, but also emotion socialization strategies: specifically, the way mothers respond to their child's emotions. These maternal responses were explored as a potential pathway by which mothers may reinforce the link between their own emotional well-being and that of their children.

The participants of the present study, both male and female, were originally recruited for the Concordia Longitudinal Risk Project in 1976. Approximately 20 years later, original participants and their preschool-aged children (n = 175) were followed, for an additional three time points at approximately 3 year intervals, into adolescence. Maternal emotion socialization, specifically contingencies to their child's emotions, was measured via questionnaires for negative emotions and via at-home observations for positive emotions. Generally, contingencies were grouped into responses that were supportive (i.e., acknowledging and helping the child through their emotional experience) or nonsupportive (i.e., ignoring, invalidating or punishing the child through their emotional experience).

Results from Study 1 suggested that child NE and child internalizing symptoms are relatively stable and associated with each other. Similarly, parental NE and depression symptoms were associated with child emotional well-being, although the specific relations differed depending on whether the factors were maternal or paternal. Results from Study 2 provided support for maternal contingencies as a potential avenue by which the link between high mother NE and high child NE may be reinforced.

Specifically, mothers with higher levels of NE tended to punish their child's negative emotions (i.e., discouragement of the negative emotional expression via sanctions; e.g., "Gave him/her a disgusted look"), which in turn was associated with higher levels of adolescent NE. Furthermore, being supportive of the adolescent's negative emotions was associated with fewer internalizing symptoms, while magnifying the adolescent's negative emotions (i.e., experiencing and expressing the negative emotion back to the child) was associated with more adolescent internalizing symptoms. Finally, results from Study 3 revealed that observed child PE was correlated across two time points, and that older children tended to express more PE than younger children. However, maternal contingencies (i.e., supportive vs. nonsupportive) to positive emotions were not correlated across time points, suggesting that mothers may not be socializing in a consistent manner across time. Nonetheless, maternal contingencies were associated with child internalizing symptoms; specifically, higher levels of maternal supportive responses to child PE at preschool age were associated with lower internalizing symptoms 2 years later.

The present dissertation makes an important contribution by conceptualizing its objectives through a developmental psychopathology framework (Cicchetti & Curtis, 2007). This framework emphasizes the need to explore multiple levels of factors that may influence the child's symptoms of psychopathology. Specifically, by examining the parent-level characteristics and factors (e.g., emotionality, depression symptoms, maternal education), child-level factors (e.g., positive and negative emotionality), and parenting-level factors (e.g., positive and negative emotion socialization), the present set of studies allows for a deeper, more comprehensive understanding of the complexity of a child's emotional life at different developmental time points.

Acknowledgements

A thank you (or several) to all of the amazing people who helped me to accomplish this goal:

To those who contributed in ways both big and small, from helping with reference checks to being sounding boards for conceptualization or analyses.

To those who believed in me, encouraged me, and celebrated with me. And *even* feigned some mild level of interest in what I do.

To those who watched Simpsons clips and ate chocolate with me instead of working (very rarely, of course).

To those who laughed with me, hugged me, and generally reminded me of the bigger picture.

Thank you. I could not have done it without you.

Table of Contents

List of Figures

Chapter 2: Study 1

Chapter 4: Study 2

List of Tables

Chapter 2: Study 1

Chapter 4: Study 2

Chapter 6: Study 3

List of Appendices

Chapter 1: General Introduction

Why do we feel feelings? This is not a simple query, yet the recent animated movie "Inside Out" tried to illustrate an answer to this critical question about the human experience. Within this film, joy, anger, sadness, fear and disgust were brought to life and each was represented with a separate character. Their specific roles to ensure the safety and well-being of the person that they inhabited were explained and explored throughout the course of the film. Indeed, the functionalist perspective argues that although negative emotions, such as anger, sadness and fear, can cause serious distress in the people who experience them, each emotion has its own role and purpose (Campos, Campos, & Barrett, 1989) and can be linked to specific action-tendencies (Fischer, Shaver, & Carnochan, 1990). Much like "Inside Out" illustrated, these action-tendencies are purported to offer evolutionary advantages by protecting the interests and lives of humans. For sadness, when a loss is experienced, people tend to withdraw and seek help from others. For anger, when an injustice is experienced, people tend to attack or approach the source of the injustice. For fear, when a threat is detected, people tend to avoid and escape the threat.

What about the action tendencies for pleasant and positive emotions, such as joy and contentment? Previous emotion-general models, such as the functionalist perspective, did not account for and adequately explain the purpose and potential evolutionary foundation of positive emotions, beyond simply explaining that positive emotions encourage the approach of the source of pleasure (Fredrickson, 2004). It was only in the beginning of the 21st century that a theory about positive emotions that complemented previous theories about negative emotions came to the fore. Whereas positive emotions were previously understood simply as indicators of healthy functioning, Fredrickson (2001, 2004) introduced the broaden-and-build theory of positive emotions. This theory posits that positive emotions are integrally involved in the development of socio-emotional well-being by producing behaviours that ensure appropriate development. Positive emotions are generally not

experienced in situations in which the person's life is in peril; as such, the action-tendency does not need to be life-saving, but rather serves to enrich the experience of the situation and take advantage of the potential gains. Specifically, positive emotions may encourage a person to be more creative in their response and consider a wide range of potential responses, many of which may help to build future personal resources, such as social resources by bonding with others, or building new skill sets through curiosity (Fredrickson 2001, 2004).

Although emotion theorists assert that both positive and negative emotions are a helpful and often crucial component of the human experience, some people may have a tendency to experience either excessively high or excessively low levels of emotions. Unfortunately, this dysregulation can be detrimental to their day-to-day lives. This emotional tendency may start from birth or early toddlerhood, and is considered a component of temperament. According to Rothbart and Bates (1998), in addition to Affect, temperament also consists of individual differences on other "A" factors: Activity level and Attention. Although sometimes seen as transposable with the term personality, temperament is typically used to refer to individual differences that appear from birth and that continue to be stable throughout life as opposed to those traits that become stable only in adulthood (Mervielde & De Pauw, 2012). However, temperament can and has been used to explore behavioural and emotional tendencies of adults as well (see Zuckerman, 2012 for a review). The affective component of temperament or personality that is typically the focus of research is referred to as negative emotionality (NE) or neuroticism, respectively. Some researchers studying life-span development use these terms interchangeably (e.g., Klein, Dyson, Kujawa, & Kotov, 2012), acknowledging that the similarities between them are substantial and the labels serve primarily to distinguish whether one is speaking of temperament or personality constructs. Essentially, NE and neuroticism both refer to a person's tendency to react to situations and stressors with negative emotions, such as sadness, anger or fear, or to perceive their world

and experiences as threatening (Bates, 1989; Rothbart, Ahadi, & Hershey, 1994; Rhee et al., 2007; Shiner & DeYoung, 2013; Watson & Clark, 1992).

Many theorists and researchers focus exclusively on NE when describing the affective component of temperament, despite positive emotionality (PE) being an equally important and valid avenue for understanding the emotional world of children and adolescents. Indeed, PE is rarely explicitly described or even named in much of the temperament literature. At times, PE is explored through such constructs as activity levels or extroversion (for a review, see Putnam, 2012). Relatedly, it is occasionally tied to behavioural inhibition (BI; Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988), although research has tried to distinguish low PE from concepts like high BI (Laptook et al., 2008). Specifically, Laptook and colleagues (2008) demonstrated that children with high BI or low PE both engage in fewer approach behaviours. However, low PE children tend to react by avoiding in both novel and familiar situations, while high BI react by avoiding exclusively in novel situations. These results suggest that the low approach in PE is due to a lack of interest, while the low approach in BI is primarily due to anxiety. Thus, high PE is conceptualized as a child's disposition to positive emotions, including exuberance, joy, excitement, and enthusiasm, in a variety of contexts.

Interestingly, the theory of a two-factor structure for affect, which explores both PE and NE within the same model, has existed for at least 30 years and been cited over 5000 times (Watson & Tellegen, 1985). In their seminal paper, Watson and Tellegen (1985) emphasized that although NE and PE may appear to be polar ends of a spectrum or negatively correlated, they are in fact independent factors. More recently, emotion theorists Larson and McGraw (2011) recommended that NE and PE be investigated independently because there is evidence that they do indeed operate orthogonally. The little research that has explored both NE and PE within the same sample has shown the independence of these constructs in children and adolescents in both laboratory and parent-report data (e.g., Belsky, Hsieh, & Crnic, 1996; Durbin, Hayden, Klein, & Olino, 2007; Goldsmith & Campos, 1990), with one study

suggesting a nearly zero correlation between NE and PE among 10- to 17-year old children (Anthony, Lonigan, Hooe, & Phillips, 2002). Despite the theoretical and empirical evidence supporting the study of both NE and PE when exploring affective temperament, PE has received substantially less attention than NE in the literature across the lifespan, and particularly in childhood and adolescence (for a review, see Gilbert, 2012).

As components of temperament, NE and PE share the characteristic of being fairly consistent throughout a person's development, since stability is considered to be a key feature of temperament. Previous research has shown that, within early childhood, NE tends to stabilize after age 2 (e.g., Bridgett et al., 2009; Leve et al., 2013; Pedlow, Sanson, Prior & Oberklaid, 1993). In addition, research using multiple time points within the preschool period (ages 3-6) has shown that NE has adequate test-retest correlations (Bould, Joinson, Sterne, & Araya, 2013; Mathiesen & Tambs, 1999). In a quantitative review of longitudinal studies, Roberts and DelVecchio (2000) found that children's temperament was fairly consistent *within* the life course periods introduced by Feldman (1997), specifically infancy, preschool, middle childhood and adolescence. However, this review did not examine whether children were stable *across* these periods. A more recent meta-analysis combined longitudinal findings across the lifespan, and found that after age 3, general personality/temperament traits tend to stabilize and show a similar level of consistency until approximately age 30, after which the stability increases even further (Briley & Tucker-Drob, 2014). Of the few existing longitudinal studies that have explored the stability of NE specifically in childhood, most examine children under age 12 (e.g., Neppl et al., 2010) or adolescence exclusively (e.g., Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008), with only one study spanning early elementary school to early adolescence (Sallquist et al., 2009). Few studies have explored NE at several time points across key development periods, in particular in order to provide evidence for its stability from preschool *into* adolescence. Because adolescence is characterized as a period of intense emotional development (Brand, & Klimes-Dugan, 2010; Garber, Keiley, & Martin,

2002), it would be of interest to know if there is some consistency in children from their early childhood to this period. Not surprisingly, there has been even less research concerning the stability of PE throughout childhood and adolescence. However, one longitudinal study conducted by Durbin and colleagues (2007), that included both NE and PE, found that both temperament factors were stable from ages 3- to 7-years-old. Another longitudinal study (Sallquist et al., 2009) using parent and teacher reports of PE found rank-order stability of PE in a four wave (6 year) study, beginning with children between kindergarten and grade 3, but found that the mean-level of PE tended to decrease into adolescence.

Importantly, either having high stable levels of NE or low stable levels of PE can have serious implications for overall emotional well-being. Researchers such as Clark, Watson and Mineka (1994) hypothesized that low PE could predispose people to depression, as anhedonia is a characterizing feature of depression. In addition, high NE could predispose people to a variety of psychopathological symptoms, as they are experiencing negative emotions more frequently and more intensely than their peers. Indeed, research with adults has reliably shown that both negative and positive emotion dysregulation uniquely contribute to the prediction of psychopathology symptoms (e.g., Carpenter & Trull, 2013; Gruber, 2011; Kashdan, 2007; Rottenberg, Gross, & Gotlib, 2005); this also further argues for the independence of NE and PE as factors. In addition, a concurrent study with youth aged 10-17 years old found that higher NE was associated with more anxiety and depression symptoms, while lower PE was associated strictly with more depression symptoms when entered in the same regression model (Anthony et al., 2002). In contrast, a longitudinal study with children which examined both NE and PE within the same sample found that when entering NE and PE within the same model, observations of child PE at age 3 predicted depression symptoms at age 10, while observations of child NE did not (Dougherty, Klein, Durbin, Hayden, & Olino, 2010). In addition, the combination of low levels of PE and high levels of NE at age 3 was associated with the highest level of depression symptoms in 10-year-

olds. Interestingly, a meta-analysis found that although the association between PE and depression symptoms exists among children, its association is significantly weaker than that found among adults, potentially due to the comparatively weaker stability of PE or to measurement and reporting issues that differ between children and adults (Khazanov & Ruscio, 2016).

In addition to depression symptoms, other studies have looked more globally at internalizing symptoms in children and youth, which also include anxiety symptoms, as well as other issues such as somatization and social withdrawal, and have found similar associations (e.g., Hagan, Luecken, Modecki, Sandler, & Wolchik, 2016; Putnam & Stifter, 2005; Zhou et al., 2009). Despite an intuitive understanding of why the relation may exist, there remains some debate about how the association between emotionality and internalizing symptoms functions (for a review, see Klein, Dyson, Kujawa, & Kotov, 2012). Essentially, there are three sets of theories: 1) temperament factors, such as NE and PE, predispose certain people to experience internalizing disorders; 2) temperament factors and internalizing symptoms come from the same source and thus co-occur; or 3) internalizing symptoms create scarring, which intensifies issues with emotionality. In their review, Klein and colleagues (2012) conclude that there is little evidence to support the scarring model, and some evidence to support the theory that temperament and internalizing issues share a common cause, and that temperament may predispose some individuals to future internalizing problems. However, they note that there is a lack of rigorous longitudinal studies in both mood and anxiety disorders to be able to reach a solid conclusion.

Although there is some evidence that temperament may be a predisposing factor in internalizing disorders, there are many other factors to consider when exploring the development of psychopathology. Specifically, the developmental psychopathology framework posits that researchers should consider biological, psychological and social-contextual factors in the child's life (Cicchetti & Toth, 2009b). These factors can be at the child, parent or even neighbourhood level. At the child-level, temperament is indeed considered an important factor in understanding internalizing disorders (Lahey, 2004). However,

parent-level factors, such as their own temperament and emotional well-being, should be considered, in addition to specific behavioural factors, such as parenting and parenting practices. Some researchers have explored the similarities between child and parent temperament, in part due to its proven heritability (Ganiban et al., 2008). Working with toddlers and preschoolers, previous researchers have been able to show some associations between children and their parents on NE or neuroticism as well as observed PE (e.g. Crawford, Schrock, & Woodruff-Borden, 2011; Davis, Suveg, & Shaffer, 2015; Potapova, Gartstein, & Bridgett, 2014). However, few studies have explored beyond the preschool period, such as in middle childhood or adolescence, or whether these associations remain consistent across time or developmental periods. In addition, very few studies have explored temperament similarities with both the mother and the father in the same study, to explore their unique contributions. As there tends to be a strong link between temperament and internalizing symptoms in adults (Elovainio et al., 2015), exploring parental psychopathology symptoms is certainly valuable. Moreover, parental mood disorders have previously been shown to be associated with child NE and PE (e.g., Durbin, Klein, Hayden, Buckley, & Moerk, 2005; Gagne, Spann, & Prater, 2013). Furthermore, multiple studies have shown that parental psychopathology symptoms are highly associated with children's psychopathology symptoms (e.g., Goodman et al., 2011). Taken together, these findings underscore the importance of including parental mental health symptoms in models exploring child temperament and internalizing symptoms.

Beyond the genetic contribution, it is believed that parents may share similar temperamental and emotional profiles with their children because of the way that temperament may influence their parenting behaviours (Belsky, 1984; Bridgett, Burt, Edwards, & Deater-Deckard, 2015). A meta-analysis exploring the relation between the Big Five personality traits and parenting behaviours found that higher levels of neuroticism are associated with less warm and responsive parenting, and more inconsistent and arbitrary structuring/discipline (Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009).

However, little research has explored the influence of NE, PE or psychopathology symptoms on parenting behaviours that are geared toward emotion socialization. Emotion socialization generally refers to the practices which teach children about how to understand their own emotions as well as those of others', in addition to learning how to express and regulate – or cope with – their own emotions (Denham, Bassett, & Wyatt, 2007). Emotion socialization can occur directly, i.e., providing the child with explicit instruction or information about how to understand, express and regulate their emotions (Root & Denham, 2010), or indirectly, i.e., intentionally or unintentionally providing a model for emotions, such as through the emotional climate of the family (Halberstadt, Crisp, & Eaton, 1999). A form of direct emotion socialization labelled contingencies has been shown to be highly related to measures of children's emotional and social well-being (e.g., Eisenberg & Fabes, 1994; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002; Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014; Nelson et al., 2013) and contingencies are considered one of the key processes of emotion socialization (Eisenberg, Cumberland, & Spinrad, 1998). Contingencies refer to the way that parents react to their child's emotional displays. Contingencies are usually categorized as either being supportive of the child's emotional display, thereby communicating an acknowledgment of the validity of the child's emotion and offering support when necessary (e.g., comforting, encouraging the emotional display, offering instrumental support, problem-solving), or as nonsupportive, communicating that the emotion is unacceptable or inappropriate (e.g., punishing, ignoring, minimizing; Root & Denham, 2010). In general, research with toddlers and preschoolers as well as those in early childhood has shown that nonsupportive reactions to negative emotions, particularly punishing the child's emotion, are related to poorer socio-emotional functioning (e.g., Denham et al., 1997; Eisenberg & Fabes, 1994). This may be because nonsupportive reactions generally do not teach a child *how* to cope with their negative emotions, and instead condition the child to associate negative emotions with negative sanctions, such as a punishment or being ignored. Thus, the child internalizes that negative emotions are unacceptable, but

is not provided with the resources to properly cope with and regulate these emotions in order to avoid displaying them in front of their parents and others. In contrast, supportive reactions to negative emotions tend to include responses that at the very least validate the child's emotion and recognize its importance, and at times even teach the child important problem solving and self-soothing skills.

Importantly, the majority of research to date has been conducted on parent's reactions to their child's *negative* emotions, particularly by measuring it via parent self-report questionnaires. Not surprisingly, the socialization of positive emotions, much like the examination of PE, has remained largely unexplored. Some recent studies have explored parental reactions to positive emotions in observational scenarios (e.g. Katz et al., 2014; Lougheed et al., 2016; Yap, Allen, & Ladouceur, 2008). This research has generally shown that supportive reactions to positive emotional displays of adolescents, such as matching or encouraging the emotion, are related to better emotional functioning (e.g., lower depression symptoms), whereas nonsupportive reactions to PE, such as dismissing or dampening the emotion, are associated with worse emotional functioning (e.g., high depression symptoms). Of import, this research has tended to focus on children in early to late adolescence, although some studies have observed maternal contingencies to PE with infants and toddlers (e.g., Malatesta, Grigoryev, Lamb, Albin, & Culver, 1986; Feldman, 2003; Roque & Verissimo, 2011). Exploring parental reactions to both negative and positive emotions may be fruitful, as previous research has shown that the type(s) of responses may differ depending on the valence of the emotion. For example, a study by Lunkenheimer, Shields, and Cortina (2007) showed that parents tended to coach or respond more to negative emotions than positive emotions during a series of observational parent-child discussion tasks. In addition, Lunkenheimer and colleagues (2007) found that responding with coaching (e.g., problem-solving, etc.) to negative emotions but not to positive emotions was associated with better socio-emotional outcomes for the child. Thus, it would be helpful to expand our understanding of the way that different contingencies, to both positive and negative emotions, may relate to emotional well-

being in children. In turn, this may allow for a deeper understanding of how best to attend to a child's emotion, depending on its valence, as well as where to focus potential intervention efforts.

Response patterns to children's displays of emotions may also vary as a function of certain parent characteristics. As discussed earlier, certain parental temperamental characteristics or psychopathology symptoms may relate differently to parenting behaviors. Specifically, higher levels of NE, lower levels of PE, and higher levels of depression and anxiety are generally associated with such parental qualities as lower levels of warmth or responsiveness (e.g., Prinzie et al., 2009) and more nonsupportive or less supportive reactions to NE (Buckholdt, Parra, & Jobe-Shields, 2014; Fabes, Leonard, Kupanoff, & Martin, 2001; Han, Qian, Gao, & Dong, 2015; Hughes & Gullone, 2010; Silk et al., 2011) and PE alike (Feng et al., 2008; Gentzler et al., 2015), while others have not found these associations (e.g., Barry & Kochanska, 2010; Premo & Kiel, 2016). Thus, studying the shared parental and child emotional characteristics, and how these relate to parental emotion socialization, may help shed light on how these characteristics are maintained.

The current studies

The present set of three studies was designed to fill a number of gaps in both the emotionality and emotion socialization literatures. Using a longitudinal data set with four time points and observational data at two of these time points, the present series of studies aimed to explore emotionality and emotion socialization and their relation to internalizing symptoms both via questionnaires and via observations, across different developmental time points (i.e., from preschool to adolescence), and across both positive and negative emotions. Importantly, this set of studies explored NE, PE and psychopathology symptoms using the developmental psychopathology model (Cicchetti & Toth, 2009b) as a guiding framework for the research questions and analyses. Where possible, these studies considered the child characteristics, parent characteristics, and parenting behaviours that may play a role in the development of internalizing symptoms in children.

In Study 1, the overarching goal was to more comprehensively understand the relation between NE and internalizing symptoms or depression, both within and between children and their parents. The relation between NE and internalizing symptoms was explored in children from preschool age to adolescence. In addition, the differential role of mothers and fathers in predicting their child's NE and internalizing symptoms was examined. In Study 2, the hypothesis that the similarity between mothers and their children in their NE may be partially mediated by mothers' emotion socialization, specifically her contingent responses to her child's negative emotions, was directly assessed. In Study 3, this set of questions was expanded to address the potential role of positive emotions as well. Specifically, mothers and their preschoolers and then subsequently pre-adolescent children were observed in order to quantify the level of child positive emotional expression as well as the maternal contingency to positive emotions, and then relate PE and responses to PE to parental and child emotional well-being. As such, this set of studies considered multiple levels of factors in the development of internalizing symptoms, including those at the child-level (i.e., emotionality), parent-level (i.e., emotionality, psychopathology symptoms), and parenting behaviours (i.e., emotion socialization). By exploring the socialization of both positive and negative emotions and their relation to internalizing symptoms, this set of studies was designed to fill crucial gaps within the emotion socialization and developmental psychopathology literatures.

Chapter 2: Dissertation Study 1

Maternal and paternal negative emotionality and depression symptoms as predictors of children's emotionality and internalizing symptoms

Ciara Briscoe, Dale M. Stack, and Lisa A. Serbin
Concordia University

Abstract

Past research has found that temperament, specifically negative emotionality (NE), plays a role in psychopathology; however, little research has explored how the emotional well-being of parents may factor into this association. We explored the predictive ability of paternal and maternal NE (Emotionality Activity and Sociability [EAS] questionnaire) and depression symptoms (Symptom Checklist 90 - Revised) on their child's NE (EAS) and internalizing symptoms (Child Behaviour Checklist) in an at-risk sample (n=175; 94 girls). There were 3 time points, spanning from when the child was preschool aged (1 to 6 years; Time 1) to when the child was an adolescent (12 to 17 years; Time 3). Path analyses were conducted for the association between NE and internalizing across all three time points and for father and mothers separately using the measures described above. Child NE and internalizing symptoms were found to be relatively stable and child NE was associated concurrently with internalizing symptoms at all three time points. Results also revealed that mother NE was concurrently associated with child NE at both Time 1 and Time 3, while maternal depression symptoms were associated concurrently with internalizing problems at Time 1 for girls only. For fathers, depression symptoms at Time 1 were directly positively associated with their child's NE scores at Time 3, while paternal NE at Time 1 was associated with concurrent child internalizing symptoms but only for boys. These findings have implications for our understanding of how family-level factors contribute to child emotionality and psychopathology.

Keywords: negative emotionality, internalizing symptoms, developmental psychopathology, longitudinal, mothers, fathers

Introduction

The subjective experience of negative emotions can range from unpleasant to extremely distressing. However, it is well known that emotions such as anger, fear and sadness can facilitate adaptive reactions to important life events and situations (Izard, 1997; Izard, 2009). Unfortunately, some children and adults experience these emotions much more frequently and intensely than is adaptive and normative, which can have consequences on their emotional lives and their overall well-being. Negative Emotionality (NE) is defined as a person's tendency to react to stressors with strong negative emotions (Bates, 1989; Rothbart, Ahadi, & Hershey, 1994). More specifically, NE can refer to a susceptibility to experience heightened negative emotions, a sensitivity to negative environmental cues, and/or difficulty recovering from distress, and is similar to the concept of neuroticism (Rothbart & Bates, 2006). Over the course of emotional development, NE progresses from being characterized by the level of emotional distress to being further differentiated into tendencies towards anger and fear (Buss, 1991). To many theorists, emotionality is considered to be a component of temperament, i.e., behavioural and emotional characteristics that emerge early in life and remain relatively stable into adulthood (Goldsmith et al., 1987; Shiner et al., 2012). Furthermore, NE specifically is considered integral to the cluster of behaviours labeled as "difficult temperament" (Bates, 1980; Prior, 1992). Having a difficult temperament is an important factor to be considered in models of developmental psychopathology (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Gartstein et al., 2010; Nigg, 2006; Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005) and NE specifically is alleged to increase the risk for developing a variety of psychological symptoms, particularly when growing up in adverse contexts (Rothbart, 2011). Previous research has shown that NE early in life (i.e., infancy and early childhood) is associated with a myriad of problems later in life, such as poor academic achievement, poor interpersonal functioning, and lower self-reported happiness

(e.g., Guerin, Gottfried, & Thomas, 1997; Holder & Klassen, 2010; Kim, Walden, Harris, Karrass, & Catron, 2007; Stright, Gallagher, & Kelley, 2008). In addition, results from many studies have found that NE is strongly linked with internalizing problems, i.e., manifestations of anxiety, depression, somatic complaints and withdrawn behaviour (Bongers, Koot, Van der Ende, & Verhulst, 2003), when measured concurrently in infancy and also as late as early adolescence (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Crawford, Schrock, & Woodruff-Borden, 2011; Marakovitz, Wagmiller, Mian, Briggs-Gowan, Carter, 2011; Tackett, Kushner, De Fruyt, & Mervielde, 2013). Furthermore, some research has shown emotionality to be a longitudinal predictor of internalizing problems (e.g., Bould, Araya, & Pearson, et al., 2014; Gjone & Stevenson, 1997; Karevold, Roysamb, Ystrom, & Mathiesen, 2009), including a recent study showing that middle childhood NE predicted young adulthood internalizing symptoms 15 years later (Hagan, Luecken, Modecki, Sandler, & Wolchick, 2016). It has been suggested that the link between NE and internalizing problems exists in part because of the child's susceptibility to experience negative emotions and how this may place a "greater strain" on a child's ability to regulate their emotions in day-to-day life (Yap, Allen, & Sheeber, 2007). As a result, children with high NE may be more likely to experience a breakdown in their regulatory abilities, even if their abilities are similar to those of their peers, purely because they are forced to use them so much more frequently, resulting in emotional exhaustion (Yap, Allen, & Sheeber, 2007). Consequently, several authors have posited that high NE in childhood and adolescence places children at risk for future internalizing problems (Clark, Watson & Mineka, 1994; Klein et al., 2012; Kovacs & Lopez-Duran, 2010).

Negative emotionality is considered to be one of the earliest emerging manifestations of temperament and is conceptualized as a fairly stable and consistent characteristic (Rothbart, 1989). During the early years, NE appears to increase across development, reaching a relative mean level of stability at around age 2 (e.g., Bridgett et al., 2009; Leve et al., 2013). Consequently, the stability of NE is considered more consistent in the toddler period (i.e., 24-48 months) and has been shown to have

substantial test-retest correlations during the preschool age period (3-6 years of age; Bould, Joinson, Sterne, & Araya, 2013; Durbin, Hayden, Klein, & Olino, 2007; Mathiesen & Tambs, 1999; Durbin et al., 2007). However, less is known about the stability of NE during early and middle childhood and particularly during adolescence, as well as whether NE is highly stable both within and across these developmental periods. Unfortunately, most longitudinal studies of temporal stability for temperament have been restricted to samples with children under the age of 12 (e.g., Neppl et al., 2010). One study examined temperament stability at two time points during adolescence, at 12- or 13-years-old and then 2-3 years later, and found that stability was mostly explained by genetic factors (Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008). Additionally, some studies performed with adolescents have found that they possess higher levels of NE than their child counterparts, suggesting a potential peak in NE during and after puberty (e.g., Garber, Keiley, & Martin, 2002; Larson & Richards, 1995). Despite a handful of studies establishing NE's stability within early childhood or within adolescence, there has been only one longitudinal study to document NE's stability across preschool age to adolescence. Specifically, Sallquist and colleagues (2009) found that, across a 6 year period into early adolescence, NE levels as reported by parents and teachers tended to decline across time but that the participants tended to maintain their rank-ordering across time. Therefore, while there is a theoretical conception of NE as being a stable characteristic, there is little evidence to support this contention.

Negative emotionality is discussed as a stable characteristic since it is considered to be a part of temperament, and this understanding of NE may lie in its purported genetic basis (Rothbart & Bates, 1998). Based on genetics, it follows that there would be similarities between parents and their children through heredity (Cumberland-Li, Eisenberg, Champion, Gershoff, & Fabes, 2003). Eisenberg, Cumberland, and Spinrad (1998) emphasize the importance of understanding both the child's temperamental traits as well as those of their parent's in order to gain a more in depth understanding of the child's emotional world and development. In addition, the developmental psychopathology

framework would echo this notion, and insist that understanding the complexity of child psychopathology would necessitate exploring crucial parent-level factors (Calkins, Propper & Mills-Koonce, 2013). Although previous work has indeed shown that parental NE is concurrently associated with their young child's NE for both mothers (e.g., Crawford, Schrock, & Woodruff-Borden, 2011) and fathers (e.g., Potapova, Gartstein, & Bridgett, 2014), this literature has a plethora of limitations. Studies rarely extend past infancy and preschool-aged children. For example, only one study found a weak correlation between mother's negative affect and that of their adolescent child (Davenport, Yap, Simmons, Sheeber, & Allen, 2011). Another study exploring alpha-personality traits (i.e., high agreeableness, low neuroticism, and high conscientiousness) showed a relation between parent and adolescent for this constellation of traits, but it did not investigate NE/neuroticism independently from the other personality traits (Schofield, Conger, Donnellan, Jochem, & Conger, 2012). Moreover, the few studies that explore this relation typically use different measures for the parent and the child, such as a neuroticism measure for the parent and an NE measure for the child. However, there are measures that instead conceptualize temperament as being applicable to both children and adults, and these measures have therefore created different versions for the respective age groups, such as the Buss and Plomin's (1986) Emotionality Activity Sociability scale. As such, NE in children and adults can be conceptualized and measured in an analogous way, highlighting the similarities between child and adult emotional well-being. Interestingly, the study conducted by Schofield and colleagues above included father participants, and their findings supported the inclusion of fathers in studies concerning temperament and personality, as the relation between parent and adolescent on the personality dimensions were similar whether it was the mother or father being studied. Few other studies have included fathers in their sample or compared the relations between mother and father NE and child NE within the same sample. Increasingly, the importance of considering fathers' role in child development is being emphasized, particularly in

relation to the socio-emotional health of children (e.g., Foster, Reese-Weber, & Kahn, 2007; Lamb & Lewis, 2013).

Similar to the association between child NE and child internalizing symptoms, NE in adults has also been associated with serious emotional consequences, including depression symptoms and diagnosis (Lahey, 2009). Elovainio and colleagues (2015, p. 211) found that NE is reciprocally associated with depression in adults, meaning that both are predictive of each other at later time points and potentially feed into each other in a "vicious circle". With regard to parenting, Hanington, Ramchandani and Stein (2010) found that depressive symptoms in both fathers and mothers predicted their infants' higher NE 18 months later. In addition, maternal depression is associated with more difficult child temperament ratings generally (Beck, 1996), and specific components of NE such as higher fearfulness in infants (Gartstein et al., 2010) and higher NE or anger in preschoolers (Gagne, Spann, & Prater, 2013; Olino, Klein, Dyson, Rose, & Durbin, 2010). Finally, maternal depression has been shown to be highly associated with child internalizing problems (Goodman et al., 2011). Taken together, parental depression is essential to consider when exploring parent and child emotionality and internalizing tendencies.

The present study was designed to investigate the NE of parents and their children in a community sample, spanning three time points and approximately 10 years of the children's development. This study used the Concordia Longitudinal Risk Project (hereafter referred to as the Concordia Project; Schwartzman, Ledingham, & Serbin, 1985; Serbin et al., 1998), a longterm study that has been following children from low socioeconomic neighbourhoods and schools in Montreal, Quebec since 1976. The focus of our study was on these original participants and their spouses as parents as they raised their own preschool to teenaged children, 20-30 years after the original study. In the NE literature, most studies use either clinical populations, or convenience samples which tend to include mostly middle income families and focus on young children, almost all under age 12 (e.g.,

Guerin, Gottfried & Thomas, 1997; Roberts & Delvecchio, 2000). Therefore, there is a need for a longitudinal study that spans developmental periods to document this association with a community sample, drawn from disadvantaged neighbourhoods. In addition, this study examined the differential role of mothers' and fathers' NE on their own child's NE, which has not previously been explored in the same sample and across developmental periods. In line with the developmental psychopathology framework (Calkins, Propper & Mills-Koonce, 2013), results from this study contribute to a deeper understanding of the factors involved in NE and internalizing disorders in children, both at the child and parent level.

The specific objectives of the study were the following: 1) reproduce and expand upon previous findings concerning the stability of NE throughout childhood and early adolescence; 2) strengthen previous findings demonstrating the link between NE and child internalizing symptoms with an at-risk community sample and spanning preschool to adolescence at multiple time points; 3) explore the link between parental NE and their child's NE and internalizing symptoms; and 4) compare the roles of mothers and fathers in the transfer of NE and internalizing problems from parent to child, while controlling for their respective contributions.

Methods

Participants

The participants in the current study derive from the original larger longitudinal sample of the Concordia Project. In 1976-77, 4,109 elementary school students in grades 1, 4 and 7 were selected from francophone low-income neighbourhoods in Montreal, Canada (Schwartzman et al., 1985; Serbin et al., 1998; Stack, Serbin, Matte-Gagné, Kingdon, Doiron, & Schwartzman, in press). The original participants of the present study, both male and female, are those who became parents and had a preschool child at the time of recruitment for the present study. This resulted in a sub-sample of 175 families with either a father or mother who was an original participant in the 1976 original data

collection for the study. In the present study, four objectives were explored using this sample, in which parents and their preschool-aged children were followed for two additional time points (described below) through middle childhood and into adolescence.

The mean age of mothers as of data collection at Time 1 was 30.44 years (*SD* = 3.35; n=175); the age at which these mothers had their first child ranged from 16.42 to 36.84, with an average age of 24.86 (*SD* = 3.39). The average number of years of education of the mothers was 11.77; in order to graduate from high school in Quebec, 11 years of education is required. For fathers, the mean age at Time 1 was 32.00 years (*SD* = 3.66; n = 152; the remaining 23 families had fathers labeled as "absent") and their average number of years of education was 11.71 (*SD* = 2.02). The age at which fathers had their first child ranged from 19.27 to 43.02 with a mean of 26.04 years (SD = 3.78). The maximum family prestige score (Standard International Occupational Prestige Scale; Treiman, 1977) was an average of 38.41, which could include jobs such as manufacturing laborers (e.g., chemical processors, tobacco preparers, sheet metal workers, etc.), and service workers (e.g., guides, tailors, etc.) At Time 1, the ages of the child participants ranged from 1.09 to 6.12 years and the average age was 3.54 (*SD* = 1.55). There were 81 boys and 94 girls (*n* = 175). At Time 2, age of child participants ranged from 6.15 to 11.64 (*M* = 7.68, *SD* = 1.01), with 63 boys and 75 girls (*n* = 138). Finally, at Time 3, the age of child participants ranged from 12.00 to 17.43 (*M* = 13.73, *SD* = 1.22), with 57 males and 63 females (*n* = 120).

Measures

Demographic Information Questionnaire (DIQ). Socio-demographic information, such as child's age and sex and mothers' and fathers' level of education in number of years, was collected using the Demographic Information Questionnaire. This measure has proven effective in collecting participant demographics, and has been used in past studies of the Concordia Project (e.g., Martin, Stack, Serbin, Ledingham, & Schwartzman, 2012; Enns et al., 2015).

Negative Emotionality – Emotionality Activity Sociability Scale (EAS; Buss & Plomin, 1986).

Children. Mothers completed the EAS (Buss & Plomin, 1986) questionnaire at all three time points on behalf of their children. The EAS is a measure of temperament that includes: Emotionality, i.e., the tendency to react to a stressor with strong negative emotions or distress; Activity, i.e., the tendency to be restless or energetic; and Sociability, i.e., the tendency to prefer to be in the company of others rather than alone and to find social interactions rewarding. Only the Emotionality subscale total score, which consists of 5 items, was used in this study. Example items include: "Cries easily*",* or "Reacts intensely when upset". Each item is rated on a likert-type scale from 1 (my child's behaviour is never like this) to 5 (my child's behaviour is always like this). Previous research has demonstrated that this measure has good test-retest reliability (e.g., r = .82) and internal consistency (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Bould, Joinson, Sterne, & Araya, 2013; Spence, Owens, & Goodyer, 2013). For the present sample, analyses revealed a Cronbach's alpha of .75 for Time 1, .79 for Time 2, and .85 for Time 3.

Parents. Both mothers and fathers completed the self-report adult version of the EAS (Buss & Plomin, 1986) at Time 1 and mothers only at Time 3. The total scores for each of the Emotionality subscales - Distress, Anger and Fearfulness - were used (4 items each), and followed the same likert-type scale scoring as described above for the child questionnaire. Sample items include: for Distress, "I frequently get distressed"; for Anger, "I am known as hot-blooded and quick-tempered"; and for Fearfulness, "I am easily frightened". Previous research has used a total score for Emotionality, thus collapsing across Distress, Anger and Fearfulness, and studies have found good internal reliability. For example, Laurent and Powers (2007) report a Cronbach's alpha of .83 for the Emotionality total score. In the present study, the Cronbach's alpha values for mothers and fathers were .81 and .70, respectively at Time 1, and .82 at Time 3 for mothers.

Parental Depression Symptoms - Symptom Checklist 90 Revised (SCL-90R; Derogatis, 1983). The SCL-90R is a self-report questionnaire concerning symptom intensity for nine psychopathology subscales. For this study, only the Depression total subscale score was used, which includes a total of 13 items that evaluate the severity of depression symptoms. With regard to internal consistency, previous research has shown that the SCL-90R Depression subscale has a Cronbach's alpha of .88 (e.g., Keefe et al., 2000), and in the present sample, it was .88 for mothers and .92 for fathers. In addition, research has shown the SCL-90R to have adequate convergent validity (e.g., Derogatis, & Unger, 2010; Ransom, Ashton, Windover, & Heinberg, 2010).

Child Internalizing Behavior - Child Behaviour Checklist (CBCL; Achenbach, 1991). Mothers completed the Parent Report Form of the Child Behavioral Checklist (CBCL; Achenbach, 1991), which is a questionnaire that is designed to assess a variety of behavioural and emotional problems in children. Mothers were asked to report whether behavioural descriptions were representative of their child, ranging from 0 (*not at all true)* to 2 (*very* true). In the present study, only the Internalizing scale was used, which is composed of items that reflect the Withdrawn, Somatic Complaints, and Anxious/Depressed subscales. This scale was used due to its previous associations with NE (e.g., Crawford, Schrock, & Woodruff-Borden, 2011; Shaw, Keenan, Vondra, Delliquardi, & Giovannell, 1997). Note that at Time 1, two different versions of the CBCL were used based on the age group of the child, i.e., under or over 4 years old. Good short-term test–retest reliability (.93 for total problems) has been reported for this measure (Achenbach, 1991), and previous research has shown high internal consistency reliability (e.g., Gartstein & Fagot, 2003). The internal consistency for the present sample for the various time points was .85 (under 4 years old) and .70 (over 4 years old) for Time 1, .86 for Time 2, and .84 for Time 3.

Analysis

Missing Data. Due to the participant attrition noted above between the three time points as well as missing data within the variable set, multiple imputation for the 175 families in the current study was considered. Multiple imputation is a statistical technique commonly used in longitudinal data sets to replace missing data with value estimates, and is preferred to other missing data techniques such as listwise deletion which drastically reduces sample size and may yield biased parameter estimates (Graham, 2009). Results from Little's MCAR test suggested that data were not missing completely at random, as the test did not reach statistical significance ($\chi^2 = 281.76$, $p = .216$). As a result, multiple imputation using Mplus (Muthén, & Muthén, 2010) was conducted with variables missing less than 35% of their data. Although some researchers suggest a level of missingness between 2 - 30% (e.g., Bukowski, 2014), previous research has shown that even with small samples (e.g., $N = 50$), multiple imputation performs very well with as much as 50% missing data in the dependent variable (Graham & Schafer, 1999). Because of the rate of missingness, 100 imputations (i.e., $m = 100$) were aggregated into one file and the resulting summary file was used in all ensuing analyses (Graham, Olchowski, & Gilreath, 2007).

Path analysis. Path analysis was conducted using Bentler's (2005) EQS software. Specifically, the software was used to construct a path analysis to establish the stability of NE and internalizing problem behaviour over three time points. In addition, path analysis was used to examine the relative contributions of parental symptoms of depression and parental NE to the child's NE and internalizing symptoms concurrently and at the two subsequent time points, using a separate path for each parent. Three main fit indices were used to evaluate model fit, including the χ^2 statistic, comparative fit index (CFI) and root mean square error of approximation (RMSEA). A model was considered to have acceptable fit if the CFI value was .90 or higher and RMSEA value was below .08 (Hu & Bentler, 1999). Where appropriate, mediation analyses were conducted using SPSS Version 22.0, using the PROCESS macro Version 2.16 developed by Hayes (2013).

Results

Preliminary Analyses

The descriptive statistics (i.e., mean, standard deviation) for all of the variables used in the three paths are presented in Table 1. In addition, the bivariate correlations between all study variables are presented in Table 2. Objectives 1 and 2 were addressed using Path 1, while Objectives 3 and 4 were addressed using Paths 2 (mother) and 3 (father). Control variables included child sex, child age, and maternal education where applicable.

Path 1: Stability of negative emotionality and its relation to internalizing problem behaviour (objectives 1, 2)

Path analysis was used to test the model shown in Figure 1. The model fit the data well [$X^2(5, 175) = 9.62$, $p = .38$; CFI = 1.00; RMSEA = 0.02 (90% CI=.000, .089)]. Regarding control variables, child sex was found to be statistically significantly associated with child internalizing problems scores at Time 1 (T1) and child emotionality at Time 3 (T3), such that being male was associated with higher ratings of internalizing problems at T1 and being female was associated with higher ratings of emotionality at T3. Child emotionality at T1 was positively associated with their emotionality at Time 2 (T2) and T3, while child internalizing problem scores from T1 were positively associated with scores at T2, and T2 scores were positively associated with scores at T3. Child emotionality at all three time points was positively associated with child internalizing problems scores at each respective concurrent time point, while child internalizing problem scores at T1 and T2 were positively associated with child emotionality at T2 and T3, respectively. Of note, child emotionality at T1 and T2 were not statistically significantly associated with child internalizing problem scores at T2 or T3 respectively. Overall, this pattern of results suggests that there was stability in children's NE and internalizing problem behaviour.

Path 2: Maternal NE predicting child NE and internalizing problems (objective 3)

Path analysis was used to test the model shown in Figure 2 for mothers and their children. The model fit the data well [$X^2(17, 175) = 25.00$, $p = .09$; CFI = 0.97; RMSEA = 0.05 (90% CI = .000, .093)]. The only control variable that was a statistically significant predictor of the outcome variables was child sex; specifically, boys received higher ratings of internalizing problem symptoms at preschool age than did girls. Consistent with the analyses above, child NE was positively associated with child internalizing problem symptoms concurrently both at T1 and T3. Similarly, maternal NE was associated positively with concurrent maternal depression symptoms. With regard to mother to child paths, mother NE was associated positively with child NE concurrently, both at the preschool (T1) and adolescent (T3) time points. Maternal depression symptoms were associated with higher levels of child internalizing symptoms concurrently at the preschool period, while maternal NE at T1 was associated with higher levels of child internalizing symptoms in adolescence at T3.

Mediation analyses were conducted to test the indirect effects of maternal variables on certain child outcomes. Results revealed that, at Time 1, the indirect effect from maternal NE to concurrent child internalizing symptoms was statistically different from zero with concurrent child NE as the mediator (β = .09, 95% CI: .0325 to .1965; as tested by a bias-corrected bootstrapping procedure; Preacher & Hayes, 2008), and the indirect effect accounted for approximately 46.16% of the total effect (see Table 3). In addition, at Time 3, the indirect effect from concurrent maternal NE to child internalizing symptoms was statistically different from zero with concurrent child NE as the mediator (β = .19; 95% CI: .0706 to .3547; $p < 0.05$, as tested by a bias-corrected bootstrapping procedure), with the indirect effect accounting for approximately 46.04% of the total effect (see Table 4). This result suggests that child NE was a concurrent mediator between maternal NE and child internalizing symptoms at both Time 1 and Time 3, further supporting the relation between maternal and child NE.

Path 3: Paternal NE predicting child NE and internalizing problems (objective 3)

Path analysis was used to test the model shown in Figure 3 for fathers and their children. The model fit the data well [$X^2(12, 175) = 11.99$, $p = .45$; CFI = 1.00; RMSEA = 0.00 (90% CI = .000, .077)]. Consistent with the analyses above, child NE was positively associated with child internalizing symptoms concurrently both at T1 and T3. Correspondingly, paternal NE was associated positively with concurrent paternal depression symptoms. Again, the only control variable to be a statistically significant predictor of the outcome variables and predictors was child sex; specifically, boys elicited higher ratings of internalizing symptoms at preschool age than did girls and having a preschool aged boy in the sample was associated with higher levels of paternal NE than having a girl. With regard to father to child paths, father NE was associated positively with child internalizing symptoms concurrently at T1. In addition, paternal depression symptoms at T1 were associated with child's NE at T3, controlling for child NE at T1.

Mediation analyses were also conducted to test the indirect effects of paternal variables on child outcomes. Specifically, results revealed that there was an indirect effect that was statistically different from zero from father's depression symptoms to adolescent internalizing symptoms with adolescent NE as the mediator (β = .21; 95% CI: .0547 to .3933; as tested by a bias-corrected bootstrapping procedure), with the indirect effect explaining 74.94% of the total effect (see Table 5). This result suggests that Time 3 adolescent NE was a mediator between Time 1 paternal depression symptoms and Time 3 adolescent internalizing symptoms.

Follow-up regressions analyses (objective 4)

A series of follow-up regressions were conducted because of limitations placed on the number of variables allowable in the models due to sample size. Specifically, these regressions were conducted to incorporate child internalizing or child NE variables at T2 and to include statistically significant mother and father predictors of the same child outcome variables within the same regression in order to strengthen the findings of the path models above.

First, the outcome variable of child internalizing symptoms at T1 was explored with both the statistically significant maternal and paternal predictors in the regression (Table 6). Due to the findings with child sex in relation to child internalizing symptoms at T1, the analyses were run separately for boys and girls. For boys, analyses revealed that father's NE at T1 was positively associated with child internalizing symptoms concurrently (β= .22 $p < .05$) after controlling for child NE at T1 (β= .34, $p <$ .01) and maternal depression at T1 (β= .01, $p > .05$). For girls (see Table 7), higher maternal depression symptoms were associated with higher concurrent child internalizing (β= .28, $p < .01$), controlling for child NE (β= .33, $p < .01$) and paternal NE (β= .06, $p > .05$). Second, child emotionality at T3 was explored further. According to the regression findings (Table 8), father depression symptoms at T1 (β= .14, $p < .05$) and mother NE at T3 (β= .17, $p < .05$) continued to be statistically significant predictors of child NE at T3, even when controlling for child NE at T1 and T2 as well as child internalizing symptoms at T2.

Discussion

In the present study, we aimed to investigate the following research objectives: 1) the stability of NE in childhood through to adolescence; 2) child NE and its relation to children's internalizing behaviour problems; 3) the role of parental emotionality and depression symptoms on child emotionality and internalizing problems from preschool to adolescence; 4) mothers' and fathers' contribution to their child's emotional development and distinguishing between these. Findings concerning the stability of NE and its relation to internalizing symptoms are reviewed first, followed by a discussion of the different associations of mothers' and fathers' emotional well-being to their child's NE and internalizing symptoms.

For the first and second objectives, we sought to replicate and expand upon previous findings concerning the stability of NE and the link between NE and internalizing problem behaviour in children. The results from the present study suggest that NE does show some stability from preschool to middle

childhood, middle childhood to adolescence, and even from preschool to adolescence. This further supports the notion that NE, as a part of temperament, remains fairly stable throughout life (Rothbart & Bates, 2006). Although previous research has shown that NE is fairly stable *within* infancy, preschool, or adolescence (e.g., Bould, Joinson, Sterne, & Araya, 2013; Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008), this is one of the first studies to suggest that NE is stable across developmental periods, spanning preschool age to adolescence. The implications of this finding may be that high NE as a preschooler could be considered useful as a marker of risk for later life. Yet, the present research also suggests that NE levels can change as a child develops; there is unexplained variance in the scores, implying that NE could potentially be modified or manipulated. In other words, although there is a genetic component to the stability of NE as argued and demonstrated by other researchers (e.g., Ganiban et al., 2008), NE is certainly not fixed as its stability is modest to moderate. Therefore, it could be a target for intervention or prevention efforts.

In their 2006 review, Propper and Moore argued that the remaining variance in NE's stability may be the role of environmental factors, such as parenting variables. The potential malleability of NE becomes all the more relevant when considering the other implications of the path analyses from our study, which suggest a link between NE and internalizing symptoms at three separate time points. The link between NE and internalizing symptoms in children has been previously documented (e.g., Crawford, Schrock, & Woodruff-Borden, 2011), however there remains debate about why or how the association between these two measures of emotional well-being functions (for a review, see Klein, Dyson, Kujawa, & Kotov, 2012). In the present study, the direction of the association appeared to be from NE to internalizing symptoms at concurrent time points, rather than from internalizing symptoms to NE. This may be evidence for the precursor model, i.e., that NE may be an early manifestation of mental illness symptoms (Klein et al., 2012). Although it cannot be thoroughly tested within the context of a longitudinal naturalistic study, the findings presented in the path analyses may also provide

evidence for the predisposition model, which posits that NE may play a causal role in the onset of psychopathological symptoms (Klein et al., 2012). Finally, it is important to note that the stability across time points and across measures may also reflect a consistency in the raters themselves and in some of the similarity between the measure items (Klein et al., 2012). Regardless, given that NE has been linked to a specific form of childhood psychopathology which can ultimately impact adult mental health (Kovacs & Devlin, 1998), this study's findings further emphasize the importance of understanding how NE can change over time and examining its associations with internalizing symptoms in more depth.

Notwithstanding the unexplained variance, understanding the stability of NE and internalizing symptoms would be incomplete without considering the role of parents' emotional well-being. In the first set of analyses with mothers, we found that mothers' self-reported NE was associated directly with their child's NE concurrently at both preschool-age and adolescence, and indirectly with concurrent internalizing symptoms through child NE. As suggested above, the stability of NE lays most likely in genetics, and thus it may not be surprising that parents and their children share similarities in their NE levels (Bouchard, & Loehlin, 2001). Nonetheless, this is one of few studies to address the link between parent and child NE and to show its role both early (i.e., preschool) and later (i.e., adolescence) in a child's development. Beyond genetic transmission, it is important to note that previous research has found that mothers with high NE/neuroticism scores, as compared to those with average and low scores, have higher rates of a variety of psychosocial and cognitive risk factors that in turn place their children at risk (e.g., less education, less social support, more verbal aggression toward partners and children; Ellenbogen & Hodgins, 2004). As such, it is important to consider the environmental factors that may explain the relation between maternal NE and child NE, particularly the way a parent may interact with their child (Propper & Moore, 2006). For example, mothers with higher NE tend not to possess or show some of the traits that lend themselves to fostering adequate emotional development in children, such as tolerance, warmth, responsiveness, nurturance, and empathy (Frodi & Lamb, 1980; Metsapelto &

Pulkkinen, 2003; Woodruff-Borden, Morrow, Bourland, & Cambron, 2002; Zussman, 1980). In addition, high NE children may elicit maladaptive parenting, making parents more likely to respond with tactics that further exacerbate their child's emotional dysregulation, such as hostility, criticism, harsher or inconsistent discipline, or less support (e.g., Davenport et al., 2011; Kochanska, Friesenborg, Lange, & Martel, 2004; Lengua & Kovacs, 2005; Lerner, 1993; Pauluseen-Hoogeboom, Stams, Hermanns & Peetsma, 2007). Furthermore, there is research to suggest that being high in NE as a child may make children more susceptible to the influence of poor parenting practices (Belsky & Pluess, 2009). Taken together, the strong link between a mother and child's high NE may be part of a transactional process, with each partner eliciting behaviour and reactions that serve only to further aggravate emotional problems (Bates & Pettit, 2007; Sameroff, 1975; 2009).

Although father's NE was not associated with child NE in the same way as mothers, father's NE was associated with child internalizing symptoms at the preschool age. Specifically, this relation only held for boys. Past research with mothers and fathers has demonstrated a positive association between NE or neuroticism and child internalizing problems (e.g., Ellenbogen & Hodgins, 2004; Kurdek, 2003). However, this research has also shown that parental NE is related both directly to child internalizing symptoms as well as indirectly, through parental NE's impact on parental psychosocial functioning and parenting practices (Ellenbogen & Hodgins, 2004). Indeed, a meta-analysis demonstrated an association between higher neuroticism and poor parenting practices, such as lower parental warmth, lower behavioural control, and lower autonomy support; these findings were consistent across mothers and fathers (Prinzie, Stams, Dekovic, Reinjntjes, & Belsky, 2009). More specifically, fathers who are rated as having high NE are more likely to be overreactive (i.e., react to problematic behaviour with anger or frustration) when their adolescent children are also high on NE (Prinzie et al., 2012). The question remains why this association between self-reported paternal NE/neuroticism and child internalizing symptoms, as rated by the mother, exists only with sons in the present study. It is possible that these

findings are in line with classical theories of identification (Bronfenbrenner, 1960), which posit that sons and daughters are more likely to identify with their same-sex parent. Indeed, Isley and colleagues (1999) found that paternal expressions of negative affect were associated with their sons' social competence, but not their daughters. Particularly in the preschool period, fathers may also be much more likely to spend time with their sons than their daughters (Crouter & Crowley, 1990; Parke & O'Leary, 1976; Thomas, Leiderman, & Olson, 1972), increasing the sons' exposure to fathers' displays of NE and modeling of reactions to situations.

In a similar pattern to father NE, maternal depression symptoms were concurrently positively associated with child internalizing symptoms at the preschool period, but only for girls. An association between maternal depression symptoms and child internalizing symptoms has been well established in the literature (Goodman et al., 2011). However, the fact that the current study found this association only to be true between mothers and their daughters is interesting. Some authors have suggested that the association between maternal depression and child depression may be stronger among girls, particularly when they are in adolescence (Sheeber, Davis, & Hops, 2002). However, a more recent meta-analysis revealed that the association between mothers' depression and their daughters internalizing symptoms may be stronger than that with sons regardless of age (Goodman et al., 2011). Goodman and colleagues (2011) propose a number of explanations for this association, including biological explanations (e.g., depression is more heritable among women than men) as well as socialization or family environment hypotheses. Specifically, girls are socialized or treated differently than boys by their mothers or girls may be more susceptible to the types of parenting behaviours or stressors that are associated with maternal depression (e.g., less warmth, interpersonal stress). In addition, it is possible that daughters increased susceptibility may be because they have a tendency to spend more time with their mothers and have stronger emotional ties (Gurian, 1987). Caution should be taken in the interpretation of these findings for this study, as maternal depression and child internalizing symptoms were both reported by

the mother. Müller, Romer and Achtergarde (2014) found that mothers with higher levels of psychopathology, as rated by the Global Severity Index (GSI) of the SCL-90, have a bias in recalling higher rates of internalizing symptoms in their preschool-aged children with clinical severity of emotional or behavioural problems. However, Müller and colleagues' (2014) analyses also found that a significant proportion of the variation in the child internalizing problem scores can be considered valid assessments of the child's emotional issues.

Beyond concurrent associations, results from the present study also showed evidence of longitudinal predictions. Fathers who had higher depression symptoms when their children were preschoolers (T1) were more likely to have children with higher emotionality 10 years later in adolescence (T3), controlling for previous levels of child NE and internalizing problems as well as concurrent maternal NE. In addition, paternal depression symptoms were indirectly associated with adolescent internalizing symptoms through their association to adolescent NE. Due to a lack of availability of father psychopathology variables at later time points, it is not possible to tell whether this longitudinal prediction would hold if concurrent father depression symptoms were also considered within the model. Regardless, these findings are consistent with the existing research; higher levels of paternal depression symptoms are associated with more child internalizing symptoms specifically in community samples (Kane & Garber, 2004), including early adolescence (Franck & Buehler, 2007). As described above, this process may be transactional. Results from a person-oriented study by Aunola and colleagues (2015) found that when the child's NE was higher, it was more likely for the father-child dyad to show interaction patterns in daily life in which the father's negative emotions appeared to spread to the child.

In addition, maternal emotionality at T1, when the children were preschoolers, was positively associated with child internalizing in adolescence at T3. This relation continued to hold even when the concurrent maternal NE was considered in the equation. Although previous research suggests that

maternal NE is associated concurrently with child internalizing symptoms (e.g., Mills et al., 2012), the results of the present study suggest that the NE of mothers when the child is a preschooler may have long-term implications for the child's emotional well-being. It is possible that at this point in the child's development, during which they are learning the basics about their own and others' emotions (e.g., see Harris, 2008 and Widen & Russell, 2008 for reviews), the parenting abilities of mothers with high NE may be so severely compromised that it impacts their ability to teach their child the appropriate ways to deal with their emotions and develop an adequate foundation for their emotional lives. For example, mothers who are suffering from high levels of distress may have difficulty soothing their child and being sensitive to their child, and may in fact increase the child's levels of stress (e.g., Gondoli & Silverberg, 1997; Papp et al., 2005; Yoo, Popp, & Robinson, 2014). Thus, the child has fewer opportunities to learn how to regulate their emotions and prevent internalizing problems.

Overall, the present study explored the relations between the emotional well-being of parents and their children from preschool to adolescence. Future research could explore the role of positive emotionality, specifically having low positive emotionality, and its effect on internalizing disorders for both parents and children. Previous research has shown that it may be an often overlooked component of emotionality (e.g., Klein et al., 2012; Ghassabian et al., 2014; Putnam, 2012), as some research has shown associations with parental psychopathology for positive emotionality and not NE (e.g., Durbin, Klein, Hayden, Buckley, & Moerk, 2005). Furthermore, as was explored above, it is possible that there are environmental factors that exacerbate or ameliorate children's NE through time, such a parenting practices, stress, and emotion socialization techniques. These factors require further research in order to better understand specifically how parents, particularly mothers, may transfer their high NE to their child, outside of genetics. Furthermore, these factors are important to understand in order to develop resilience and prevention programs for children at-risk either because of their parent's high NE or the child's high NE, or a combination of both, early in their development. More research is also needed to

understand the differences noted above between fathers and mothers and their differential roles in child emotionality and child internalizing symptoms. For example, future research could explore how paternal NE and maternal NE may differentially predict the way that parents discipline their child, show warmth and sensitivity, and are intrusive or controlling. Based on gender display rules regarding emotional expression, it may also be interesting to examine the different types of negative emotions displayed by mothers and fathers and how expressing gender-conforming or gender-nonconforming emotions may moderate the relation of general NE from parent to child. Finally, exploring negative emotions separately (e.g., anger, fear, sadness) may have implications for psychopathology; for example, past research has shown that father hostility specifically is associated with child externalizing and not child internalizing symptoms (Carrere & Bowie, 2012).

While there were a number of important contributions, the present study also had its limitations. It should be noted that all measures used in the present study were mother or father self-report or maternal-report for the child. Although there is substantial research to support the use of these tools particularly in relation to NE, including comparisons to observational assessment of temperament (e.g., Rothbart & Bates, 1998; Pauli-Pott, Mertesacker, Bade, Bauer, & Beckmann, 2000), these findings should be replicated and expanded using observational measures of emotionality and/or using multiple informant sources for the questionnaires. In addition, future research should control for concurrent paternal emotionality and parent psychopathology when the children are adolescents (T3) in order to be able to comment on the predictive ability of those variables at the Time 1 point. Unfortunately, that data was not available for the present study.

Taken together, results from the present study contribute to our growing knowledge of NE within the family context. Specifically, this study is the first to demonstrate that NE's stability extends from preschool and into adolescence, providing further support for the conception of NE as a somewhat fixed trait and part of temperament. In addition, this study used multiple time points to suggest that child NE

predicts internalizing symptoms throughout development, even while controlling for internalizing symptoms at a previous time point. Finally, we explored how parental NE may play a role in the development of child NE and internalizing symptoms: this study is the first to explore the roles of both mothers and fathers within the same study. The findings emphasize that both mothers' and fathers' temperament and emotional well-being are associated with their children's, but that maternal and paternal factors may differentially relate to their child's NE and internalizing symptoms, particularly based on the sex of the child. Overall, the findings from the present study underscore the role that parents play in the development of NE and internalizing symptoms in children. Notably, this study sheds light on the importance of considering both parents to best understand the emotional development of a child.

Table 1

Descriptive Statistics for Study Variables

Variable	*N*	*M (SD)*
Maternal education (years)	175	11.77 (2.37)
Child NE T1	175	12.48 (3.72)
Child NE T2	175	13.49 (3.83)
Child NE T3	175	11.60 (3.88)
Child Internalizing Symptoms T1	175	53.82 (7.81)
Child Internalizing Symptoms T2	175	54.19 (10.61)
Child Internalizing Symptoms T3	175	52.62 (8.75)
Mother NE T1	175	28.04 (7.46)
Father NE T1	175	25.28 (5.87)
Mother NE T3	175	28.05 (6.47)
Maternal Depression Symptoms T1	175	55.00 (9.72)
Paternal Depression Symptoms T1	175	55.43 (.34)

Note. NE = Negative Emotionality; T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 2

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Child Sex	-	.01	-.11	-.12	.07	.00	-.02	-.15*	-.23**	-.21**	-.03	-.04	.05
2. Maternal education (years)		-	-.01	.04	-.08	-.11	-.05	-.21**	-.16*	-.09	-.09	-.10	-.13
3. Child NE T1			-	.34**	.38**	.28**	.04	.06	.39**	.26**	.32**	.26**	.06
4. Child NE T2				-	.40**	.27**	.14	.10	.29**	.39**	.39**	.14	.13
5. Child NE T3					-	.20**	.27**	.24**	.25**	.36**	.59**	.26**	.26**
6. Mother NE T1						-	.47**	.10	.24**	.14	.30**	.52**	.29**
7. Mother NE T3							-	.11	.19*	.15*	.32**	.20**	.26**
8. Father NE T1								-	.20**	.17*	.19*	.16*	.58**
9. Child Internalizing Symptoms T1									-	.48**	.36**	.25**	.11
10. Child Internalizing Symptoms T2										-	.50**	.17*	.12
11. Child Internalizing Symptoms T3											-	.25**	.20**
12. Maternal Depression Symptoms T1												-	.27**
13. Paternal Depression Symptoms T1													-

Pearson Correlations Between Study Variables
Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

* $p < .05$, ** $p < .01$

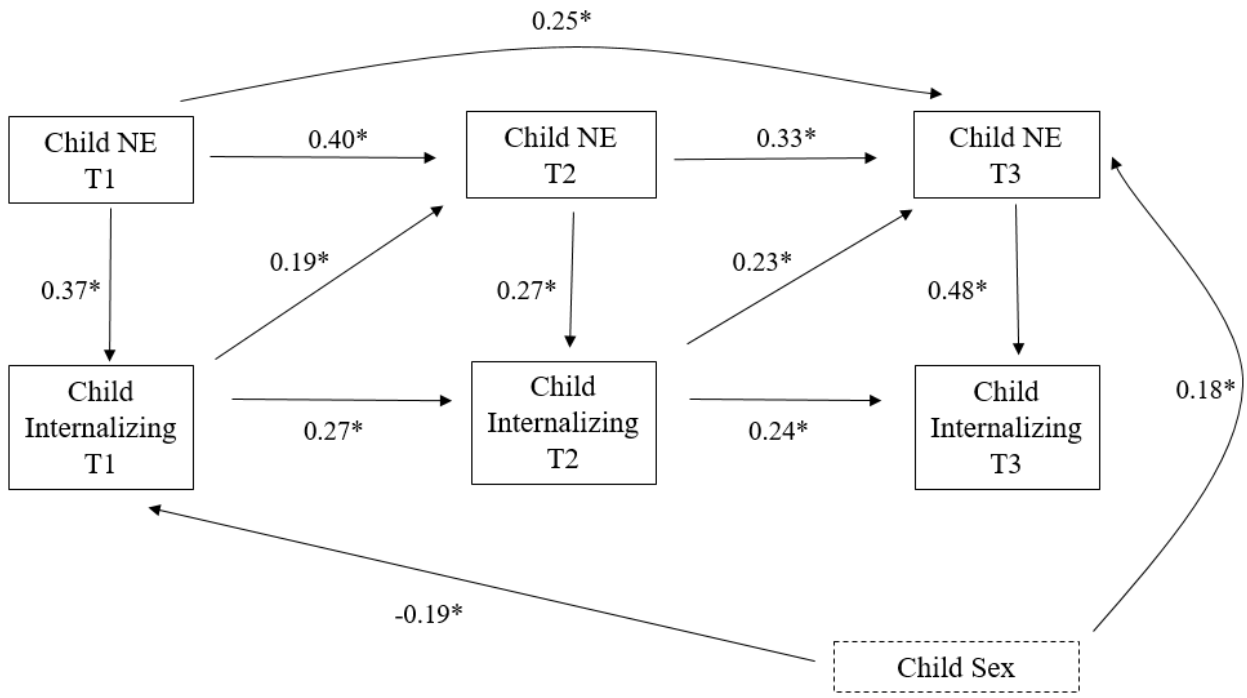

Figure 1. Standardized regression coefficients for the relationship between child negative emotionality (NE) and child internalizing symptoms across three time points, controlling for the covariates of child sex (depicted in box with dashed lines).

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

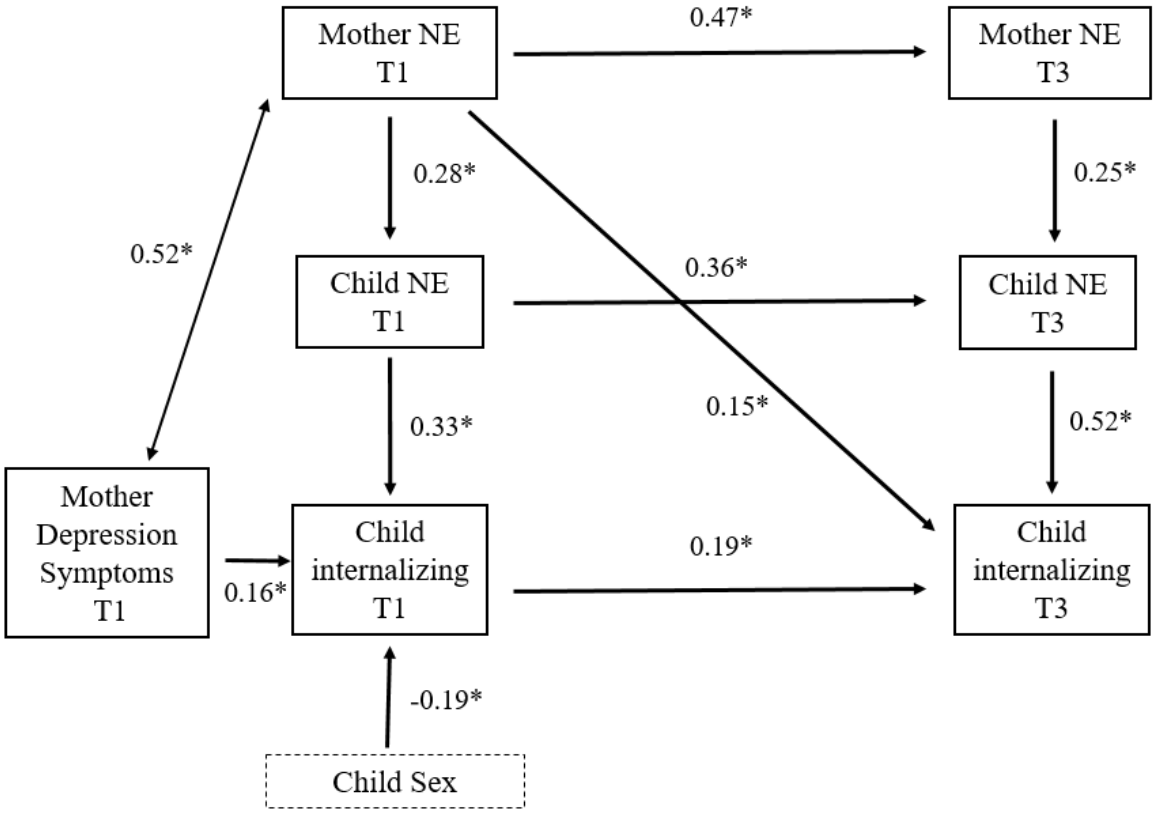

Figure 2. Standardized regression coefficients for the relationship between maternal negative emotionality (NE) and depression symptoms and child negative emotionality (NE) and internalizing symptoms, controlling for the covariate of child sex (depicted in a box with dashed lines).

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

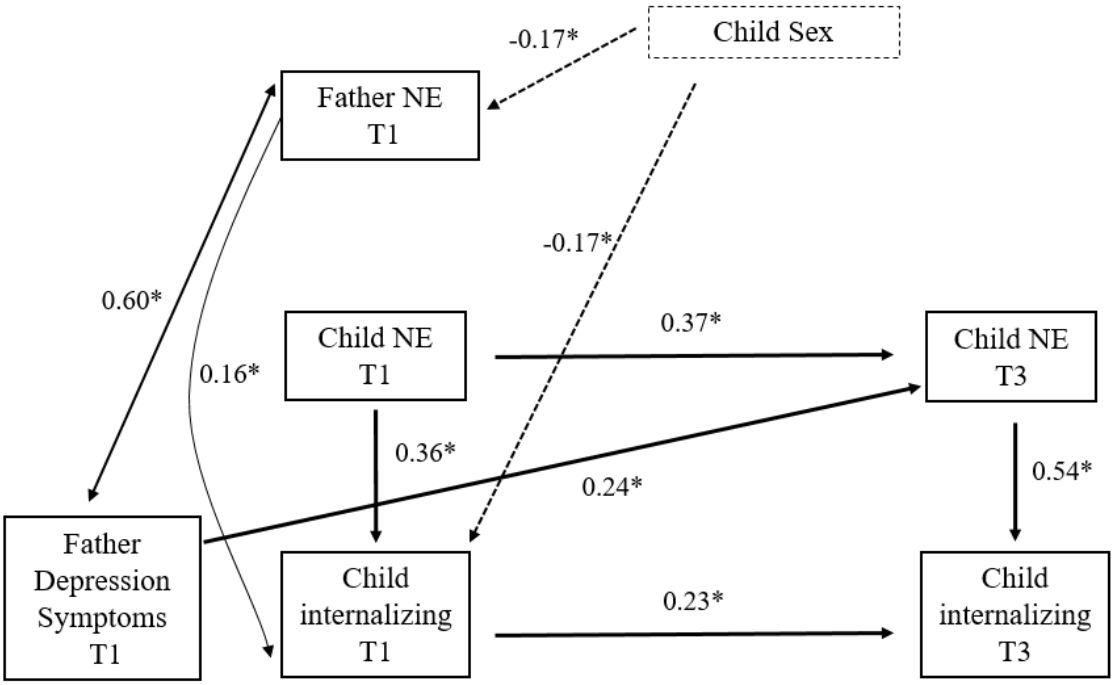

Figure 3. Standardized regression coefficients for the relationship between paternal negative emotionality (NE) and depression symptoms and child negative emotionality (NE) and internalizing symptoms, controlling for the covariate of child sex (depicted in a box with dashed lines).

Note. NE = Negative Emotionality; T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 3

Mediation Coefficients for Maternal NE to Internalizing Symptoms through Child NE at Time 1

		Consequent						
		M (Child NE T1)				*Y* (Child Internalizing T1)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal NE T1)	*a*	0.139	0.036	<.001	*c′*	0.110	0.109	.313
M (Child NE T1)		----	----	----	*b*	0.677	0.218	<.05
constant	i_1	8.570	1.056	<.001	i_2	42.659	3.560	<.001
		$R^2 = 0.078$ $F(1, 173) = 14.631$, $p < .001$				$R^2 = 0.072$ $F(2, 172) = 6.733$, $p < .01$		

Note. NE = Negative Emotionality; T1 = Time 1; T3 = Time 3

Table 4

Mediation Coefficients for Maternal NE to Internalizing Symptoms Through Child NE at Time 3

		Consequent						
		M (Child NE T3)				*Y* (Child Internalizing T3)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal NE T3)	*a*	0.160	0.044	< .001	*c′*	0.232	0.084	< .01
M (Child NE T3)		----	----	----	*b*	1.233	0.141	< .001
constant	i_1	7.102	1.265	< .001	i_2	31.828	2.540	< .001
		$R^2 = 0.072$ $F(1, 173) = 13.324$, $p < .001$				$R^2 = 0.379$ $F(2, 172) = 52.486$, $p < .001$		

Note. NE = Negative Emotionality; T1 = Time 1; T3 = Time 3

Table 5

Mediation Coefficients for Paternal Depression at Time 1 to Internalizing Symptoms at Time 3 through Child NE at Time 3

		Consequent						
		M (Child NE T3)				*Y* (Child Internalizing T3)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Paternal Depression T1)	*a*	0.160	0.049	< .01	*c′*	0.070	0.094	0.458
M (Child NE T3)		----	----	----	*b*	1.310	0.142	< .001
constant	i_1	7.563	1.266	< .001	i_2	35.656	2.603	< .001
		$R^2 = 0.058$ $F(1, 173) = 10.707$, $p < .01$				$R^2 = 0.354$ $F(2, 172) = 47.077$, $p < .001$		

Note. NE = Negative Emotionality; T1 = Time 1; T3 = Time 3

Table 6

Hierarchical Regression for Time 1 Internalizing Symptoms in Boys Only

		Child Internalizing Symptoms	
	β	ΔF	ΔR^2
Child NE T1	.37**		
		12.61	.14
Child NE T1	.34**		
Father NE T1	.22*		
Maternal Depression Symptoms T1	.01		
		2.28	.05
	R = .43		
	R^2_{adj} = -.15		
	F = 5.86**		

Note. * p <.05, ** p <.01
NE = Negative Emotionality; T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 7

Hierarchical Regression for Time 1 Internalizing Symptoms in Girls Only

	Child Internalizing Symptoms		
	β	ΔF	ΔR^2
Child NE T1	.38**		
		15.65	.15
Child NE T1	.33**		
Father NE T1	.06		
Maternal Depression Symptoms T1	.28**		
		4.92	.08
	R = .48		
	R^2_{adj} = .20		
	F = 8.94**		

Note. * p <.05, ** p <.01

NE = Negative Emotionality; T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 8

Hierarchical Regression Predicting Child NE at Time 3

	Child NE T3		
	β	ΔF	ΔR^2
Child Sex	.07		
		.94	0.01
Child Sex	.18**		
Child NE T1	.25**		
Child NE T2	.24**		
Child Internalizing Symptoms T2	.24**		
		22.65**	.28
Child Sex	.17**		
Child NE T1	.26**		
Child NE T2	.21**		
Child Internalizing Symptoms T2	.20**		
Mother NE T3	.17**		
Paternal Depression Symptoms T1	.14*		
		7.11**	0.06
	$R = .59$		
	$R^2_{adj} = .32$		
	$F = 14.74$**		

Note. * $p < .05$, ** $p < .01$

NE = Negative Emotionality; T1 = Time 1; T2 = Time 2; T3 = Time 3

Chapter 3: Transition Statement between Study 1 and Study 2

Results from Study 1 provided further evidence to the already existing literature for the association between Negative Emotionality (NE) and subsequent internalizing symptoms in children. Specifically, Study 1 contributed by showing stability and associations between these variables over three time points, from preschool into adolescence. In addition, by using questionnaire data from mothers and fathers, Study 1 demonstrated relations between parental NE and depressions symptoms and their own child's NE and internalizing symptoms. Although the similarities between parent and child on these emotional outcomes may in part be genetic, it is also possible that these similarities arise due to environmental factors. In particular, parental emotional well-being has been shown to influence parenting behaviours, and parenting behaviours are in turn associated with emotional outcomes for children. More specifically, emotion socialization is a crucial parenting behaviour that relates directly to the emotional well-being of parents and children alike. Thus, in Study 2 a mediation model was proposed to explain the similarity between mother and child NE, with the emotion socialization technique of contingencies (i.e., in the moment reactions to child's negative emotions) as the concurrent mediator. It was generally hypothesized that supportive reactions to negative emotions (i.e., those that validate and provide soothing or problem-solving for the negative emotion) would be associated with better maternal and child emotional functioning, whereas nonsupportive reactions to negative emotions (i.e., those that intensify the emotion or invalidate it) would be associated with worse maternal and child emotional functioning.

Chapter 4: Dissertation Study 2

Maternal emotion socialization mediates the relationship between maternal and adolescent negative emotionality

Ciara Briscoe, Dale M. Stack, and Lisa A. Serbin
Concordia University

Abstract

The present study was designed to explore the link between the negative emotionality (NE) of mothers and their adolescent children and the potential mechanisms for this similarity. Maternal emotion socialization was explored as a mediator between maternal and child NE, as well as a predictor of child internalizing symptoms. Participants were mothers (*M* age = 30.47) with their children at three time points: preschool (Time 1; *M* age = 3.54 years old), middle childhood (Time 2; *M* = 7.68), adolescence (Time 3; *M* = 13.73), with 81 boys and 94 girls. Negative emotionality was measured using a questionnaire, with mothers reporting for herself and her child. Maternal emotion socialization was measured by mothers' self-report of their reactions or contingencies to their adolescent child's negative emotions: 1) Punish; 2) Magnify; 3) Ignore; 4) Override; 5) Support. Results revealed that the maternal contingency of punishing the adolescent's negative emotions was a mediator between concurrent mother NE and adolescent NE, such that higher mother NE was associated with more punishing, and more punishing was associated with higher adolescent NE, controlling for previous levels of maternal and child NE at Times 1 and 2. Furthermore, being supportive of a child's negative emotions was negatively associated with concurrent levels of adolescent internalizing symptoms while magnifying a child's emotions held a positive association, controlling for previous levels of internalizing symptoms. Results highlight the importance of considering maternal emotion socialization strategies, even into adolescence, for a more comprehensive understanding of children's emotional well-being. Findings have implications for developing and implementing emotion-based parenting interventions.

Keywords: negative emotionality, emotion socialization, adolescent, maternal contingencies, internalizing symptoms

Maternal emotion socialization mediates the relationship between maternal and adolescent negative emotionality

Negative Emotionality (NE) is defined as a person's tendency to react to stressors with strong negative emotions, such as anger, fear or sadness (Bates, 1989). This emotional reactivity is considered to be a part of temperament, reflecting that it is a dispositional tendency that remains fairly stable from birth until death. Specifically, NE is considered to be a part of the difficult temperament construct (Bates, 1980; Prior, 1992), as infants with higher NE are considered difficult to soothe and interact with. These difficulties tend to follow them through infancy into childhood. Research suggests that NE is associated with a myriad of problems later in life, especially internalizing problems and symptoms, such as worrying, nervousness, poor self-concept, sadness, loneliness, and somatization symptoms (Klein, Dyson, Kurjawa, & Kotov, 2012). Consistent with the stress-diathesis model, children with high NE who are exposed to a traumatic event (e.g., natural disaster) are much more likely to develop psychopathology, such as depression or anxiety, than children who do not have high NE (Kopala-Sibley et al., 2016). Even for those not exposed to an acute event, high NE ratings during infancy and preschool are predictive of later internalizing symptoms at school age and even during adolescence (e.g., Karevold, Røysamb, Ystrom, & Mathiesen, 2009; Dougherty et al., 2011). Moreover, a recent longitudinal study by Hagan and colleagues (2016) showed that NE in middle to late childhood predicted internalizing symptoms in early adulthood approximately 15 years later, even after controlling for internalizing symptoms in childhood. Taken together, the current literature identifies high NE in childhood and adolescence as a potential risk factor for future internalizing problems (Klein et al., 2012; Kovacs & Lopez-Duran, 2010).

Due to it being considered a component of temperament, NE is considered to be at least partially genetically or biologically determined. Consequently, it would be expected that parents may pass on their high or low NE to their biological children. Indeed, research suggests that mothers and their

children tend to be similar in terms of their level of NE (e.g., Crawford, Schrock, & Woodruff-Borden, 2011). However, previous studies have shown that although a large part of NE's stability throughout life is biologically determined, NE's variability throughout developmental stages may be attributed to environmental influences, particularly parenting (Propper & Moore, 2006). The NE of parents and children may influence the way they interact with each other and the type of behaviour they elicit from each other. For example, mothers with higher NE tend not to possess or show some of the traits that lend themselves to fostering adequate emotional development in children, such as tolerance, warmth, responsiveness, nurturance, and empathy (e.g., Metsäpelto & Pulkkinen, 2003; Woodruff-Borden, Morrow, Bourland, & Cambron, 2002; Zussman, 1980), and tend to use more harsh parenting practices in general (e.g., Leung & Slep, 2006). In addition, parents of children with high NE tend to use parenting approaches that further exacerbate their child's emotion dysregulation (Davenport, Yap, Simmons, Sheeber, & Allen, 2011; Lengua & Kovacs, 2005). It is perhaps in these ways that parents and their children with high NE may maintain it - through the ways that the parent reacts towards their child but also through the ways that their child elicits certain parenting behaviours from them. The present study was designed to explore how NE relates to parenting, and how this in turn can play a role in adolescents' emotional well-being, specifically NE and internalizing symptoms.

When considering a parent's role in a child's healthy emotional development, a critical parenting practice is socialization. Emotion socialization is the process by which parents teach their children to be emotionally competent (Eisenberg et al., 1999). This can occur directly, such as when a parent coaches their child in emotional situations, or indirectly, such as the way that a parent models emotional reactions to stressful situations unintentionally. One area that is receiving more attention recently is the direct emotion socialization technique of emotion contingencies. Contingencies refer to the way a parent responds to negative emotions, and these responses can teach children important lessons about experiencing and expressing negative emotions (Jones et al., 2002). According to Tomkins' Affect

theory (Tomkins, 1963, 1991), children whose emotions are rewarded and supported, whether they are negative or positive emotions, will have healthier emotional development. O'Neal and Magai (2005) elaborated on Tomkins Affect theory, and explored the role of punitive or nonsupportive contingencies, such as yelling at or mocking a child who displays a negative emotion. They suggest that these nonsupportive strategies may teach the child that their parent does not approve of the expression of negative emotions, while the child is not necessarily taught how to cope with their negative emotions (Brand & Klimes-Dougan, 2010; Buck, 1984). Thus, the child may try to reduce their negative emotions in order to garner their parent's approval, albeit in inappropriate or ineffective ways. In contrast, supportive contingencies, such as comforting the child when they are experiencing a negative emotion, help teach the child that there are ways to deal with negative emotions and that negative emotions are a part of everyday life (see Zeman, Cassano, & Adrian, 2013 for a review).

Emotion socialization strategies have been shown to have a specific impact on emotional well-being in childhood, with nonsupportive contingencies being associated with emotional and behavioural problems and supportive contingencies being associated with better psychosocial outcomes (e.g., Blair, Perry, O'Brien, Calkins, Keane, & Shanahan, 2014; Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Fabes, Leonard, Kupanoff, & Martin, 2001; Hurrell, Hudson, Schniering, 2015; Scrimgeour, Davis, & Buss, 2015; Silk et al., 2011; Wilson, Havighurst, & Harley, 2012). However, there is a dearth of research on emotion socialization techniques in adolescence specifically (Zeman et al., 2013). This is unfortunate because adolescence is a critical period in emotional development, as adolescents' relationships become more complex and authority figures hold them to higher standards (Brand & Klimes-Dougan, 2010). In addition, similar to the toddler and preschool age periods, some researchers argue that adolescence is a developmental period that is notable for more frequent and/or more intense negative emotions (e.g., Garber, Keiley, & Martin, 2002; Goodenough, 1931; Greene, 1990; Larson, Moneta, Richards, & Wilson, 2002). Furthermore, some research suggests that, following

a decline in middle childhood, nonsupportive contingencies tend to rise and become more prominent in early adolescence, emphasizing the importance of this time in parents' and adolescents' emotional lives (e.g., Eisenberg et al., 1999).

Consistent with research with children, the available research on adolescents suggests that being nonsupportive of negative emotions has harmful consequences. Klimes-Dougan and colleagues (2007) endeavored to discover how parents socialize their adolescent's emotions in an exploratory study. They found that as adolescents became older, their parents tended to be less supportive and more punitive of their negative emotions. Other researchers have explored the emotional implications of these findings. For example, O'Neal and Magai (2005) reported that nonsupportive contingencies, such as punishment or neglecting/ignoring the negative emotion, were associated with higher levels of internalizing and externalizing symptoms in early adolescence. Recent research suggests that nonsupportive parental contingencies are associated with psychopathology, such as depression, in adolescents (e.g., Shortt, Katz, Allen, Leve, Davis, & Sheeber, 2016; for a review, see Schwartz et al., 2012). For example, in an observational study, mothers who used more nonsupportive contingencies to their adolescent's fear or sadness, such as acting angry, being rejecting or being self-focused, had children with more internalizing problems and depression symptoms (Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014). In addition, supportive emotion socialization, such as providing comfort, empathizing, and problem solving was associated with fewer internalizing problems in the same study (Hastings et al., 2014). Taken together, there is some research to suggest that the way a parent responds to his/her adolescent's negative emotions may have important implications for their emotional well-being.

Considering the biological and environmental influences on NE and its implications for later psychopathology, the study of NE is best explored through the lens of developmental psychopathology (Cichetti & Curtis, 2007). This model posits that both the characteristics of the individual, such as NE, as well as their rearing environment, such as maternal emotion socialization, must both be considered in

the etiology of psychopathology. In addition to their genetic contribution, it is possible that emotion socialization may be one of the pathways through which parents reinforce their high NE in their children. Specific to emotion socialization, previous research has shown that mothers with current or histories of poor emotion regulation capabilities or more negative affect are more likely to use nonsupportive strategies with children, such as punishing or neglecting their child's negative emotions (Buckholdt, Parra, & Jobe-Shields, 2014; Fabes, Leonard, Kupanoff, & Martin, 2001; Han, Qian, Gao, & Dong, 2015; Hughes & Gullone, 2010; Silk et al., 2011), while recent research has shown no association between higher levels of maternal negative affect (e.g., depression) and nonsupportive contingencies with toddlers (Premo & Kiel, 2016). It is also possible that children with high NE may elicit nonsupportive contingencies from their parents. Previous research with preschoolers has suggested that children with higher levels of NE tend to experience higher levels of punishment with regard to their negative emotions (Eisenberg & Fabes, 1994). Moreover, an experimental manipulation with undergraduate students showed that tactics that dismiss a young person's negative emotional experience may in turn intensify their negative emotional reactivity (Shenk & Fruzzetti, 2011). Of note, children who are more emotionally labile are more likely to benefit from supportive emotion contingencies and thus reduce their risk of developing behavior problems (Dunsmore, Booker, Ollendick, & Greene, 2016).

Although there is some research to support that parents and children with high NE may be more likely to provide and receive nonsupportive contingencies respectively, no study has examined child and parent NE in the same study and explored whether the link between child and parent NE may exist in part because of parental emotion socialization. In the present study we sought to examine the similarity of mother and adolescent NE, and NE's potential contribution to the development of internalizing symptoms. Moreover, we explored the role of maternal emotion socialization, specifically, contingencies to negative emotions, in the emotional well-being of adolescents, controlling for their emotionality

earlier in childhood. Given that maternal NE is associated with harsher parenting practices, including nonsupportive contingencies, and that harsher emotion socialization practices are associated with worse socio-emotional functioning, maternal emotion socialization was hypothesized as a psychosocial pathway by which mothers' and their children's similar NE may be partly explained. The present study was conducted with a subsample from the Concordia Longitudinal Risk Project (hereafter referred to as the Concordia Project; Schwartzman, Ledingham, & Serbin, 1985; Serbin et al., 1998; Stack et al., in press). The Concordia Project began in 1976, and recruited elementary school-aged children from at-risk, disadvantaged neighbourhoods in Montreal, Quebec. The present study followed a sub-sample of these children into parenthood and explored their emotion socialization techniques with their own children over 20 years later. An important feature of this study is its longitudinal design including information collected when the offspring of original participants were preschoolers, in middle childhood, and in adolescence. There were four objectives for the present study: 1) to establish the positive association between mothers and their adolescent children on NE; 2) to evaluate the relation between maternal NE and nonsupportive (i.e., punishing, magnifying, ignoring or overriding their child's negative emotion) and supportive (i.e., providing comfort and support) contingencies; 3) to explore the mediating role of contingencies (i.e., maternal emotion socialization) between maternal high NE and adolescent high NE; and 4) to examine whether certain contingencies are associated with adolescent emotional functioning, both with regard to NE and internalizing symptoms. Based on previous findings in the literature with other age groups and similar constructs, we hypothesized that mothers' NE would be positively associated with adolescent NE. In addition, mothers with high NE were hypothesized to be more likely to respond to their child's negative emotions in a nonsupportive manner and less likely to respond in a supportive manner. In turn, nonsupportive maternal contingencies were hypothesized to relate to higher adolescent NE and internalizing symptoms, while supportive

maternal contingencies were hypothesized to be associated with lower adolescent NE and internalizing symptoms.

Methods

Participants

The participants in the current study derive from the original larger longitudinal sample of the Concordia Project. The original recruitment for the Concordia Project was conducted in 1976-77, whereby 4,109 elementary school students in grades 1, 4 and 7 from francophone low-income neighbourhoods in Montreal, Canada were screened (Schwartzman et al., 1985; Serbin et al., 1998; Stack, Serbin, Mantis & Kingdon, 2015). The present study is composed of original participants, both male and female, who became parents and had a preschool child at the time of recruitment. There were 175 eligible families, with either a father or mother who was an original participant in the 1976 original data collection for the study. All of the objectives were explored using this sub-sample, in which mothers and their preschool-aged children were followed for two additional time points (described below) through middle childhood and into adolescence.

With regard to demographic values, the mean age of mothers as of data collection at Time 1 was 30.44 years (*SD* = 3.35; n=175). The age at which these mothers had their first child ranged from 16.42 to 36.84, with an average age of 24.86 (*SD* = 3.39). The average number of years of education of the mothers was 11.77; in order to graduate from high school in Quebec, 11 years of education is required. The maximum family prestige score (Standard International Occupational Prestige Scale; Treiman, 1977) was an average of 38.41, which could include jobs such as manufacturing laborers (e.g., chemical processors, tobacco preparers, sheet metal workers, etc.), and service workers (e.g., guides, tailors, etc.) At Time 1, the ages of the child participants ranged from 1.09 to 6.12 years and the average age was 3.54 (*SD* = 1.55). There were 81 boys and 94 girls (*n* = 175). At Time 2, age of child participants ranged from 6.15 to 11.64 (*M* = 7.68, *SD* = 1.01), with 63 boys and 75 girls (*n* = 138). Finally, at Time 3, the

age of child participants ranged from 12.00 to 17.43 (M = 13.73, SD = 1.22), with 57 males and 63 females (n = 120). In order to investigate the potential influence of attrition, a series of ANOVAs were run to determine whether there were demographic differences between the three time points. No differences were found between time points on maternal age, maternal age at the time of their first child, family occupational prestige, or maternal education.

Measures

Demographic Information Questionnaire (DIQ). Socio-demographic information, such as child's age and sex and mothers' level of education in number of years, was collected using the Demographic Information Questionnaire. This measure has proven effective in collecting participant demographics, and has been used in past studies of the Concordia Project (e.g., Martin, Stack, Serbin, Ledingham, & Schwartzman, 2012; Enns et al., 2015).

Negative Emotionality – Emotionality Activity Sociability Scale (EAS; Buss & Plomin, 1986).

Children. Mothers completed the EAS (Buss & Plomin, 1986) questionnaire at all three time points on behalf of their children. The EAS is a measure of temperament that includes: Emotionality, i.e., the tendency to react to a stressor with strong negative emotions or distress; Activity, i.e., the tendency to be restless or energetic; and Sociability, i.e., the tendency to prefer to be in the company of others rather than alone and to find social interactions rewarding. Only the Emotionality subscale total score, which consists of 5 items, was used in this study. Example items include: "Cries easily*",* or "Reacts intensely when upset". Each item is rated on a likert-type scale from 1 (my child's behaviour is never like this) to 5 (my child's behaviour is always like this). Previous research has demonstrated that this measure has good test-retest reliability (e.g., r = .82) and internal consistency (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Bould, Joinson, Sterne, & Araya, 2013; Spence, Owens, & Goodyer, 2013). For the

present sample, analyses revealed a Cronbach's alpha of .75 for Time 1, .79 for Time 2, and .85 for Time 3.

Mothers. Mothers completed the self-report adult version of the EAS (Buss & Plomin, 1984) at Time 1 and Time 3. The total scores for each of the Emotionality subscales - Distress, Anger and Fearfulness - were used (4 items each), and followed the same likert-type scale as described above for the child questionnaire. Sample items include: for Distress, "I frequently get distressed"; for Anger, "I am known as hot-blooded and quick-tempered"; and for Fearfulness, "I am easily frightened". Previous research has used a total score for Emotionality, thus collapsing across Distress, Anger and Fearfulness, and has found good internal reliability; for example, Laurent and Powers (2007) report a Cronbach's alpha of .83 for the Emotionality total score. In the present study, the Cronbach's alpha value for the Emotionality total score was .81 and .82 for Time 1 and Time 3 respectively.

Child internalizing behavior - Child Behaviour Checklist (CBCL; Achenbach, 1991).

Mothers completed the Parent Report Form of the Child Behaviour Checklist (CBCL; Achenbach, 1991) at all three time points, which is a questionnaire that is designed to assess a range of behavioural problems in children. Mothers were asked to report whether behavioural descriptions were representative of their child, ranging from 0 (*not at all true)* to 2 (*very* true). In the present study, only the Internalizing scale was used, which is composed of 32 items that reflect the Withdrawn, Somatic Complaints, and Anxious/Depressed subscales. This scale was used due to its previous associations with NE (e.g., Crawford et al., 2011; Shaw, Keenan, Vondra, Delliquardi, & Giovannell, 1997). Good short-term test–retest reliability (.93 for total problems) has been reported for this measure (Achenbach, 1991), and previous research has shown high internal consistency reliability (.90; e.g., Gartstein & Fagot, 2003). Note that at Time 1, two different versions of the CBCL were used based on the age group of the child, i.e., under or over 4 years old. The internal consistency for the present sample for the various time

points was .85 (under 4 years old) and .70 (over 4 years old) for Time 1, .86 for Time 2, and .84 for Time 3.

Emotions as a Child questionnaire (Magai, 1996). Mothers completed the Emotions as a Child questionnaire at Time 3. The questionnaire, which can be modified to be completed as a self-report by the parent or as child-reported, has been used to assess the techniques used by parents in reaction to their child's negative emotions (Klimes-Dougan et al., 2007; Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014; O'Neal & Magai, 2005). In the present study, the questionnaire reflected the mother's self-reported tendency to react to their child's negative emotions (specifically: sadness, anger and fear) with certain contingencies. It asks mothers to reflect on their reactions to their child's negative emotional expressions in the past two months. Five contingencies to these emotions were identified: 1) Punish (i.e., discouragement of the negative emotional expression via sanctions; e.g., "Gave him/her a disgusted look"); 2) Magnify (i.e., experience and express the negative emotion back to the child; e.g., "Got tearful and cried"); 3) Ignore (i.e., not pay attention to the child's displays either intentionally or unintentionally; e.g., "Usually didn't notice"); 4) Override (i.e., minimize their emotional experience; e.g., "Told him/her not to worry"); or 5) Support (i.e., help the child with the problem or with the experience of the emotion itself; e.g., "Helped my child deal with the issue"). Mothers were asked how likely on a likert-type scale of 1 (not at all typical) to 5 (very typical) they were to respond to each of the respective emotions (i.e., sadness, anger, fear) with a series of reactions, with three items per reaction per emotion, totaling 45 items. Internal reliability coefficients of the questionnaire revealed adequate reliability for the present study, with Punish at .64, Magnify at .77, Ignore at .74, Override at .79, and Support at .88. These reliability coefficients are similar to those found in other studies (e.g. Buckholdt, Parra, & Jobe-Shields, 2009).

Analysis

Missing Data. Due to the participant attrition noted above between the three time points as well as missing data within the variable set, multiple imputation for the 175 families in the current study was considered. Multiple imputation is a statistical technique commonly used in longitudinal data sets to replace missing data with value estimates, and it is preferred to other missing data techniques such as listwise deletion which drastically reduces sample size and may yield biased parameter estimates (Graham, 2009). Results from Little's MCAR test suggest that data were not missing completely at random as the test did not reach statistical significance ($\chi^2 = 281.76$, $p = .216$). As a result, multiple imputation using Mplus (Muthén, & Muthén, 2010) was conducted with variables missing less than 35% of their data. Although there is contention about the use of rules of thumb in multiple imputation (Enders, 2010), some researchers suggest a level of missingness between 2 – 30% (e.g., Bukowski, 2014; Demirtas, Freels, & Yucel, 2008) and previous research has shown that even with small samples (e.g., $N = 50$), multiple imputation performs very well with as much as 50% missing data in the dependent variable (Graham & Schafer, 1999; Graham, 2009). Because of the rate of missingness, 100 imputations (i.e., $m = 100$) were aggregated into one file and the resulting summary file was used in all ensuing analyses (Graham, Olchowski, & Gilreath, 2007).

Path analysis. Path analysis was conducted using Bentler's (2005) EQS software. Specifically, the software was used to construct a path analysis to explore the potential mediating role of maternal contingencies in the similarity between mother and adolescent NE, while controlling for previous child NE, child sex, child age, and maternal education. Three main fit indices were used to evaluate model fit, including the χ^2 statistic, comparative fit index (CFI) and root mean square error of approximation (RMSEA). A model was considered to have acceptable fit if the CFI value was .90 or higher and RMSEA value was below .08 (Hu & Bentler, 1999). Mediation analyses were planned for statistically significant maternal contingencies in order to explore their roles as potential mechanisms. Mediation

analyses were based on bootstrapping procedures recommended by Preacher and Hayes (2008), using the PROCESS tool (Hayes, 2013) in SPSS.

Results

Descriptive statistics for the predictors can be found in Table 1 and correlations between the predictors can be found in Table 2. With regard to maternal contingencies, the Punish contingency was positively associated with Ignore (r = .39), Override (r = .25) and Magnify (r = .45). The Magnify was positively associated with Ignore (r = .31) and Override (r = .26). Of note, Reward was only associated with Override (r = .51).

Objectives 1, 2 & 3: Path analyses to explore maternal and child NE and maternal contingencies

In the first set of analyses, the variables were entered in a path model to predict to child (adolescent) NE at Time 3 from maternal contingencies and maternal NE at Time 3, controlling for child NE at Time 1 and Time 2, maternal NE at Time 1, maternal education, child age and child sex.

Control Variables

Child NE at Time 1 and Time 2 were positively associated with adolescent NE at Time 3. In addition, child sex was positively associated with child NE at Time 3; girls tended to have higher NE scores than boys (see Figure 1). Maternal education and child age were not found to be associated with study variables. Maternal NE at Time 1 was associated with Maternal NE at Time 3, but not with the outcome variable (i.e., adolescent NE) when Maternal NE at Time 3 was also entered as a predictor, and therefore Maternal NE at Time 1 was removed from the model. However, follow-up analyses were conducted to establish the mediating role of Time 3 maternal NE in the potential relation between maternal NE at Time 1 and adolescent NE at Time 3. Specifically, mediation analyses revealed that the indirect effect from maternal NE at Time 1 to adolescent NE at Time 3 was statistically different from zero ($\beta = .05$; 95% CI: .0110 to .1136, as tested by a bias-corrected bootstrapping procedure), and the indirect effect through maternal NE at Time 3 explained 50.81% of the total effect (see Table 3). Of

note, the mediation analyses included Time 1 and Time 2 child NE, child sex, and the punish contingency as covariates, as these were all associated with adolescent NE at Time 3 (see Figure 1).

Contingencies with NE

In order to investigate the pathway between mother and child NE, path analyses were conducted. Of the maternal contingencies, only the punish contingency was positively associated with Time 3 adolescent NE when entered with the other contingencies in the model. The resulting model fit well (χ^2 (8, 175) = 8.99, p = 0.34, CFI = .99, RMSEA = 0.03 (90% CI = .000, .095); see Figure 1). Of note, the magnify contingency was associated with maternal NE at Time 3 (β = .28, $p < .001$), but was not associated with adolescent NE when the punish contingency was also in the model and therefore was removed from the model.

Mediation with maternal punish contingency

Mediation analyses were conducted to evaluate the role of the maternal punish contingency in the relation between maternal and adolescent NE. Child NE at Time 1 and Time 2 as well as child sex were included as covariates in the analysis. The indirect effect from maternal NE at Time 3 to concurrent adolescent NE was statistically different from zero with maternal punish contingency as the mediator (β = .04; 95% CI: .0097 to .0783; as tested by a bias-corrected bootstrapping procedure), suggesting that the maternal punish contingency is a mediator between maternal NE and adolescent NE. The indirect effect explained 27.00% of the total effect (see Table 4).

Objective 4: Path analysis to explore association between maternal contingencies and internalizing symptoms

In the second set of analyses, path analysis was used to explore the relation between contingencies and internalizing problems at Time 3, controlling for previous internalizing symptoms and adolescent NE.

Control Variables

Child internalizing at Time 2 and child NE at Time 3 were positively associated with child internalizing problem scores at Time 3. In addition, maternal NE at Time 1 was directly associated with child internalizing scores, while maternal NE at Time 3 was not associated with child internalizing symptoms at Time 3. Maternal education, child sex and child age were not found to be associated with child internalizing problem scores at Time 3.

Contingencies with internalizing symptoms

In order to investigate the role of maternal emotion contingencies on adolescent internalizing symptoms, a path analysis was conducted. Of the maternal contingencies (Time 3), only the reward and magnify contingencies were associated with Time 3 adolescent internalizing symptoms when entered with the other contingencies in the model as well as the control variables. The resulting model fit well (χ^2 (12, 175) = 18.92, p = 0.09, CFI = .97, RMSEA = 0.06 (90% CI = .000, .104); see Figure 2).

The magnify contingency was positively associated with adolescent internalizing symptoms while the support contingency was negatively associated with adolescent internalizing symptoms. As such, mothers who reported supporting their adolescent's negative emotions had children with lower internalizing symptoms, while mothers who reported magnifying in response to their child's emotions had children with higher internalizing symptoms.

Although the punish contingency was not directly associated with internalizing symptoms, previous analyses showed that it was associated with child NE, which in turn is associated with internalizing symptoms. In order to investigate the link between the punish contingency and internalizing symptoms, a mediation approach was taken, controlling for internalizing symptoms at Time 1 and Time 2, maternal NE at Time 3 and child sex. These analyses revealed that the relation between the maternal punish contingency and internalizing symptoms is in part explained through the indirect effect maternal punishing has through adolescent NE; specifically, the indirect effect was

statistically different from zero (β = 1.83; 95% CI: .3823 to 3.8765; as tested by a bias-corrected bootstrapping procedure) and explained 52.95% of the total effect (see Table 5).

Following this, a serial mediation approach was taken to link the mediation analyses from objectives 3 and 4. Specifically, results revealed that the indirect effect from maternal NE at Time 3 to concurrent child internalizing symptoms was mediated first by maternal punishing behaviour followed next by child NE (β = .03; 95% CI: .0068 to .0733), controlling for child internalizing at Time 2 and maternal NE at Time 1. Thus, higher levels of maternal NE were associated with higher levels of maternal punishing, which in turn were associated with higher levels of child NE, which in turn were associated with higher levels of child internalizing symptoms (see Table 6 for coefficients). Of note, the confidence intervals for the indirect effects of alternate serial mediation models (i.e.: from maternal NE, to maternal punish, to child internalizing; from maternal NE, to child NE, to child internalizing) contained zero, and therefore were not statistically significant.

Discussion

The developmental psychopathology framework encourages researchers to examine both the personal characteristics that may make a child more vulnerable to psychopathology, such as emotionality, as well as the impact that their parent's characteristics and rearing practices may have, such as parental emotionality and emotion socialization (Cichetti & Curtis, 2007). In the present study we sought to examine the link between maternal and adolescent emotionality, and how this association may be mediated by maternal emotion socialization, specifically contingencies. A range of maternal contingencies (i.e., responses to child's negative emotions) was explored as potential mediators of the association between maternal and adolescent NE. Further, the roles of emotionality and emotion socialization were explored in relation to maladaptive psychological outcomes, specifically internalizing symptoms in adolescence. We first discuss findings concerning NE's stability and its relation to internalizing symptoms, followed by the mediating role of maternal contingencies.

With regard to the stability of NE, results suggest that NE, a component of temperament, is fairly consistent throughout preschool into adolescence, as found in Study 1. Interestingly, the only control variable to appear to play a role in the child's emotional outcomes was that of child sex. Specifically, girls had higher reported NE than boys, and solely at the adolescent time point (Time 3). A meta-analysis examining emotionality measures found that boys and girls aged 0-12 years were not different on measures of NE or affect at infancy, toddlerhood, or elementary school age (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006), while a meta-analysis studying solely emotion expression found sex differences through infancy and childhood, but excluding adolescence (Chaplin & Aldao, 2013). While few studies have considered emotional reactivity in adolescence, one existing study suggests that girls tend to show more emotional reactivity in general than boys in late adolescence (Bradley, Codispoti, Sabatinelli, & Lang, 2001). Adolescent girls may have more difficulty using effective emotion regulation strategies when necessary, which may lead to heightened negative emotional expression (Bender, Reinholdt-Dunne, Esbjorn, & Pons, 2012; Neumann, van Lier, Gratz, & Koot, 2011). It is also possible that boys may be less likely to express their negative emotions, particularly sadness and fear, due to gender display rules (Brody, 2000). Results from the present study contribute to the mixed literature concerning the role of sex in NE, specifically at the adolescent period, suggesting that mothers may view adolescent girls as expressing and experiencing more negative emotions than adolescent boys. Taken together, our results suggest that NE is fairly stable from preschool to adolescence and viewed by mothers as more intense for girls than boys in adolescence, while also appearing to be a potential precursor or warning sign of internalizing problems.

In order to explore the potential familial contributions to the adolescent's emotional well-being, the NE of the mother as well as her emotion socialization practices were explored in relation to her child's NE and internalizing problems. Results from the present study revealed that maternal NE was positively associated with adolescent NE, even after controlling for Time 1 maternal NE and Time 1 and

Time 2 child NE. Overall, path analyses revealed that mothers with high NE tended to have adolescent children with high NE. Given previous research associating parent and child NE (e.g., Crawford et al., 2011; Davenport et al., 2011) and other emotion-related competencies such as emotion regulation (e.g., Buckholdt et al., 2014), results from this study serve to provide further evidence of the similarity between maternal and child NE. Although there have been some studies to show this link between parent and child, it is rare that this research is conducted with adolescents. Apart from one study that found a weak correlation between mother's negative affect and that of her adolescent child (Davenport et al., 2011), the present study is one of the first to examine and demonstrate a significant association between mother and adolescent NE.

In the present study we also sought to expand and contribute to the literature by exploring a potential mechanism by which mothers may reinforce high NE in their adolescent children, aside from genetics. Specifically, this was explored via contingencies, a form of emotion socialization that involves the parental response to emotions. A total of five contingencies were examined as potential mediators. In general, nonsupportive responses have been positively associated with more difficulty coping with anger and sadness in children, and high negative affect and more depression symptoms in adolescents (Eisenberg & Fabes, 1994; Sanders, Zeman, Poon, & Miller, 2015; Shortt et al., 2016). The only contingency that we found to be associated with both maternal and adolescent NE was the punish contingency. Specifically, the punish contingency acted as a mediator between maternal and adolescent NE, such that mothers who experienced higher levels of NE were more likely to use the punish contingency, and adolescents who received the punish contingency more often tended to have higher levels of NE. The punish contingency specifically includes behaviours such as giving a disgusted look, being condescending or mocking, and giving a tangible behavioural punishment, in response to their adolescent expressing a negative emotion. By responding in this nonsupportive way, the expression of negative emotions is treated as something to be ignored or denied and as something harmful or

undesired as opposed to an opportunity to learn and grow from (Schwartz et al., 2012). This type of responding provides children with fewer opportunities to learn how to deal with these emotions in an appropriate way (Buck, 1984). Instead, nonsupportive or harsh reactions may be laying the foundation for maladaptive reactions such as thought suppression or other avoidant coping (Krause, Mendelson, & Lynch, 2003; Wenzlaff & Eisenberg 1998) which in turn increases the likelihood of distress (e.g., Brenner & Salovey, 1997). Moreover, the adolescent may begin to associate sanctions and negative consequences with their negative emotions, further contributing to their emotional distress in already stressful situations. Conversely, there is also the possibility that high levels of emotional distress from the adolescent tends to elicit negative emotions from their parent (e.g., Kim, Conger, Lorenz, & Elder Jr., 2001) which in turn may make nonsupportive socialization tactics, such as punishment, more likely. However, recent observational research with adolescents suggests that the mother characteristics, such as her awareness of her own emotions, may be a much better predictor than child characteristics, such as child NE, in the circumvention of nonsupportive socialization strategies (Yap, Allen, Leve, & Katz, 2008).

Results from our mediation analyses suggest that mothers with higher NE were more likely to use the punish contingency than mothers with lower levels of NE. This is well-supported by previous research, which suggests that mothers whose emotional capabilities are somehow compromised (e.g., high NE, history of depression, low emotion regulation) will tend to use parenting practices which are harsh or punitive (e.g., Leung & Slep, 2006), including nonsupportive emotional responses (e.g., Buckhold et al., 2014; Silk et al., 2011). In further mediation analyses, it was revealed that the punish contingency was no longer associated directly with internalizing problems when adolescent NE was taken into account. These results suggest that punishing negative emotions leads to higher levels of emotional distress in adolescents, which can then lead to higher levels of internalizing symptoms. The findings therefore support the potential precursor or predisposing role of NE in internalizing problems

(Klein et al., 2012). It is suggested that having higher NE places a greater strain on a child's ability to regulate their emotions in day-to-day life, and therefore these high NE children may be more likely to have failures in their regulatory abilities, potentially manifesting as internalizing problems (Yap, Allen, & Sheeber, 2007).

The magnify contingency was also associated with higher maternal NE. This contingency is characterized by the mother matching her child's distress with her own similar emotional reaction. Therefore, it should follow that mothers with higher NE in general may be less able to contain their own emotional distress in response to their children's. Interestingly, magnify could not be included as a potential mediator because its association with NE became statistically nonsignificant when the punish contingency was also in the model. This may be because responding to anger with magnify is similar to the act of the punish contingency according to factor analyses, in that matching an adolescent's angry expression with anger or aggression (e.g., yelling) may likely be perceived as a form of punishment (Klimes-Dougan et al., 2007). Indeed, the magnification of anger specifically has been associated with detrimental outcomes such as externalizing behaviour, while the magnification of sadness or fear does not share that association (O'Neal & Magai, 2005). However, the implications of magnifying sadness or fear remain unclear. Although mirroring sadness or fear could be problematic as the parent's distress may interfere with their ability to properly coach their child through the negative emotion (Moed et al., 2015), it could also be potentially perceived as validating by the adolescent in that their emotional concerns are being heard and understood. Interestingly, the magnify contingency was associated with internalizing symptoms. Considering that this association remained statistically significant even when controlling for the punish contingency, while the punish contingency was not statistically significant, it is possible that the variance associated with internalizing symptoms relates to the reactions to sadness and fear, and *not* anger as described above. Potentially, children of mothers who respond to their sadness or fear with their own similar reactions are creating the space for the child to also show their emotions

regularly. However, because magnification does not involve the use of coaching techniques, it is possible that these children may feel comfortable expressing their sadness and fear to their mothers, but have few resources to cope with these emotions on a daily basis.

With respect to helpful emotion socialization techniques, the support contingency was directly associated with internalizing symptoms. Specifically, more support, in the form of comforting or problem solving with the child, was associated with fewer internalizing symptoms. Interestingly, this contingency was not associated with adolescent NE. This may reflect the fact that providing support and comfort may help to improve day-to-day coping with such things as worries, somatization, and self-defeating beliefs, but may not help reduce the intensity and frequency with which adolescents react to stressors or crises with strong negative emotions. Improving an adolescent's emotional reactivity – the spur of the moment reactions - may pose as a serious challenge to parents, even if they are responding supportively. Supportive reactions do not necessarily entail strategies to increase emotional distress tolerance or soothe the emotion instantly. Instead, they provide the adolescent with problem-solving strategies and a safe space to express their emotions and thoughts. This may help the child to process their emotions in a gradual manner that overall leads to less worrying, rumination, and somatization, even if their gut reactions remain intense (e.g., Bronstein, Fitzgerald, Briones, Pieniadz, & D'Ari, 1993). In a sense, they may feel more comfortable to feel and display negative emotions intensely, knowing that their mother has shown them consistently that negative emotions fade away with comforting and soothing and that they will receive the scaffolding necessary to solve their problems.

By understanding one of the potential mechanisms at play in the transfer of NE, it is possible to intervene to protect parents and adolescents alike. For example, Tuning in to Teens (TINT; Kehoe, Havighurst, & Harley, 2014) is an emotion socialization training program for parents which has proven to be effective in a community sample. In addition to emotion coaching skills, the program teaches parents how to deal with their own emotions in the moment, such as through meditation and

mindfulness-based skills. Considering that the present study found that parental emotional distress is associated with the use of maladaptive techniques, such as the punish contingency, it may be particularly helpful to teach parents skills that allow them to regulate their emotions in the midst of their adolescent's emotional crisis, in order to ultimately respond in a way that will be helpful and supportive. Future programs may also emphasize the harmfulness of punishing negative emotions, potentially prioritizing the dramatic reduction of this particular technique above all other nonsupportive techniques.

Although the present study contributed to the literature in a number of ways, there are some limitations that would be best attended to in the context of future studies. The measures for the present study were exclusively self-report for the maternal measures and mother-report for the adolescent measures, raising the issue of the single-rater effect. Although maternal reports for emotionality and internalizing symptoms have been shown to be valid and reliable (e.g., Pauli-Pott, Mertesacker, Bade, Bauer, & Beckmann, 2000; Rothbart & Bates, 2006; Salquist et al., 2009; Sterba, Prinstein, & Cox, 2007), a combination of reporters, such as a teacher, father/partner, or the child him/herself could have added to our understanding of the child's behavioural and emotional experience (e.g., Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003). In addition, the use of maternal self-report on the contingencies may have led to some biased reporting, as mothers may have intuited which responses would be seen as maladaptive. Future studies could use observational data and coding systems as well as the corroboration from the child in conjunction with the self-report questionnaire data in order to have a more objective and broader view of the mother's responses. In addition, future studies may use longitudinal methods to control for past and present maternal socialization techniques to establish the power of the socialization strategy at that moment and further argue for its role in transmission via prospective relations (Bridgett, Burt, Edwards, & Deater-Deckard, 2015). Longitudinal designs in studies could also help to answer questions about how mothers may modify their techniques as their children age and whether specific

techniques are particularly harmful or beneficial for a child's psychosocial well-being depending on their age.

In conclusion, results from the present study have helped deepen our understanding of maternal emotion socialization practices and their implications for adolescent emotional health. Within the framework of the developmental psychopathology model, we attempted to underscore the importance of exploring both child and parent characteristics as well as the rearing environment in order to obtain a more complete understanding of a child's emotional well-being (Calkins, Propper & Mills-Koonce, 2013; Cichetti & Curtis, 2007). Findings concerning antecedents of the punish contingency, specifically high maternal NE, contribute to our knowledge of the contextual factors that place certain parents at-risk for maladaptive practices. Kovan and colleagues (2009) have emphasized the need to further explore how and why parents may use certain emotion socialization practices over others, as this will help intervention researchers identify at-risk groups who may need extra assistance in reducing and eliminating these behaviours. In addition, the present study examined adolescent outcomes of emotion socialization techniques, which is rare in the literature. Our study's findings demonstrate the importance of socialization's role on temperamental constructs such as NE in addition to psychopathological symptoms measures such as internalizing behaviours. Our results provide evidence that an adolescent's distress can potentially be worsened with nonsupportive emotion socialization techniques, such as punishing negative emotions, while supportive reactions can be potentially helpful in reducing internalizing symptoms. Taken together, our research has highlighted the importance of studying parental emotion socialization practices beyond childhood and into adolescence in order to best understand how to support adolescent emotional well-being. Finally, this study identifies specific directions for further investigation in the development of interventions for families who are emotionally at-risk.

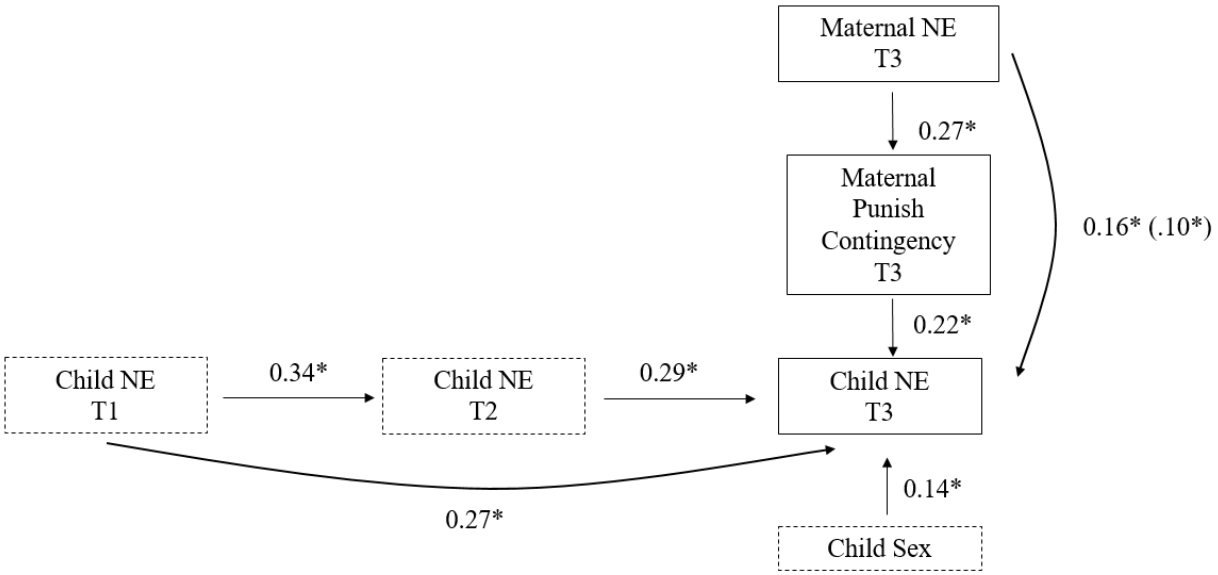

Figure 1. Standardized regression coefficients for the relationship between maternal negative emotionality (NE) and child negative emotionality (NE) as mediated by maternal emotion socialization contingency punish, controlling for the covariates of child NE and child sex (depicted in boxes with dashed lines). The standardized regression coefficient between maternal NE and child NE, controlling for maternal punish, is in parentheses.

*p < .05

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

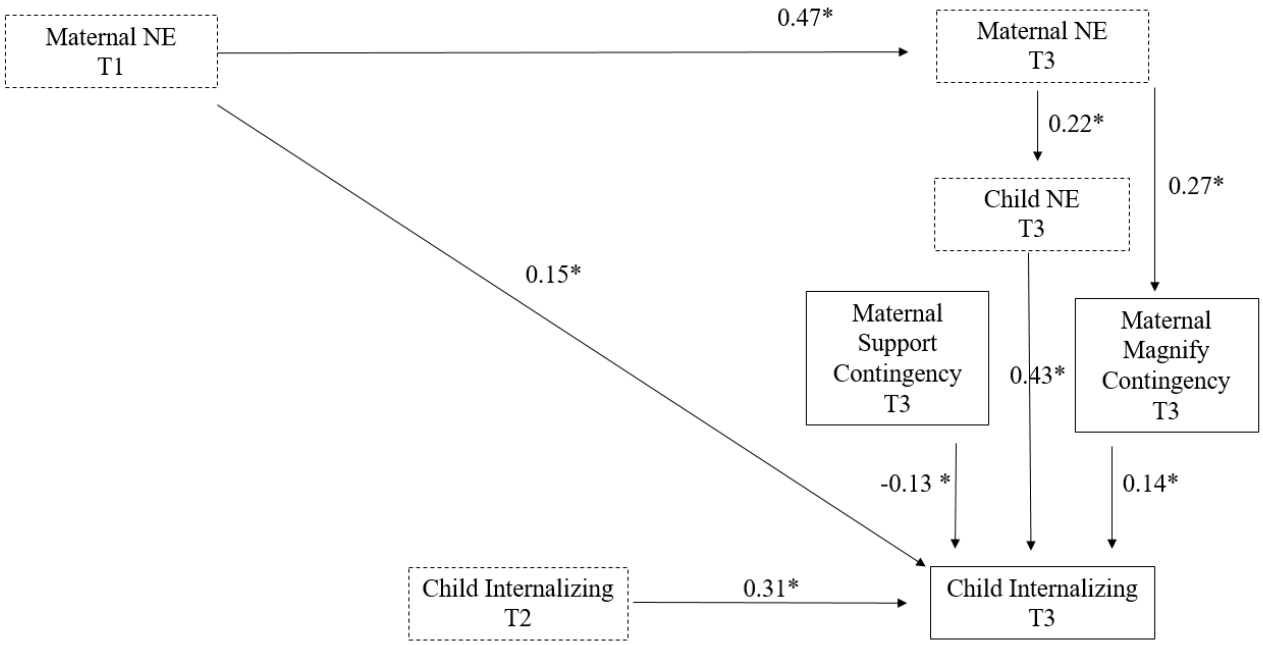

Figure 2. Standardized regression coefficients for the relationship between the maternal emotion socialization contingencies of magnify and reward and adolescent internalizing symptoms, controlling for maternal negative emotionality (NE), child negative emotionality (NE), and previous child internalizing symptoms (depicted in boxes with dashed lines).

*p < .05

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 1

Descriptive Statistics for Study Variables

Variable	*N*	*M (SD)*
Child Age at T3	175	13.73 (1.22)
Maternal Education	175	11.77 (2.37)
Child Negative Emotionality T1	175	12.48 (3.72)
Child Negative Emotionality T2	175	13.49 (3.83)
Child Negative Emotionality T3	175	11.60 (3.88)
Child Internalizing Symptoms T1	175	53.82 (7.81)
Child Internalizing Symptoms T2	175	54.19 (10.61)
Child Internalizing Symptoms T3	175	52.62 (8.75)
Maternal Negative Emotionality T1	175	28.04 (7.46)
Maternal Negative Emotionality T3	175	28.05 (6.47)
Maternal Ignore Contingency	175	1.32 (.34)
Maternal Override Contingency	175	3.16 (.59)
Maternal Magnify Contingency	175	2.17 (.57)
Maternal Punish Contingency	175	1.46 (.34)
Maternal Support Contingency	175	3.6 (.67)

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3

Table 2

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Child Sex	-	-.03	.01	-.11	-.12	0.07	-.23**	-.21**	-.02	.00	-.02	-.01	.22**	-.07	.00	.18*
2. Child Age T3		-	-.14	.01	.01	-.05	-.04	.01	.04	-.08	.12	.18	-.14	.05	.09	-.25**
3. Maternal Education T1			-	-.01	.04	-.08	-.16*	-.09	-.09	-.11	-.05	-.35**	-.08	-.08	-.07	-.09
4. Child Negative Emotionality T1				-	.34**	.38**	.39**	.26**	.32**	.28**	.04	-.02	0.07	-.09	.11	-.06
5. Child Negative Emotionality T2					-	.40**	.29**	.39**	.39**	.27**	.14	-.02	-.06	.05	.07	-.14
6. Child Negative Emotionality T3						-	.25**	.36**	.59**	.20**	.27**	.04	.13	.24**	.31**	-.03
7. Child Internalizing Symptoms T1							-	.48**	.36**	.24**	.19*	.18*	-.01	.17*	.18*	-.06
8. Child Internalizing Symptoms T2								-	.50**	.14	.15*	.16*	-.07	.11	.18*	-.12
9. Child Internalizing Symptoms T3									-	.30**	.32**	.17*	-.02	.27**	.31**	-.16*
10. Maternal Negative Emotionality T1										-	.47**	.09	-.01	.17*	.02	-.02
11. Maternal Negative Emotionality T3											-	.15*	.09	.29**	.27**	.00
12. Maternal Ignore Contingency												-	.01	.31**	.39**	-.14
13. Maternal Override Contingency													-	.26**	.25**	.51**
14. Maternal Magnify Contingency														-	.45**	.13
15. Maternal Punish Contingency															-	-.10
16. Maternal Reward Contingency																-

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3
* $p < .05$, ** $p < .01$

Table 3

Mediation Coefficients for Maternal NE at Time 1 to Child NE at Time 3 through Maternal NE at Time 3

		Consequent						
		M (Maternal NE T3)				*Y* (Child NE T3)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal NE T1)	*a*	0.405	0.058	< .001	*c′*	0.052	0.043	0.300
M (Maternal NE T3)		----	----	----	*b*	0.133	0.050	< .01
constant	i_1	16.705	1.695	< .001	i_2	6.427	1.381	< .001
		$R^2 = 0.217$ $F(1, 173) = 47.955$, $p < .001$				$R^2 = 0.079$ $F(2, 172) = 7.407$, $p < .001$		

Note. NE = Negative Emotionality; T1 = Time 1; T3 = Time 3

Table 4

Mediation Coefficients at Time 3 for Maternal NE to Child NE through Maternal Punish

		Consequent						
		M (Maternal Punish T3)				*Y* (Child NE T3)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal NE T3)	*a*	0.014	0.004	< .001	*c′*	0.096	0.039	< .05
M (Maternal Punish T3)		----	----	----	*b*	2.528	0.743	< .001
constant	i_1	0.936	0.1733	< .001	i_2	-3.800	1.818	< .05
		$R^2 = 0.082$ $F(4, 170) = 3.788$, $p < .01$				$R^2 = 0.336$ $F(5, 169) = 17.104$, $p < .001$		

Note. NE = Negative Emotionality; T3 = Time 3

Table 5

Mediation Coefficients at Time 3 for Maternal Punish to Child Internalizing through Child NE

		Consequent						
		M (Child NE T3)				*Y* (Child Internalizing T3)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal Punish T3)	*a*	2.247	0.786	< .01	*c′*	1.627	1.424	0.255
M (Child NE T3)		----	----	----	*b*	0.815	0.136	< .001
constant	i_1	-4.763	2.464	.055	i_2	11.259	4.407	< .05
		$R^2 = 0.253$ $F(4, 170) = 14.400$, $p < .001$				$R^2 = 0.542$ $F(5, 169) = 39.990$, $p < .001$		

Note. NE = Negative Emotionality; T3 = Time 3

Table 6

Serial Mediation Coefficients from Maternal NE at Time 3 to Child Internalizing at Time 3

		Consequent									
		M_1 (Maternal Punish)				M_2 (Child NE)				Y (Child Internalizing)	
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Maternal NE)	a_1	0.015	0.004	< .001	a_2	0.047	0.048	> .05	c'	0.035	0.084	.682
M_1 (Maternal Punish)		----	----	----	d_{21}	2.343	0.819	< .05	b_1	1.924	1.467	.191
M_2 (Child NE)		----	----	----		----	----	----	b_2	0.829	0.134	< .001
Constant	i_{M1}	0.824	0.159	< .001	i_{M2}	-1.299	1.828	0.482	i_y	15.174	3.200	< .001
		$R^2 = 0.133$ $F(3, 171) = 8.778, p < .001$				$R^2 = 0.234$ $F(4,170) = 12.986, p < .001$				$R^2 = 0.541$ $F(5, 169) = 39.868, p < .001$		

Note. NE = Negative Emotionality

Chapter 5: Transition Statement between Study 2 and Study 3

Results from Study 2 provided support for the association between maternal emotional factors and maternal emotion socialization behaviour. Specifically, mothers who reported higher levels of negative emotionality (NE) were more likely to engage in nonsupportive emotion socialization strategies. In turn, nonsupportive and supportive reactions related directly to child emotional wellbeing. Specifically, children who received more nonsupportive techniques in response to their negative emotions, i.e., punishing and magnifying, were more likely to have higher levels of NE and internalizing symptoms, respectively. In contrast, higher levels of supportive maternal responses were associated with lower levels of child internalizing symptoms. Of note, the findings from Study 2 were based on questionnaire data that was obtained solely via mother report. In addition, the associations between emotion socialization and child emotional outcomes were limited to concurrent data and focused solely on negative emotional displays.

In Study 3, the emotional well-being of mother and child and its association with maternal emotion socialization behavior was also examined. However, in order to address Study 2 limitations, Study 3 examined the child's *positive* emotional displays using observational data, with emotional outcomes at four separate time points. Maternal contingencies to their child's positive emotions, particularly with children in preschool and middle childhood/pre-adolescence, have been understudied. Furthermore, this topic has rarely been studied using observational data, particularly in a naturalistic environment, such as in at-home observations. In Study 3, it was hypothesized that better emotional well-being in mothers would be associated with higher levels of supportive reactions to their child's positive emotional displays. Furthermore, it was hypothesized that higher levels of supportive maternal contingencies would be associated with better emotional functioning in the child, concurrently and longitudinally.

Chapter 6: Dissertation Study 3

Observed maternal contingencies to positive emotions from preschool to middle childhood

Ciara Briscoe, Dale M. Stack, and Lisa A. Serbin
Concordia University

Abstract

Maternal contingencies (i.e., responses) to child emotions are a powerful emotion socialization tool, teaching children crucial lessons about emotions. The present study was designed to explore how mothers respond to their child's positive emotions (PE) in at-home observations during pleasant tasks, when the children were preschool age (M = 4.44 years, SD = 1.08) and in middle childhood (M = 11.21, SD = .82). Measures of the frequency of child PE as well as the type of contingency response of the mother to this emotion (supportive vs. nonsupportive) were systematically coded. Hierarchical regressions and t-tests were conducted to evaluate the consistency of child PE and mother contingency across time points and to examine potential maternal predictors and child outcomes of these variables. Results revealed that child PE was correlated between time points, and that older children tended to express more PE than younger children. Maternal contingencies were not correlated between time points. In addition, maternal psychosocial predictors were not associated with their maternal contingency behaviour. However, maternal contingencies were associated with child internalizing symptoms; specifically, higher levels of maternal supportive responses to child PE at preschool age were associated with lower internalizing symptoms 2 years later. Taken together, results from the present study highlight the importance of exploring PE and its socialization in children of all ages, in order to understand its implications for child emotional well-being.

Keywords: positive emotionality, emotion socialization, maternal contingencies, internalizing symptoms, observational

Observed maternal contingencies to positive emotions from preschool to middle childhood

Positive emotions, as in joy and humour, are critical human experiences. Generally, experiencing and expressing positive emotions is beneficial for development, particularly in the realm of social connectedness to family and friends (Fredrickson, 2001). Despite its role in healthy growth, less research has focused on how to generate and foster positive emotionality (PE) in childhood, compared to the ample existing research focusing on negative emotions. Often, when positive emotions are considered, they are discussed in terms of their protective influence (Davis & Suveg, 2014). For example, having a high level of PE has been suggested to buffer children against stressful life events such as in the divorce of their parents (Lengua, Sandler, West, Wolchi, & Curran, 1999) or being the child of an alcoholic parent (Carle & Chassin, 2004). Other studies have shown that having a high level of positive emotions may be helpful even in low-risk contexts (e.g., Blau & Klein, 2011; Lengua, 2003). High PE may help to "combat" the negative impact that negative emotionality (NE) or high levels of negative emotions may have on relationships and psychopathology (Fredrickson, Mancuso, Branigan, & Tugade, 2000; Garland et al., 2010; Ong & Allaire, 2005), potentially by helping with the development of good coping strategies, such as savouring and positive rumination (Lyubomirsky, King, & Diener, 2005; Nelis, Bastin, Raes, Mezulis, & Bijttebier, 2016).

Beyond its circumvention of risk and of negative outcomes, high PE can also produce an upward spiral, in which positive emotions beget positive reactions and emotions from others, further fueling more positive emotions (Sroufe et al., 1985; see Ramsey & Gentzler, 2015 for a review). Conversely, low levels of PE and attempts to downregulate and limit PE have been associated with emotional difficulties and psychopathology with youth and adults alike (Carl, Soskin, Kerns, & Barlow, 2013; Gilbert, 2012; Khazanov & Ruscio, 2016; Watson & Naragon-

Gainey, 2010). Based on Clark and Watson's (1991) model for adult psychopathology, Forbes and Dahl (2005) propose that a low level of positive affect can be a potential risk factor for youth internalizing problems specifically, including social withdrawal, anxiety, and sadness. Therefore, PE is an important factor to consider in the healthy development of all children and youth, whether they be considered at low or high risk for adverse outcomes, including internalizing symptoms. Conceptualized as one component of temperament, PE is considered to be fairly stable. Although few longitudinal studies exist, particularly with children, Sallquist and colleagues (2009) explored the stability of PE with kindergarten to grade 3 age children in wave 1, with three more waves of data collection occurring every 2 years. They found that children maintained similar levels of rank-order stability throughout the time points, but showed a mean level decrease across time, demonstrating less intense PE and less expressions of PE as they aged. As a purportedly stable characteristic with a theoretical connection to internalizing symptoms, studying PE across childhood appears to be a worthy endeavour in understanding developing emotional well-being.

The present study sought to explore the stability of child PE as well as the potential socio-emotional predictors and outcomes of child PE, including the way PE is socialized. Of note, the present study measured PE using direct dyadic observations between mothers and their children, allowing for an exploration of what may happen after a positive emotion is expressed by a child. This is important because positive emotions are much more socially driven than negative emotions. While an infant can experience distress alone, they largely necessitate the participation of a social partner, such as a parent, in order to experience and express positive emotions such as joy. Observing these transactions naturalistically can lead to important discoveries; for example, parents tend to express more joy than other parents in the presence of

children who also express more joy than other children, and vice-versa (Barry & Kochanska, 2010). Furthermore, frequent expression of PE by mothers is important for children's well-being and has been associated with better emotional outcomes for children, such as emotional understanding and self-esteem (Brody & Ge, 2001; Halberstadt, Crisp, & Eaton, 1999).

Consequently, understanding the role of parents in the socialization of positive emotional experiences throughout a child's development is critical to understanding their relationship with positive emotions and its potential consequences on their quality of life. The reciprocal and dyadic nature of positive emotions in early development substantiates the parent's place as a powerful socialization agent. Although emotion socialization can take many forms, the contingencies or reactions that a parent has to their child's expressions of emotion can be extremely important and one of the most direct forms of emotion socialization (Eisenberg, Cumberland, & Spinrad, 1998; Zeman, Cassano, & Adrian, 2013). Broadly, contingencies can be categorized as being either supportive, in which the child's emotional experience and expression are acknowledged, validated and the parent provides the appropriate coping techniques to deal with the emotion, or nonsupportive, in which the child's emotional experience and expression are rejected and the child is left to cope on their own (e.g., Gottman, Katz & Hooven, 1996).

According to Tomkins' Affect theory (Tomkins, 1963, 1991), children whose negative *or* positive emotions are rewarded and supported will have healthier emotional development. However, contingencies have been studied primarily with negative emotions, such as sadness, anger or fear. Nonsupportive responses to negative emotions, such as punishing or ignoring the child, have been linked to emotional and behavioural problems, while being supportive of a child's negative emotions, such as by offering comfort or advice about how to deal with the emotion or situation, has been associated with more adaptive emotional and social outcomes

(e.g., Blair, Perry, O'Brien, Calkins, Keane, & Shanahan, 2014; Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Fabes, Leonard, Kupanoff, & Martin, 2001; Hurrell, Hudson, Schniering, 2015; Scrimgeour, Davis, & Buss, 2015; Wilson, Havighurst, & Harley, 2012). In the case of positive emotions, supportive responses are typically those that *savour* the positive emotion (i.e., matching the child's level of joy and excitement to help the emotional experience last longer), while nonsupportive responses tend to *dampen* the positive emotion (i.e., expressing a neutral to negative emotional response, which serves to downregulate the emotion of the other; Gentzler, Ramsey, & Black, 2015). Observational research has provided evidence for the effects of these responses; when a child's positive emotion expression is matched or met with a positive emotion expression from their parent (e.g., laughter, smiling), the child is more likely to sustain that positive emotion (Bai, Repetti, & Sperling, 2016). In this way, contingencies to positive emotions are conceptualized in a simpler way than those to negative emotions. Rather than providing nuanced teachings about the function of and/or how to cope with negative emotions, contingencies to positive emotions serve more narrowly to confirm the appropriateness of the emotion to the child within the specific context (Barry & Kochanska, 2010). Therefore, simply by reacting positively or by matching the positive emotional expression, parents may be teaching their child to "recognize, appreciate and enhance" their positive emotional experiences and their importance (Lunkenheimer, Shields, & Cortina, 2007, p. 234). As such, the research on positive emotions has focused heavily on the earlier period of child development, during infancy, as contingencies can be seen as part of a conditioning or reward based system to encourage or discourage the expression of positive emotions in infants (Maccoby & Martin, 1983).

Because of its simplicity and its resemblance to conditioning models, it logical that the little research concerning positive emotion contingencies is more typically conducted using

direct observations as opposed to questionnaires or self-reports. Observational methods have many advantages over questionnaire based measures, including being more objective and less susceptible to social desirability bias, as well as the function of recording both naturalistic and in the moment verbal *and* nonverbal behaviour (Zeman, Klimes-Dougan, Cassano, & Adrian, 2007). However, the research in this area remains limited. The majority of the research lies within the developmental ends of the spectrum of childhood, either in infancy and toddlerhood (e.g., Malatesta, Grigoryev, Lamb, Albin, & Culver, 1986; Feldman, 2003; Roque & Verissimo, 2011) or adolescence (e.g., Katz et al., 2014; Lougheed et al., 2016; Yap, Allen, & Ladouceur, 2008). Importantly, the research with adolescents suggests that higher levels of dampening and lower levels of supportiveness of positive emotions is associated with higher levels of internalizing problems concurrently, particularly depression symptoms. Unfortunately, there have been few longitudinal studies that have explored whether socialization behaviours and their associations with internalizing behaviours hold across time. For example, using observational data, Sallquist and colleagues (2010) examined the trajectories of PE between mothers and their children at 4 time points ranging from infancy to preschool age. They found that children's PE tended to rise as they became older, but dipped at the latest time point at 54 months old. Barry and Kochanska (2010) explored the expressions of joy and affection between family members, with children beginning in infancy until early school age. Findings from their study suggested that parents tended to express the most joy and affection towards their child earlier in their child's development, whereas children tended to express positive emotions more as they became closer to school-age. Of note, both of these studies focused on positive emotional expression in general, and did not explore the impact of dampening or nonsupportive responses on children's emotional well-being. Without this information integrated within the longitudinal design, the

question remains whether parents are consistent in the way they respond to their child's positive emotional expressions across time and across developmental periods. Furthermore, it remains unclear whether maternal contingencies may have associations with internalizing symptoms concurrently and in the future.

When considering parenting behaviours such as emotion socialization, it is crucial to reflect on the parental characteristics that may make certain behaviours more or less likely to occur. Neuroticism or NE is the tendency to react to stressors with intense negative emotions and can have important implications for parenting. Generally, higher levels of neuroticism are associated with lower levels of parental warmth/responsiveness according to a meta-analysis (Prinzie et al., 2009). More specifically, some research suggests that NE or neuroticism is strongly associated with children's emotional expression and parent emotion socialization behaviour (e.g., Buckholdt, Parra, & Jobe-Shields, 2014; Fabes, Leonard, Kupanoff, & Martin, 2001; Han, Qian, Gao, & Dong, 2015; Hughes & Gullone, 2010). However, the literature is mixed when it concerns the link between maternal emotional well-being, specifically maternal levels of NE, depression and anxiety symptoms, and child PE specifically. For example, maternal histories of a mood disorder, even those disorders occurring before the child's birth, are associated with low PE in preschoolers (Durbin et al., 2005). This is consistent with findings that suggest that mothers who are depressed tend to show less positive emotion to their children (Feng et al., 2008). Within community samples, mothers who rated themselves as higher on anxiety reported that they were more likely to dampen a child's positive event from their day by reacting by minimizing the event's importance (Gentzler et al., 2015). In addition, these mothers higher in anxiety were also more likely to report feeling discomfort and to reprimand their child for expressing PE (Gentzler et al., 2015). In contrast, other researchers did not find a relation

between neuroticism or NE and the joy and affection expressed from parents to their child (Barry & Kochanska, 2010). Hooper, Feng, Christian, and Slesnick (2015) used a profiling analysis to understand emotionality and depression in mothers and its relation to child emotional expression. Overall, they found that one profile characterized by higher levels of depression and NE was associated with a higher likelihood to express negative emotions during a positive-valence task as well as higher levels of child internalizing symptoms. Thus, it is more comprehensive to consider *both* maternal emotionality and psychopathology symptoms when examining maternal contingencies and child outcomes.

The present study was designed to explore the environmental antecedents and developmental outcomes of maternal emotion socialization and child PE. We explored these relations through the framework of developmental psychopathology (Cichetti & Curtis, 2007), and more specifically, a transactional model that has been modified to explicitly explore child PE (Davis & Suveg, 2014). Davis and Suveg (2014) posit that there are both biological (e.g., genetics, stress reactivity) and environmental factors (e.g., parenting style, parent affect, parent psychopathology) that may relate and interact with child PE, and that these factors may in turn relate to the child's developmental outcomes (e.g., emotional well-being). Importantly, the present study considered these environmental factors across four time points, from preschool age to adolescence. In so doing, it was possible to examine the potential long-term correlates of emotion socialization and of child PE. Specifically, the present study was designed to address the following research objectives: 1) explore the consistency of observational measures of PE and maternal contingencies to PE across 2 time points; 2) examine the association between mother's emotional well-being (as measured by her NE, depression symptoms and anxiety symptoms) and her contingencies to her child's PE or the amount of child PE; and 3) consider the potential

outcomes of supportive or nonsupportive emotion contingencies and child PE on children's internalizing symptoms.

Methods

Participants

The participants in the current study derive from the original larger longitudinal, prospective sample of the Concordia Project. In 1976-78, 4,109 elementary school students in grades 1, 4 and 7 were selected from francophone low-income neighbourhoods in Montreal, Canada (Schwartzman et al., 1985; Serbin et al., 1998; Stack et al., in press). In the present study, a sub-sample of the Concordia Project of 120 francophone mothers were selected based on whether they had a child aged from 2.5 to 6 years old at Time 1 of this study. These 120 mother-child dyads participated in home observations. However, 24 of these dyads were excluded because of a variety of issues with the videotapes, including: poor audiovisual quality (e.g., inaudible or pixelated videos that compromised the identification of positive emotions; n = 13), missing or incomplete interactions (e.g., task not recorded or substantially shorter than 15 minutes; n = 7), and difficulty hearing or understanding participants due to speech issues (e.g., speaking foreign languages or whispering; n = 4). Thus, the remaining 96 dyads were included in analyses and coding. These dyads participated in 3 time points following Time 1 (4 time points in total), separated by 1-3 years between follow-ups. At Time 3, there was another set of observational data collected. Of the 106 available videos of dyads, a total of 85 dyads were coded. Videos were excluded primarily because of the audio-visual quality of the video or set-up of the camera (e.g., mother or child's face not visible; n = 16) or because the segment of interest was not completed in part or in whole (n = 5). Only 51 of the same dyads were coded for Time 1 and Time 3. Overall, the study captures the children from preschool age to adolescence, with approximately 10 years spanning the first and last time point.

With regard to demographic information, the mothers were between 20.81 and 46.45 years old at Time 1 (M = 30.74, SD = 3.39). The age at which these mothers had their first child ranged from 18.73 to 36.84 years, with an average age of 24.77 (SD = 3.23). The average number of years of mothers' education was 11.70; in order to graduate from high school in Quebec, 11 years of education is required. The maximum family prestige score (Standard International Occupational Prestige Scale; Treiman, 1977) was an average of 38.05 (SD = 10.80), which could include jobs such as manufacturing laborers (e.g., chemical processors, tobacco preparers, sheet metal workers, etc.), and service workers (e.g., guides, tailors, etc.) At Time 1, the children in the dyads were between the ages of 2.53 and 6.12 years (M = 4.44 years, SD = 1.08), with a similar number of boys (n = 47) and girls (n = 49). At Time 2, age of child participants ranged from 6.15 to 11.64 (M = 7.99, SD = 1.02). At Time 3, age of child participants ranged from 9.77 to 13.20 (M = 11.21, SD = .82). Finally, at Time 4, the age of child participants ranged from 12.00 to 17.43 (M = 13.99, SD = 1.29).

Procedure

The study consisted of a total of four time points. Questionnaires were provided to the mothers at all time points, either by mail or in person. At Times 1 and 3 only, observational data were collected in the homes of the families. Families were visited in their homes by two members of the research team, one part-time researcher (research laboratory coordinator, graduate student, or research associate), and one research assistant or graduate student. Mothers were provided with a description of the procedure and read and signed informed consent forms. With the help of the researchers, mothers selected a room appropriate for interactions with their child, and one in which they were unlikely to be disturbed by other family members. All

interactions were videotaped using a Sony Video 8AF camera with a directional microphone that was fixed to a tripod placed in front of the dyad for later coding of maternal contingencies.

At Time 1, a mat was set up on the floor, along with a set of standardized toys. The mother and child were instructed to remain on the mat with the set of standardized toys and to participate in a free play task for 15 minutes. Age-appropriate toys were selected for children aged 2 through 6 (e.g. books, a doll, building blocks, tea set). The instructions to mothers for free play were for them to play with their child as they would normally, making use of the standardized toys. A pleasant activity was selected due to the research questions and coding system (i.e., positive emotions).

At Time 3, instead of a free play task, mothers and their children were asked to play a developmentally appropriate game for 4-6 minutes. This block game was the Jenga game (Hasbro) and involves taking turns removing pieces of a block tower and then placing them at the top, while attempting to keep the block tower upright. The playful, anticipatory, and surprising components of this game are meant to elicit positive emotions in the dyad.

Questionnaire Measures

Demographic Information Questionnaire (DIQ). The Demographic Information Questionnaire (DIQ) is a questionnaire used for the collection of socio-demographic information, such as the child's age and sex, the mother's level of education in number of years, etc. This measure has been used in past studies of the Concordia Project (e.g., Martin et al., 2012) and it has been shown to be an effective way to collect participant demographics.

Negative Emotionality – Emotionality Activity Sociability Scale (EAS-2; Buss & Plomin, 1986).

Children. The children's emotionality was rated by their mothers who completed the EAS (Buss & Plomin, 1986) questionnaire at three time points (Time 1, 2 and 4). The EAS is a measure of temperament that includes Emotionality, Activity, and Sociability, as its subscales. For the purposes of this study, only the Emotionality subscale score (i.e., the tendency to react to a stressor with strong negative emotions or distress) was used. It consists of 5 items, with example items including: "Cries easily*",* or "Reacts intensely when upset". Each item is rated on a likert-type scale from 1 (my child's behaviour is never like this) to 5 (my child's behaviour is always like this). Previous research has demonstrated that this measure has good test-retest reliability (e.g., r = .82) and internal consistency (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Bould, Joinson, Sterne, & Araya, 2013; Spence, Owens, & Goodyer, 2013). For the present sample, the Cronbach's alpha value was .75 for Time 1, .79 for Time 2, and .85 for Time 4.

Mothers. Mothers completed the self-report adult version of the EAS (Buss & Plomin, 1984) at Time 1 and Time 4. A summary of the total scores for each of the Emotionality subscales (i.e., Distress, Anger, Fearfulness) was used (4 items each) to calculate a total Emotionality score. The items followed the same likert-type scoring as described above for the child questionnaire. Sample items include: for Distress, "I frequently get distressed"; for Anger, "I am known as hot-blooded and quick-tempered"; and for Fearfulness, "I am easily frightened". A total Emotionality score, collapsing across the Distress, Anger and Fearfulness subscales, has been used successfully in previous research (e.g., Laurent & Powers, 2007). With the collapsed total Emotionality score, Laurent and Powers (2007) report a Cronbach's alpha of .83. In the present

study, the Cronbach's alpha values for mothers were similar and of acceptable quality at Time1 (.81) and Time 3 (.82).

Child Internalizing Problem Behavior - Child Behaviour Checklist (CBCL; Achenbach, 1991). The Child Behavioral Checklist (CBCL; Achenbach, 1991) is a questionnaire that is designed to assess a variety of behavioural problems. Mothers completed the Parent Form version of this questionnaire and were asked to report whether behavioural descriptions were representative of their child, ranging from 0 (*not at all true)* to 2 (*very* true). In the present study, only the Internalizing problem scale was used, which is composed of items that reflect the Withdrawn, Somatic Complaints, and Anxious/Depressed subscales. The total score is transformed into a t-score, based on the norms of other children of the same age and sex. Two different versions of the CBCL were necessary at Time 1 because of the ages of the children; separate forms were used for those under and over 4 years old. Good short-term test–retest reliability (.93 for total problems) has been reported for this measure (Achenbach, 1991), and previous research has shown high internal consistency reliability (e.g., Gartstein & Fagot, 2003). The internal consistency for the present sample for the various time points was .85 (under 4 years old) and .70 (over 4 years old) for Time 1, .86 for Time 2, .83 for Time 3, and .84 for Time 4.

Maternal Symptoms of Psychopathology - Symptom Checklist 90 Revised (SCL-90R; Derogatis, 1983). The SCL-90R is a self-report questionnaire concerning symptom intensity for nine psychopathology subscales. Mothers completed this questionnaire at Time 1 and Time 3. For this study, only the Anxiety and Depression total subscale scores were used, which include a total of 10 and 13 items respectively, evaluating the severity of the symptoms. With regard to internal consistency, for the present sample we found the kappas for depression to to be .88 at Time 1 and .87 at Time 3, and for anxiety .82 at both time points; these values are consistent

with previous research that has shown good internal consistency for these scales (e.g., Keefe et al., 2000). In addition, research has shown the SCL-90 R to have adequate convergent validity (e.g., Derogatis, & Unger, 2010; Ransom, Ashton, Windover, & Heinberg, 2010).

Observational Coding

Maternal contingencies to positive emotions. Videotaped observations of the above-described dyadic activities (Time 1: free play; Time 3; Jenga block game) were used to code the mother's behaviour. Mangold Interact 9 software was used to code the video records (Mangold, 2010). The coding system consisted of two components: the child's positive emotion and the mother's response to the positive emotion. Coding of the child's positive emotion was based on the Emotion Behaviour Coding Scheme (Enns & Stack, 2007). A positive emotional expression was coded when the child expressed: a) joy and enthusiasm (e.g., smile and laughing, a positive interest in the event or activity); or b) surprise and excitement (e.g., widening of the eyes, loud vocalizations, quickened speech). Once the child had expressed a positive emotion, the mother's reaction to it was coded. The maternal contingency codes were based on previous coding systems meant to capture the reactions of parents to their child's positive emotions (e.g., Yap et al., 2008; Yap, Schwartz, Byrne, Simmons, & Allen, 2010; Gentzler, Ramsey, & Black, 2015). Maternal contingencies to their child's display of positive emotion were coded as either: a) supportive (e.g., matching the child's positive emotional display in intensity); b) nonsupportive (e.g., failing to match the child's positive emotional display by reacting neutrally, dampening, or ignoring the display); or c) unknown (e.g., mother could not have been able to see the child's emotional display or the mother's response was somehow hidden). A total count of positive emotional displays was calculated by summing the above-described contingencies, including the unknown category. A proportionalized score for the level of supportiveness was calculated by dividing the total number of supportive responses by the total number of responses (i.e., both the

supportive and nonsupportive totals). Coding was conducted by two separate trained undergraduate student coders at Time 1 and Time 3. Reliability coding was conducted by the first author for Time 1, and a trained undergraduate coder of Time 1 for Time 3, who coded approximately 30% of the videos. For Time 1, kappa coefficients were calculated (n = 33) for supportive (0.93), nonsupportive (0.87), and unknown (0.84), and ranged between very good and excellent. For Time 3, kappa coefficients were calculated (n = 26) and the coefficients for supportive (0.91), nonsupportive (0.85), and unknown (0.81) codes were also very good to excellent.

Analysis

Missing Data. In a previous study using this sample, some missing values for relevant questionnaire measures were imputed for all four time points (Briscoe, Stack & Serbin, in preparation). This was deemed necessary due to the participant attrition between the time points as well as missing data within the variable set. Specifically, multiple imputation was used; it is a statistical technique commonly used in longitudinal data sets to replace missing data with value estimates. It is preferred to other missing data techniques such as listwise deletion, as other techniques can drastically reduce sample size and have the potential to yield biased parameter estimates (Graham, 2009). Results from Little's MCAR test (see Briscoe, Stack & Serbin, in preparation) found that data were not missing completely at random, as the test did not reach statistical significance (χ^2 = 281.76, p = .216). As a result, multiple imputation using Mplus (Muthén, & Muthén, 2010) was conducted with variables missing less than 35% of their data. Some researchers suggest a level of missingness between 2 – 30% (e.g., Bukowski, 2014); previous research has shown that even with small samples (e.g., N = 50), multiple imputation performs very well with as much as 50% missing data in the dependent variable (Graham &

Schafer, 1999). Because of the rate of missingness, 100 imputations (i.e., *m* = 100) were aggregated into one file and the resulting summary file was used in all ensuing analyses (Graham, Olchowski, & Gilreath, 2007).

Results

All analyses were conducted using SPSS-22. For Objective 1, correlations were conducted to explore the consistency of the observational codes (i.e., maternal contingencies to PE and child PE) from Time 1 to Time 3. In addition, paired samples t-tests were also conducted with these variables to test for differences within individuals on their scores for the observational measures across time points. For Objectives 2 and 3, hierarchical multiple regressions were conducted to explore the concurrent and longitudinal research questions. In all regression analyses, maternal education was included as a control variable. Child age and child sex were only used as control variables when the outcome variable did not use age and sex norms for the calculation of the final score (e.g., T-score). In general, child age and sex, and maternal education were entered in Step 1, other control variables specific to the outcome (e.g., outcome variable at an earlier time point) in Step 2, and predictor variables were entered in Step 3. Of note, when maternal contingencies to positive emotions were used as predictors, both supportive and nonsupportive responses were entered in the same regression in order to account for their shared variance. The outcome variables included internalizing symptoms, maternal contingencies (proportionalized) or child PE.

Data screening

Data screening was performed according to the guidelines described by Kline (2009) and Wilkinson and the Task Force on Statistical Inference (1999). Although there were some outliers, these outliers were not corrected, as skew and kurtosis were within acceptable limits.

Assumptions of multicollinearity and singularity were not violated (see Table 3). The basic descriptives for all study variables, as well as for the correlations between all study variables, can be found in Tables 1 and 2, and 3, respectively.

Objective 1: Concurrent correlations and consistency from Time 1 to Time 3 for observational measures of maternal contingencies and child PE

Concurrently, correlations regarding maternal contingencies to PE revealed that within Time 1, supportive responses were positively associated with nonsupportive responses ($r = .29$ $p< .01$) and that within Time 3, supportive responses were negatively associated with nonsupportive responses ($r = -.22$, $p < .05$). Longitudinally, supportive responses at Time 1 were positively associated with supportive responses at Time 3 ($r = .42$, $p < .01$). The proportional levels of maternal supportive responses of PE at Time 1 and Time 3 were not statistically significantly associated with each other ($r = .00$, $p > .05$). A paired samples t-test was conducted to compare the proportion of maternal supportive responses compared to nonsupportive responses in Time 1 and Time 3. Mothers displayed a statistically higher proportion of supportive responses to child's PE at Time 3 ($M = .73$, $SD = .24$) than they did at Time 1 ($M = .60$, $SD = .33$); $t(49) = -2.44$, $p < .05$.

Correlations regarding the number of total PE displays by the child revealed that the number of child PEs at Time 1 were positively associated with the number of child PEs at Time 3 ($r = .38$, $p < .01$). A paired samples t-test was conducted to compare the number of times children expressed positive emotions at Time 1 to Time 3. Children expressed more positive emotions at Time 3 ($M = 10.80$, $SD = 4.34$) than at Time 1 ($M = 8.49$, $SD = 6.00$); $t(50) = - 2.80$, $p < .01$.

Objective 2: Relation of maternal NE and psychopathology symptoms to maternal contingencies and child PE

Maternal NE and anxiety and depression symptoms were used as predictors of the proportion of supportive maternal responses to child PE at both Time 1 and Time 3. Hierarchical regression analyses revealed that maternal NE and maternal anxiety and depression symptoms were not concurrently associated with supportive maternal responses to child PE at Time 1 (Table 4) or Time 3 (Table 6). With regard to child PE, hierarchical regressions showed that maternal NE and anxiety and depression symptoms were not concurrently associated with the number of times a child expressed PE at Time 1 (Table 5) or Time 3 (Table 7).

Objective 3: Relation of maternal contingencies and child PE to concurrent and future child internalizing symptoms

With regard to maternal contingencies to PE at Time 1, regressions revealed that neither supportive nor nonsupportive contingencies were statistically associated with child internalizing symptoms concurrently at Time 1 (Table 8). Longitudinally, more maternal supportive contingencies to child PE at Time 1 were associated with lower levels of child internalizing symptoms at T2 ($\beta = .26$, $p < .05$), controlling for Time 1 levels of internalizing symptoms (Table 9). With regard to Time 3 observations of maternal contingencies, neither supportive nor nonsupportive contingencies were associated with internalizing symptoms at Time 3 (Table 10) or Time 4 (Table 11).

Hierarchical regressions concerning child PE revealed that child PE was not associated concurrently with internalizing symptoms at Time 1 (Table 12) or Time 3 (Table 14), and longitudinally from Time 3 observations to Time 4 symptoms (Table 15). However, a statistical trend was noted for a negative association between child PE observations at Time 1 and child

internalizing symptoms at Time 2 (β = - .17, p = .06), controlling for Time 1 internalizing symptoms (Table 13).

Discussion

The present study sought to explore maternal emotional socialization of positive emotions through observational methods. We used observational data from two time points (Time 1 and Time 3) in childhood as well as questionnaire data from all four time points (Time 1 to Time 4) in order to explore whether observational measures of child PE and maternal contingencies to child PE were consistent across time, as well as to examine maternal socio-emotional factors and child socio-emotional outcomes of the observed PE. Findings concerning the observational measures of child PE and maternal contingencies are reviewed first, followed by maternal predictors of the observational measures, and then child internalizing outcomes of the observational measures.

In the present study, child PE was measured using observational coding in naturalistic at-home settings. Using these observational findings, we were able to provide evidence that child PE may be higher among older children. These results were found both cross-sectionally at Time 1 and Time 3, in that age was a statistically significant predictor of child PE at both time points, and also in intra-individual comparisons from Time 1 to Time 3. This is consistent with other observational research that has shown that PE tends to increase gradually from infancy to early childhood (Sallquist et al., 2010) and that children tend to *initiate* PE with their mothers in interactions more as they age (Barry & Kochanska, 2010). However, this is the first observational study to extend these findings into middle childhood and pre-adolescence. Davis and Suveg (2014) state that there is no clear consensus on when the positive linear trajectory of

PE may taper off. However, some results from questionnaire data suggest that the frequency and intensity of PE may wane into adolescence (see Gilbert, 2012 for a review).

Nonetheless, the observational measure of PE in our study showed some consistency, with Time 1 and Time 3 rates of PE expression being statistically significantly correlated, sharing roughly 15% of their variance. A longitudinal observational study with preschoolers found that observations of PE shared approximately 35 to 49% of their variance when the observations were made 1-2 years apart, and approximately 21% of their variance when the observations were made 4 years apart (Durbin et al., 2007). Given that approximately 7 years had passed between the observations and that different developmentally appropriate tasks were assigned at these time points, the observed shared variance of the present study is understandable. In addition, Davis and Suveg (2014) suggest that observational methods for emotion socialization related behaviours may show more variability than questionnaire methods, as observational methods only capture a snapshot of behaviour whereas questionnaires are designed to gather information on the consistencies in the child and how the child *tends* to behave. Indeed, Durbin and colleagues (2007) found consistently higher correlations for mother-rated temperament across the preschool period than the correlations between observational tasks across the same period.

Interestingly, the observations of maternal contingencies, specifically the proportion of contingencies that were supportive instead of nonsupportive, were not correlated across time points. Some emotion socialization research suggests that parents may alter their expectations for their children's emotional behaviour as they travel through different developmental periods, which may in turn shift their emotion socialization approach (see Klimes-Dougan & Zeman, 2007). Indeed, Mirabile (2014) contends that researchers still do not understand much about the

importance of consistency in emotion, including whether being inconsistent across time is beneficial and adaptive or problematic. In our study, mothers used a higher proportion of supportive contingencies compared to nonsupportive contingencies at Time 3 than Time 1. Of note, the nature of the Time 3 task may have made it more likely that mothers would express enjoyment towards the task itself, and not necessarily be responding specifically to their child's joy. The Jenga task in Time 3, which involves removing and adding pieces to an unstable tower, tended to elicit emotions such as surprise and excitement, which are expressed in ways that are typically obvious (e.g., squeals, laughter, wide eyes). On the other hand, free play tended to elicit milder emotions, such as contentment, as the activities are typically less intense (e.g., reading together, brushing a doll's hair), and are less likely to be expressed in an obvious way to outsiders (e.g., closed-mouth smile). Free play may also be less likely to be experienced as enjoyable by parents, as they may spend more time focused on activities such as teaching, which may be satisfying but not exciting, and playing pretend, which is typically not experienced as an enjoyable activity after childhood. In contrast, Jenga is a game that can be and is played by adults. In this way, it may have been easier for mothers to respond to their child's enjoyment of the task with genuine shared enthusiasm. It is also important to consider the fact that the children were evidently older at Time 3. A previous study found that mothers tend to initiate PE less as their children age from infancy to early childhood (Barry & Kochanska, 2010); this may suggest that we should have expected the number of supportive contingencies to be lower as children age. However, the observational measure used in the present study reflects how the mothers responded to their child's expression of positive emotion; as such, the children were by default seen as the initiators. Although the mothers could have potentially been the initiators in some of these PE transactions, it was not necessary for them to be in order for a code to occur.

Concerning maternal factors in emotion socialization, the present study did not find any relation between maternal NE and psychopathology symptoms and maternal contingencies to positive emotions. Mothers with high levels of NE or neuroticism are by definition more likely to respond to stressors with negative emotions; this may in turn relate to higher levels of problematic parenting behaviours, such as hostility, criticism, harsher or inconsistent discipline, or less support (Kochanska, Friesenborg, Lange, & Martel, 2004; Lengua & Kovacs, 2005; Lerner, 1993; Pauluseen-Hoogeboom, Stams, Hermanns & Peetsma, 2007). However, NE as a concept does not necessarily dictate or hypothesize how mothers may respond to positive interactions. In fact, there is ample theory and evidence to show that levels of NE are independent from levels of PE within the same individual (see Gilbert, 2012 for a review). Consequently, even if a mother expresses a higher than average level of negative emotions in response to stressors, this same mother would not necessarily tend to respond to fun or enjoyable activities with negative emotions as well. This may explain why no relation was found between maternal NE and both their own responses to their child's PE in a playful task as well as the direct relation to their child's PE.

Despite these arguments, past research has found that mothers who are clinically depressed – as opposed to neurotic - have more difficulty regulating their emotional expressions in general (Silk et al., 2006) and may show less positive emotion with their children than non-depressed mothers (Feng et al., 2008). In addition, anxious mothers may be more likely to dampen their child's positive emotions (Gentzler et al., 2015). The present study found no association between anxiety or depression symptoms and maternal contingencies. However, it should be noted that the sample for the present study was a community not a clinical sample, and the majority of the scores for the depression and anxiety subscales did not meet clinical cut-offs.

Therefore, the null findings may be a result of studying depression and anxiety symptom levels among a community sample as opposed to comparing clinically depressed or anxious mothers versus non-depressed or non-anxious mothers.

Finally, the present study found a relation between both sets of observational measures and child internalizing symptoms. First, maternal supportive contingencies were associated with fewer child internalizing symptoms. These findings are consistent with those found in studies with adolescents, in which supporting or enhancing child PE was negatively associated with the level of depression symptoms or depression status (e.g., Katz et al., 2014; Lougheed et al., 2016). When mothers display acceptance and support of their children's PE, they are also more likely to engage in positive emotion coaching behaviours, such as teaching their children about emotions (Denham & Kochanoff, 2002). These coaching behaviours are thought to enable children to master their regulatory abilities (Eisenberg et al., 1998), helping them to cope with internalizing symptoms. Interestingly, no concurrent results were found in the present study; rather, a lower level of supportive contingencies at preschool age (Time 1) was predictive of a higher level of internalizing symptoms approximately 3-5 years later at Time 2. Consistent with this finding, previous research has found that mothers' supportive and nonsupportive responses to their 5 year-old children's negative emotions were related to their child's emotion regulation 2 years later, after controlling for their concurrent levels of emotion regulation (Blair et al., 2014). Other researchers have also found that concurrent associations between maternal emotion socialization and child outcomes are less apparent than longitudinal ones (e.g., Perry, Calkins, Nelson, Leerkes, & Marcovitch, 2012). Because we did not have observations at Time 2, it is unclear whether the relation between higher maternal supportive contingencies at Time 1 and lower internalizing symptoms at Time 2 is due to something specific about receiving that feedback at

preschool age or whether it reflects a pattern of maternal responding that may endure and have its own effects concurrently at Time 2. However, considering that there was no relation between Time 1 and Time 3 maternal supportive contingencies, it is possible that mothers' contingencies are not consistent across time. Of note, maternal contingencies were not associated with concurrent or future internalizing symptoms based on Time 3 observations, when the children were in middle childhood or pre-adolescence. Yi and colleagues (2016, p. 1556) stated that maternal socialization of positive emotions at this age may not have as much of an impact as at other ages because children within this age group "already have a good understanding of the appropriateness of certain emotional expressions."

Intriguingly, observed nonsupportive responses in preschool and middle childhood were not associated with concurrent or future internalizing symptoms. In contrast, Yap, Allen and Ladouceur (2008) found that nonsupportive contingencies were associated with increased depressive symptomatology in early adolescents concurrently, while supportive responses were unrelated to child outcomes. In addition, a study conducted with children in middle childhood (aged 7-12 years) found that mothers' reported levels of supportiveness were unrelated to child internalizing symptoms, while nonsupportive responses were positively related to child internalizing symptoms (Yi, Gentzler, Ramsey, & Root, 2016). These studies and others have examined the level of parental minimizing, reprimanding, hostility, dysphoria or aversive reactions in response to child PE (e.g., Katz et al., 2014; Yap, Allen, & Ladouceur, 2008; Yi et al., 2016). In the present study, nonsupportive responses were primarily responses that did not match the child's level of enjoyment or excitement, usually by responding with a neutral face. Although this response is not rewarding, it is not punitive. High intensity nonsupportive responses, such as those found in other studies, were rare in the present study, potentially due to

using observational methods instead of reports as well as the positive valence of the game-playing tasks. Further, other researchers have found that positive responses may be more important for emotional development than negative ones. For example, Blair and colleagues (2014) found the supportive responses were more strongly associated with better emotional regulation than nonsupportive responses and these latter were associated with worse emotion regulation.

Finally, we found a statistical trend suggesting an association between low child PE at Time 1 and high levels of internalizing symptoms at Time 2, even after controlling for previous levels of internalizing symptoms and for the child's level of NE. A recent meta-analysis demonstrated that low levels of self- or parent-reported PE have been associated with an increased risk of depression and anxiety longitudinally, after controlling for baseline levels of those symptoms (Khazanov & Ruscio, 2016). Although this link was stronger among adults, it remained statistically significant among children and adolescents. In addition, longitudinal research with observations of PE has found similar results. Ghassabian and colleagues (2014) found that low observed PE at age 3 was associated with higher parent-rated internalizing symptoms at age 6 (Ghassabian et al., 2014). Other researchers also found that lower observed PE at age 3 was associated with depression symptoms at age 10, after controlling for NE and anxious/depression symptoms at age 3 (Dougherty et al., 2010). Taken together, although it was only a statistical trend between child PE in preschool and internalizing symptoms in middle childhood, our finding is highly consistent with both previous questionnaire and observational studies within the preschool to early childhood age group.

Despite substantial contributions, our study is not without its limitations. The present study explored the role of positive emotions in a fitting context, in which positive emotions are

expected. However, Davis and Suveg (2014) have argued that different contexts, potentially ones in which the emotions are incongruent with the situation, can be essential in our understanding of emotional development. One future direction may be to use tasks in which positive emotions may be unexpected or even inappropriate. This may in turn result in more nonsupportive responses that are adaptive, and a deeper understanding of the distinction between different types of nonsupportive responses and their appropriateness. For example, future studies could use a task which requires seriousness and focus; nonsupportive responses may range from punishing the emotion, to explaining why the expression of emotion is inappropriate at this time, to ignoring or not responding to the child's emotion. Previous research has shown that exuberance in schools is related to externalizing behaviours (e.g., Fox, Henderson, Rubin, Calkins, & Schmidt, 2001), thus the dampening of intense positive emotions, like exuberance, may actually be adaptive and teach children about emotion regulation and the need to regulate one's emotions differently in different contexts. Furthermore, understanding children within their context should include the involvement of all of their socialization agents, including fathers or both partners. Barry and Kochanska (2010) examined child and parent joy and found that parents are more joyful with children who are more joyful, but the predictions concerning joy did not stand across parents and were limited to within the particular dyad. That is, if a mother expressed high levels of joy, the child showed high levels of joy with their mother, but not necessarily with their father. Finally, although the participants in this research were nearing adolescence, adolescent PE was not explicitly explored in this study. Gilbert (2012) has previously highlighted the importance of researching PE in adolescence, both in contrast to NE and in contrast to earlier age groups; the dysregulation of PE can have important implications for socio-emotional development at this vulnerable age. However, the present study did explore two developmental periods – preschool

age and middle childhood to pre-adolescence – which have been the subject of very few previous studies, particularly observational ones.

Overall, the present study contributed in a number of ways to the small but growing literature on the socialization of positive emotions. By using observational measures at two time points, the present study was able to take steps towards understanding the consistency with which parents respond to their child's positive emotions across time. In addition, this is one of only a few studies to explore PE observationally, in addition to exploring its consistency across developmental periods. Furthermore, coherent with the developmental psychopathology model (Cichetti & Curtis, 2007), the present study attempted to better understand children's emotional health by exploring potential parenting behaviours and their correlates as well as child characteristics that contribute to emotional well-being. Finally, while the majority of the emotional development literature focuses on negative emotions and their socialization, the findings from our study highlight the importance of considering positive emotions and their socialization in deepening our understanding of children's emotional well-being. Overall, results from this study have important implications for future interventions in the realm of emotion socialization, and underscore that teaching parents to be aware and supportive of their children's positive emotions is a worthy endeavour.

Table 1

Descriptive Statistics for Study Variables (Time 1 and Time 2)

Variable	*N*	*M (SD)*
Child Age T1	96	4.45 (1.08)
Child Age T2	77	7.99 (1.02)
Maternal Education (years) T1	96	11.70 (2.39)
Child NE T1	96	12.61 (3.45)
Child NE T2	96	13.57 (3.97)
Child NE T4	96	11.92 (4.11)
Child Internalizing T1	96	55.02 (8.33)
Child Internalizing T2	96	55.45 (11.10)
Child Internalizing T3	96	56.25 (9.66)
Child Internalizing T4	96	53.80 (9.18)
Mother NE T1	96	27.86 (7.53)
Maternal Depression Symptoms T1	65	7.69 (7.70)
Maternal Anxiety Symptoms T1	66	3.89 (4.79)
Maternal Supportive Responses T1	96	3.96 (3.74)
Maternal Nonsupportive Responses T1	96	2.77 (3.29)
Maternal Unknown Responses T1	96	2.36 (2.39)
Child Total Positive Emotions T1	96	9.09 (6.99)

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; NE = Negative Emotionality

Table 2

Descriptive Statistics for Study Variables (Time 3 and Time 4)

Variable	*N*	*M (SD)*
Child Age T3	85	10.80 (0.86)
Child Age T4	73	13.55 (1.01)
Maternal Education T1	85	12.33 (2.47)
Child NE T1	85	12.64 (3.46)
Child NE T2	85	14.10 (3.86)
Child NE T4	85	12.06 (4.23)
Child Internalizing T1	85	53.68 (7.59)
Child Internalizing T2	85	53.86 (10.73)
Child Internalizing T3	85	55.33 (10.54)
Child Internalizing T4	85	52.91 (9.38)
Mother NE T1	85	28.41 (8.70)
Maternal Depression Symptoms T3	79	6.78 (6.91)
Maternal Anxiety Symptoms T3	80	3.58 (4.68)
Maternal Supportive Responses T3	85	6.40 (3.96)
Maternal Nonsupportive Responses T3	85	2.01 (2.04)
Maternal Unknown Responses T3	85	1.71 (1.57)
Child Total Positive Emotions T3	85	10.12 (4.35)

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; NE= Negative Emotionality

Table 3

Pearson Correlations Between all Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1. Child Age T1	-	.57**	.73**	-.04	.60**	.07	-.20	-.11	-.10	-.11	.02	.04	.04	.00	0.3	-.01	-.06	-.04	.23*	.45**	.33**	.44**	.16	.05	.10	.21
2. Child Age T2		-	.79**	-.03	.63**	-.16	-.10	-.01	.01	.05	-.01	.09	-.03	.02	.01	.05	.06	.03	.08	.37**	.19	.29*	-.05	.06	.02	-.01
3. Child Age T3			-	-.18	.77**	-.14	-.07	-.05	-.02	.13	.04	-.05	-.06	.01	.11	.20*	.20*	.12	.16	.37**	.11	.30*	.12	.19	.04	.21
4. Child Age T4				-	.08	-.15	-.12	.02	.15	.08	.19	-.03	-.08	-.07	-.06	-.01	.07	.02	.06	.37**	.03	.22	.01	.22	.08	.15
5. Child Sex					-	.02	-.03	-.05	-.06	-.07	-.01	-.12	-.15	.12	-.21*	-.24**	-.20*	-.05	.00	.09	-.11	.00	.15	.05	-.17	.10
6. Maternal Education						-	-.11	-.02	-.01	-.02	-.19	-.01	.03	-.07	-.17	-.11	-.05	-.11	.09	-.01	-.09	.02	-.07	-.09	.03	-.10
7. Maternal NE T1							-	.52**	.59**	.35**	.21*	.25**	.21*	.17	.20*	.07	.24**	.25**	-.09	-.12	-.04	-.12	-.10	.06	-.03	-.07
8. Maternal Depression Symptoms T1								-	.78**	.40**	.17	.28**	.20*	.28**	.13	.10	.31**	.24*	-.17	.01	-.02	-.10	.04	.06	-.07	.04
9. Maternal Anxiety Symptoms T1									-	.34**	.27**	.24*	.07	.17	.13	.10	.38**	.21*	-.14	-.01	.04	-.07	.01	.02	-.01	.02
10. Maternal Depression Symptoms T3										-	.69**	.20*	.12	.19	.23	.37**	.46**	.38**	-.23	-.15	-.06	-.22	.07	-.13	-.02	-.00
11. Maternal											-	-.04	-.12	-.01	.10	.18	.23*	.19	-.19	-.05	-.14	-.18	.08	-.11	-.05	.00

Anxiety Symptoms T3															
12. Child NE T1	-	.29**	.33**	.31**	.27**	.30**	.25**	-.02	.12	.05	.06	-.11	-.15	.09	-.13
13. Child NE T2		-	.41**	.22*	.36**	.33**	.35**	.05	.10	.33**	.18	-.08	-.10	-.09	-.15
14. Child NE T4			-	.15	.36**	.37**	.60**	-.04	.15	.20*	.12	.08	-.02	.13	.10
15. Child Internalizing Symptoms T1				-	.43**	.32**	.33**	-.05	.08	.06	.03	.04	-.10	.01	-.10
16. Child Internalizing Symptoms T2					-	.63**	.49**	-.23*	-.04	.11	-.10	-.22*	.06	.38**	-.04
17. Child Internalizing Symptoms T3						-	.61**	-.17	-.00	.04	-.08	-.11	-.12	.06	-.13
18. Child Internalizing Symptoms T4					.		-	-.22*	.10	.13	-.03	-.01	-.01	.06	.00
19. Maternal Supportive Responses T1								-	.29**	.29**	.77**	.42**	.18	.05	.47
20. Maternal Nonsupportive									-	.39**	.76**	.04	.12	.15	.15

Responses T1						
21. Maternal Unknown Responses T1	-	.68**	.04	.19	.17	.19
22. Total Child Positive Emotions T1		-	.24	.22	.17	.38**
23. Maternal Supportive Responses T3			-	-.22*	-.11	.77**
24. Maternal Nonsupportive Responses T3				-	.23*	.36**
25. Maternal Unknown Responses T3					-	.37**
26. Total Child Positive Emotions T3						-

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality
* $p < .05$, ** $p < .01$

Table 4

Hierarchical Regression Predicting Proportion of Supportive Responses at Time 1

		Proportion of Validation	
	β	ΔF	ΔR^2
Child Age	-.24		
Maternal Education	.02		
Child Sex	.18		
		1.81	.09
Child Age	-.27		
Maternal Education	-.00		
Child Sex	.20		
Maternal Depression Symptoms T1	-.04		
Maternal Anxiety Symptoms T1	.04		
Maternal NE T1	-.10		
		.18	.01
	R = .31		
	R^2_{adj} = -.00		
	F = .96		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 5

Hierarchical Regression Predicting Total Number of Positive Emotions at Time 1

	Total Number of Positive Emotions		
	β	ΔF	ΔR^2
Child Age	.48**		
Maternal Education	-.01		
Child Sex	.01		
		5.93**	.23
Child Age	.48**		
Maternal Education	-.01		
Child Sex	.01		
Maternal Depression Symptoms T1	-.07		
Maternal Anxiety Symptoms T1	.00		
Maternal NE T1	.04		
		.09	.00
	R = .48		
	R^2_{adj} = .15		
	F = 2.88*		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 6

Hierarchical Regression Predicting Proportion of Supportive Responses at Time 3

		Proportion of Validation	
	β	ΔF	ΔR^2
Child Age T3	-.05		
Maternal Education	.05		
Child Sex	.03		
		.19	.01
Child Age T3	-.08		
Maternal Education	.06		
Child Sex	.03		
Maternal Depression Symptoms T3	.17		
Maternal Anxiety Symptoms T3	.08		
Maternal NE T1	-.09		
		1.15	.05
	R = .23		
	R^2_{adj} = -.03		
	F = .67		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 7

Hierarchical Regression Predicting Total Number of Positive Emotions at Time 3

	Total Number of Positive Emotions		
	β	ΔF	ΔR^2
Child Age T3	.24*		
Maternal Education	-.06		
Child Sex	.13		
		1.89	.07
Child Age T3	.24*		
Maternal Education	-.08		
Child Sex	.12		
Maternal Depression Symptoms T3	.02		
Maternal Anxiety Symptoms T3	-.03		
Maternal NE T1	-.15		
		.53	.02
	R = .30		
	R^2_{adj} = -.02		
	F = 1.19		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 8

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 1 from Maternal Contingencies

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.15		
		2.09	.02
Maternal Education	-.13		
Child NE T1	.32**		
		10.65**	.10
Maternal Education	-1.22		
Child NE T1	.31**		
Maternal Supportive Responses T1	-.05		
Maternal Nonsupportive Responses T1	.05		
		.18	.00
	R = .36		
	R^2_{adj} = .09		
	F = 3.27*		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 9

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 2 from Maternal Contingencies

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.08		
		.64	.01
Maternal Education	-.03		
Child Internalizing Symptoms T1	.34**		
Child NE T2	.30**		
		16.03**	.26
Maternal Education	-.02		
Child Internalizing Symptoms T1	.33**		
Child NE T2	.31**		
Maternal Supportive Responses T1	-.21*		
Maternal Nonsupportive Responses T1	-.03		
		3.26*	.05
	R = .56		
	R^2_{adj} = .28		
	F = 8.20**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 10

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 3 from Maternal Contingencies

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.02		
		.04	.00
Maternal Education	.02		
Child Internalizing Symptoms T2	.49**		
Child NE T2	.14		
		17.95**	.31
Maternal Education	.01		
Child Internalizing Symptoms T2	.50**		
Child NE T2	.12		
Maternal Supportive Responses T3	-.01		
Maternal Nonsupportive Responses T3	-.13		
		.98	.02
	R = .57		
	R^2_{adj} = .28		
	F = 7.58**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 11

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 4 from Maternal Contingencies

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.10		
		.77	.01
Maternal Education	-.02		
Child Internalizing Symptoms T3	.40**		
Child NE T4	.49**		
		49.44**	.55
Maternal Education	-.02		
Child Internalizing Symptoms T3	.41**		
Child NE T4	.48**		
Maternal Supportive Responses T3	.00		
Maternal Nonsupportive Responses T3	.05		
		.18	.00
	R = .75		
	R^2_{adj} = .53		
	F = 19.77**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality

* p <.05, ** p <.01

Table 12

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 1 from Child Positive Emotionality

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.15		
		2.09	.02
Maternal Education	-.13		
Child NE T1	.32**		
		10.65**	.10
Maternal Education	-.13		
Child NE T1	.32**		
Child PE T1	.01		
		.01	.00
	R = .35		
	R^2_{adj} = .09		
	F = 4.28**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality; PE = Positive Emotionality

* p <.05, ** p <.01

Table 13

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 2 from Child Positive Emotionality

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.08		
		.64	.01
Maternal Education	-.03		
Child Internalizing Symptoms T1	.34**		
Child NE T2	.30**		
		16.03**	.26
Maternal Education	-.03		
Child Internalizing Symptoms T1	.34**		
Child NE T2	.33**		
Child PE T1	-.17		
		3.60	.03
	R = .54		
	R^2_{adj} = .26		
	F = 9.36**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality; PE = Positive Emotionality

* p <.05, ** p <.01

Table 14

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 3 from Child Positive Emotionality

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.02		
		.04	.00
Maternal Education	-.02		
Child Internalizing Symptoms T2	.49**		
Child NE T2	.14		
		17.95**	.31
Maternal Education	-.01		
Child Internalizing Symptoms T2	.49**		
Child NE T2	.13		
Child PE T3	-.09		
		.89	.01
	R = .56		
	R^2_{adj} = .28		
	F = 9.20**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality; PE = Positive Emotionality

* p <.05, ** p <.01

Table 15

Hierarchical Regression Predicting Child Internalizing Symptoms at Time 4 from Child Positive Emotionality

		Child Internalizing	
	β	ΔF	ΔR^2
Maternal Education	-.10		
		.77	.01
Maternal Education	-.02		
Child Internalizing Symptoms T3	.40**		
Child NE T4	.49**		
		49.44**	.55
Maternal Education	-.02		
Child Internalizing Symptoms T3	.41**		
Child NE T4	.49**		
Child PE T3	.00		
		.00	.00
	R = .74		
	R^2_{adj} = .53		
	F = 24.83**		

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3; NE = Negative Emotionality; PE = Positive Emotionality

* p <.05, ** p <.01

Chapter 7: General Discussion

Drawing from the developmental psychopathology framework (Cicchetti & Toth, 2009), the present set of three studies considered family-level and child-level factors, particularly emotionality, in the development of internalizing symptoms. Specifically, potential parental risk factors, such as emotional well-being, were related to child emotionality and maternal emotion socialization behaviour, while the sequelae of emotionality and emotion socialization behaviour, in the form of child internalizing problems, were also studied. Taken together, the findings from this dissertation attempted to shed light on the concurrent and longitudinal similarities between parents and their children on variables related to emotional well-being. Furthermore, these studies explored a key potential parenting mechanism for this similarity: maternal contingencies to child displays of emotion. Although not always examined within the context of the same study, this collection of studies used both questionnaire and observational methods to understand emotionality and emotion socialization, exploring both positive and negative emotions.

Importantly, the findings in this set of studies highlight the similarities and distinctions between the negative and positive emotions of a child and their relation to internalizing symptoms. This is in contrast to the majority of research to date, which has focused primarily on NE and responses to negative emotions, particularly using questionnaire measures (Davis & Suveg, 2014; Gilbert, 2012). Of note, there is increasing evidence for the importance of considering positive emotions in children's emotional well-being, both in terms of their implications for internalizing problems as well as understanding how these emotions are socialized (see Davis & Suveg, 2014 for a review). Specifically, results from Study 1 demonstrated that questionnaire measures of NE and internalizing symptoms are fairly stable and associated with each other across 3 time points, spanning approximately 10 years. In order to explore the relation between PE and internalizing symptoms, Study 3 incorporated observations

of child PE. Interestingly, there was not a consistent association between PE and concurrent or future internalizing symptoms, with only one negative statistical trend from preschool PE to childhood internalizing symptoms 3 years later, while controlling for child NE. Consistent with this finding, a previous study that explored both PE and NE within the same sample showed that when both are considered in the same regression, NE is a statistically significant predictor of future internalizing problems while PE is not (Rydell, Berlin, & Bohlin, 2003). The relation between parental emotional well-being and child emotionality showed a comparable pattern with regard to the valence of the emotion. Parental NE and depression symptoms were associated with child NE and internalizing symptoms, in some cases showing a relation even across time points. However, maternal depression and anxiety symptoms showed no association with observed child PE in preschool or late childhood in Study 3. It is possible that the disparity of the findings on PE in relation to NE findings are in part due to the way the data was collected, in that PE was collected observationally while NE was collected via maternal report. In this way, the consistency between NE and both maternal risk factors and child internalizing symptoms may partly reflect the consistency of the reporter for both sets of measures, while the relations between PE and other factors may have been negatively impacted by the use of observational versus parent-report data. In addition, the literature generally suggests that NE is more closely linked to internalizing problems than PE (Klein et al., 2012), and the difference in the strength of the association may be particularly obvious when conducting analyses with community samples, where the levels of NE, PE and internalizing symptoms are more normative.

In contrast, results were more consistent across emotions and analyses with the maternal emotion socialization measures. Maternal punishment in response to negative emotions was found to be a mediator between maternal and adolescent NE, suggesting that mothers who were

higher on NE were more likely to punish their child's negative emotions, and this in turn was associated with higher adolescent NE. Furthermore, mothers who used more supportive responses and fewer magnifying responses to their adolescent's negative emotions had adolescents with fewer concurrent internalizing symptoms. With positive emotion socialization, higher levels of observed maternal supportive responses in preschool were associated with fewer child internalizing symptoms several years later. As such, these findings echo previous research, emphasizing the importance of being more supportive and less nonsupportive in response to a child's emotions, as a potential way to help children to achieve emotional health (e.g., Eisenberg et al., 1999; Shortt et al., 2016; Silk et al., 2011; Whittle et al., 2009; Yap, Allen, & Ladouceur, 2008). However, results from this set of studies also makes an important contribution to the literature, by examining the sequelae of the socialization of both positive and negative emotions within the same sample and over time.

Relatedly, the design and measures of the present set of studies allowed for the exploration of novel research questions. Unlike many of the studies in this area of research, the present studies used multiple time points in a longitudinal design in order to better understand emotional well-being over time. This allowed for the testing of the consistency of the measures themselves, i.e., the questionnaire and observational measures of emotionality, over time and across developmental periods. There have been few studies that have explored the stability of questionnaire and observational data of PE and NE, and those that have been conducted have focused on 1-3 years of stability (e.g., Durbin, Hayden, Klein, & Olino, 2007; Nelis, Bastin, Raes, Mezulis, & Bijttebier, 2016) as opposed to 5 to 7 years, or even 10 years later. Because of the range of ages within time points, cross-sectional analyses also allowed for interesting age related findings to complement and corroborate the longitudinal findings. Specifically, in Study 3

it was found that children tended to express more positive emotions as they became older, both cross-sectionally and longitudinally. Furthermore, the longitudinal design allowed for the inclusion of several developmental periods, such as preschool, middle childhood, pre-adolescence, and adolescence, rather than exploring emotionality and emotion socialization solely within one period. This is of particular importance in the realm of emotion socialization, in which there is a dearth of research in adolescence for negative emotions, and a lack of research on middle childhood for positive emotions. In addition, there was also the opportunity to examine the potential long-term implications of certain factors and parenting behaviours as well as control for previous symptoms or behaviour, as opposed to observing solely concurrent associations.

In addition to the longitudinal design, the integration of observational measures for both the expression as well as the socialization of positive emotion is fairly rare within the literature, particularly with children older than toddlers and younger than adolescents. Typically, questionnaire methods are used for PE (e.g., Positive and Negative Affect Schedule; Watson, Clark, & Tellegen, 1988), and positive emotion socialization (e.g., Parent's Reaction to Children's Positive Emotions Scale; Ladouceur, Reid, & Jacques, 2002), although the use of parent-child interaction tasks is slightly more common with adolescents (e.g. Yap, Allen, & Ladouceur, 2008). Generally, questionnaire methods offer an overall picture of how the person may feel or react on a day-to-day basis, but may be coloured by the rater's perception of the situation or demand characteristics (Zeman et al., 2007). In Study 3, PE and maternal emotion socialization of PE were measured in observational tasks, which have the advantage of being more objective than parent-report (e.g., less subject to social desirability). However, it has been noted that observational measures may lack ecological validity and only offer a snapshot of the

individual, which may or may not be representative of their overall behaviour (Zeman et al., 2007).

Furthermore, the present set of studies was designed to involve fathers. Fathers are rarely considered in the emotional competence literature, despite arguments for their inclusion (e.g., Cassano, Adrian, Veits, & Zeman, 2006; Connell & Goodman, 2002; Kane & Garber, 2004; Potapova, Gartstein, & Bridgett, 2014). Unfortunately, due to various factors (e.g., difficulty recruiting fathers, missing data), the Concordia Project data on fathers is limited to questionnaire data at the first time point, which constrained the types of research questions that could be explored. For example, fathers could not be compared to mothers on the socialization of emotion, either by questionnaire or observationally. Regardless, the results provided evidence for the link between fathers' emotional well-being and that of their child's. Furthermore, the inclusion of both mothers and fathers within the same analyses in Study 1 allowed us to tease out their independent contributions to their child's emotional well-being, demonstrating that the association between fathers and their children remains statistically significant even after controlling for mothers' contributions.

Taken together, using the developmental psychopathology framework allowed for a more thorough exploration of the complexity of the development of child emotionality and internalizing symptoms within a community sample. At the child level, child NE was shown to be consistently positively related to internalizing symptoms, while observed child PE did not share this consistent association. At the parent-level, both maternal and paternal NE and depression symptoms held strong associations with both child NE and internalizing symptoms, with each parent making independent and different contributions in these associations. At the parenting level, more supportive and fewer nonsupportive maternal responses to emotions were

generally associated with lower NE and fewer internalizing symptoms, regardless of the valence of the emotion. The use of observational and longitudinal data helped to strengthen the contributions of this set of studies by providing evidence for prospective relations. Together, this set of studies demonstrates the importance of considering not only multiple levels of variables in the conceptualization of emotional well-being and psychopathology, but also emphasizes the necessity of including both positive and negative emotions.

Limitations and future directions

Despite a number of important contributions, there were some limitations to the studies. A lack of consistency in the observational methods and questionnaire methods across time points limited the analyses in certain ways. In some cases, observational and questionnaire versions of the same construct were not possible at the concurrent time point. Otherwise, this would have allowed for the exploration of the similarities and differences between observational and questionnaire methods for emotion socialization and emotionality. Both of these methods of measuring emotionality and emotion socialization have their respective strengths and weaknesses, as described above. This is why a combination of both forms of measurement are ideal, particularly if they can be combined with other reporters for the questionnaires and multiple contexts for the observations (Zeman et al., 2007).

Furthermore, there was little overlap between the PE and NE and emotion socialization techniques within the same sample at the same time points. Previous studies have used the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) to assess the role of both PE and NE within the same child concurrently (e.g., Anthony, Lonigan, Hooe, & Phillips, 2002; Gumora & Arsenio, 2002), and some others have used observational methods (e.g., Durbin et al., 2007). Unfortunately, due to the availability of the questionnaire data and of

the at-home observations at specific time points, only Study 3 considered the role of PE and NE in the prediction of internalizing behaviour, observationally and through parent-report data, respectively. Because NE and PE are orthogonal temperament constructs yet both are important for emotional development (e.g. Larson &McGraw, 2011), it is ideal to include both within the same analyses in order to provide a more complete picture of a child's affective temperament. In addition, it was not possible to explore positive and negative emotion socialization at the same time point in the current studies. Future studies should endeavor to include both sets of data in order to weigh the relative contributions of positive and negative emotion socialization on child outcomes. Currently, research only exists on the independent contributions of PE and NE to child emotional well-being (e.g., Nelis, Bastin, Raes, Mezulis, & Bijttebier, 2016; Rydell et al., 2003), but not about how the socialization of positive and negative emotions may have different and independent associations with emotional outcomes.

Although the present set of studies did attempt to include fathers in the study of NE, a lack of questionnaire and observational data with fathers, particularly at the later time points, prevented an examination of emotion socialization techniques in fathers. The little research that has been conducted with fathers has shown that they may socialize negative emotions differently than mothers. For example, research with children has shown that fathers tend to be more punitive in response to their child's negative emotions, while research with adolescent and emerging adults has shown that fathers are more likely to ignore or overlook their children's expressions of negative emotions (for a review, see Brand & Klimes-Dougan, 2010). Furthermore, in the socialization of positive emotion, fathers have been found to be less likely than mothers to convey acceptance of their adolescent's positive emotions and responses that could potentially amplify their adolescent's PE (Katz et al., 2014). Beyond understanding the

different practices fathers and mothers may implement and how these may relate to emotional well-being, including fathers may also illuminate the importance of being consistent as a parenting team (Mirabile, 2014).

The contributions, as well as the limitations, of the present set of studies point to clear future directions. Methodologically, using both observational as well as questionnaire data for emotionality and emotion socialization –positive and negative – would be very interesting, in order to better understand where and why these measure may converge or diverge and how they may be associated differently with risk factors or child outcomes. The use of multiple methods may also be the best possible valid assessment of a child's emotionality and parents' emotion socialization behaviours (Zeman et al., 2007).

In terms of observational research, it may be fruitful to explore the intensity of the positive or negative emotions, as opposed to simply their frequency and the accompanying reactions. For example, researchers such as Else-Quest, Hyde, Goldsmith, and Van Hulle (2006) distinguished between low-intensity pleasure and high-intensity pleasure, which discriminates between the intensity of the stimuli (e.g., playing house vs. rough and tumble play), and have found differences between boys and girls. In addition, because positive emotions can, at their upper extreme, be understood and perceived as disruptive and hyperactive behaviour in certain contexts, it would be helpful to consider the behaviour of the child beyond the expression of joy when exploring the accompanying reaction from the parent.

Furthermore, the present set of studies focused specifically on parent and child emotionality, internalizing symptoms, and parenting behaviours. Inevitably, there are some factors that may also share associations with these variables that were not included in the studies. For example, parenting stress may be associated both with parent NE and child NE as well as

parenting behaviours (e.g., Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2008; Williford, Calkins, & Keane, 2007), and thus may be an important family-level variable to consider in future studies. In addition, the present set of studies focused exclusively on the relation between emotionality/emotion socialization and internalizing behaviours in children and adolescents. However, there is research to suggest that a link also exists between emotionality and externalizing behaviours, e.g., symptoms of conduct disorder, hyperactivity and aggressive behaviour. Indeed, some of the covariation that internalizing and externalizing problems share may be due to NE (Rhee et al., 2007). Regarding PE, the association it has with externalizing problems may be more complex and not necessarily linear. Low levels of PE have previously been associated with higher levels of externalizing problems (e.g., Kim, Walden, Harris, Karrass, & Catron, 2007), and children who display PE tend to be seen as socially competent (Sallquist et al., 2009). However, displaying high intensity PE or being an exuberant child (i.e., high on PE, impulsivity and approach behaviour) is associated with having more problem behaviour, including externalizing problems (e.g., Morales, Pérez-Edgar, & Buss, 2016; Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004; Stifter, Putnam, & Jahromi, 2008). In addition, associations between emotion socialization techniques and externalizing problems also merit further investigation. For example, a recent meta-analysis revealed that more supportive emotion socialization strategies and fewer nonsupportive strategies, including the way parents respond to their child's emotions, are associated with lower levels of conduct problem behaviour specifically, particularly with younger children, although the effect size appears to be small (Johnson, Hawes, Eisenberg, Kohlhoff, & Dudeney, 2017).

Clinical implications and applications

The findings from this set of three studies have some clear clinical and practical implications. Emotionality, particularly high levels of NE or emotional vulnerability, has been strongly associated with disorders such as borderline personality disorder (BPD; for a review, see Carpenter & Trull, 2013), including support from neuro-biological studies (e.g., Ruocco, Amirthavasagam, Choi-Kain, & McMain, 2013). According to the bio-behavioural theory, higher levels of emotionality, which are experienced by individuals as more easily activated, more intense and/or longer-lasting negative emotional reactions to situations, lead to BPD when it is coupled with an invalidating environment (Linehan & Koerner, 1992). The description of an invalidating environment typically includes the way a parent responds to his or her child's emotional expressions, particularly negative emotions, and includes responses such as dismissing the emotion or punishing the child. Particularly when invalidation is experienced throughout childhood, the child does not learn regulatory skills to appropriately cope with their comparatively more intense emotions, and also learns to distrust their own emotional experiences. Linehan (1993) argues that this leads to a downwards spiral, in which the child's emotion regulation abilities continue to fail them, particularly in the face of their especially high NE, and their parents become more and more frustrated with what may be perceived as a lack of motivation, effort, or grit in adapting to situations. Particularly in Study 2, results revealed that invalidating or nonsupportive techniques, such as punishing negative emotions, were associated with higher adolescent NE. Considering the fact that mothers with higher NE were more at risk of engaging in nonsupportive or invalidating behaviour, this may describe the situation that families with BPD find themselves in. If NE is indeed somewhat heritable, and mothers who have high NE are more likely to respond with nonsupportive techniques, this could be one way

this connection is maintained and the cycle is perpetuated (Stepp, Whalen, Pilkonis, Hipwell, & Levine, 2011). Essentially, mothers with NE are less able to control their emotions in the moment when confronted with the stressor of their child displaying emotion, and thus react impulsively by punishing or magnifying rather than by coaching or modeling the appropriate regulation techniques.

The treatment for BPD, Dialectical Behaviour Therapy (DBT; Linehan, 1993), may hold many of the answers for potential interventions with families with high levels of NE. Among many different modules, a key component of DBT is the teaching of emotion regulation skills, including the use of mindfulness techniques (Linehan, 1993). Previous research has found emotion regulation skills to be a moderator for the link between NE and internalizing symptoms. In effect, individuals who are high on NE but who can draw from adaptive emotion regulation techniques to cope with their high NE are not as likely to suffer from internalizing disorders or symptoms as those who have high NE, but few emotion regulation resources (e.g., Eisenberg, Fabes, Guthrie, & Reiser, 2000; Gumora & Arsenio, 2002; Rydell, Berlin, & Bohlin, 2003). Fortunately, emotion regulation skills can be taught to both parents and their children, including mindfulness-based skills. Some emotion socialization interventions, such as Tuning into Teens (Havighurst, Kehoe, & Harley, 2015; Kehoe, Havighurst, & Harley, 2014), have incorporated elements of mindfulness with community samples, with positive results for the child's emotional well-being. Mindfulness may be a particularly good set of skills for parents to acquire. Learning to be more attuned to the present may help parents to approach situations in which their child is dysregulated more calmly and with more rational thinking (Duncan, Coatsworth, & Greenberg, 2009). In other words, rather than reacting to their child's emotional display, they may be able to better act with intention (Duncan et al., 2009). Duncan and colleagues (2009) have proposed that

mindful parenting can include an emotional component specifically, such as the emotional awareness of self and child, which they believe can lead to more responsiveness to the child's emotional needs and less dismissing or disciplining of emotional expressions that result from the parents' own emotional reaction. In one longitudinal study, parents with higher levels of dispositional mindfulness tended to use lower levels of negative parenting, which included being reactive, intrusive, coercive and hostile, and this in turn was associated with lower levels of child internalizing symptoms (Parent, McKee, Rough, & Forehand, 2016). In addition, being more mindful may also have implications for situations where the child is expressing a positive emotion. With mindfulness skills, the parent may become more capable of savouring the moment (Bryant & Veroff, 2007) or engaging in positive mindfulness (Ritchie & Bryant, 2012). As such, they may be better able to attune themselves to their child's expression of happiness and share in the happiness, and be less distracted by their own potentially neutral or even distressing thought processes (e.g., worrying, ruminating).

General Conclusions

In conclusion, the present set of studies provides a deep exploration of the child and parent-level factors involved in child emotionality and internalizing problem behaviour. By using a longitudinal design and a combination of observational and questionnaire data, the present set of studies was able to provide evidence for the stability of both PE and NE across several time points from preschool to adolescence, as well as explore the maternal and paternal risk factors that are associated with emotionality, including emotion socialization behaviour. Interestingly, this research provides evidence for the importance of considering the socialization of both positive and negative emotions, as nonsupportive and supportive responses to emotions were associated with child emotional well-being both concurrently and at later time points. In turn,

these findings point to clear potential applications, including family-level interventions that may be of use for children with emotionality issues, even within community samples. Overall, the findings emphasize the critical role that parents play in the emotional well-being of their children, and point to the ability of all parents to foster emotional health in their families.

References

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/ 4–18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Anthony, J. L., Lonigan, C. J., Hooe, E. S., & Phillips, B. M. (2002). An affect-based, hierarchical model of temperament and its relations with internalizing symptomatology. *Journal of Clinical Child and Adolescent Psychology*, *31*, 480–490. doi:10.1207/S15374424JCCP3104

Aunola, K., Tolvanen, A., Kiuru, N., Kaila, S., Mullola, S., & Nurmi, J.-E. (2015). A person-oriented approach to diary data: Children's temperamental negative emotionality increases susceptibility to emotion transmission in father-child dyads. *Journal for Person-Oriented Research, 1*, 72-86. doi:10.17505/jpor.2015.08

Bai, S., Repetti, R. L., & Sperling, J. B. (2016). Children's expressions of positive emotion are sustained by smiling, touching, and playing with parents and siblings: A naturalistic observational study of family life. *Developmental Psychology*, *52*, 88–101. doi:10.1037/a0039854

Barry, R.A, & Kochanska, G. (2010). A longitudinal investigation of the affective environment in families with young children: from infancy to early school age. *Emotion*, *10*, 237–249. doi:10.1037/a0018485

Bates, J. E. (1980). The concept of difficult temperament. *Merrill-Palmer Quarterly*, *26*, 299–319.

Bates, J. E. (1989). Concepts and measures of temperament. In G. A. Kohnstamm, J. E. Bates, & M. K. Rothbart (Eds.), *Temperament in Childhood* (pp. 405–420). Chichester, UK:: Wiley.

Bates, J. E., & Pettit, G. S. (2007). Temperament, Parenting, and Socialization. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (2nd ed.; pp. 153–177). New York, NY: Guilford Press.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Manual for the Beck Depression Inventory-II. San Antonio, TX: Psychological Corporation

Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*, 83–96. doi:10.1002/9780470939406.ch2

Belsky, J., Hsieh, K., & Crnic, K. (1996). Infant positive and negative emotionality: One dimension or two? *Developmental Psychology*, *32*, 289–298. doi:10.1037/0012-1649.32.2.289

Belsky, J., & Pluess, M. (2009). Beyond diatheses stress: Differential susceptibility to environmental influences. *Psychological Bulletin*, *135*, 885-908. doi:10.1037/a0017376

Bender, P. K., Reinholdt-Dunne, M. L., Esbjørn, B. H., & Pons, F. (2012). Emotion dysregulation and anxiety in children and adolescents: Gender differences. *Personality and Individual Differences*, *53*, 284–288. doi:10.1016/j.paid.2012.03.027

Bentler, P. M. (2005). EQS Structural Equations Program Manual. Los Angeles, CA: BMDP Multivariate Statistical Software.

Blau, R., & Klein, P. S. (2011). Effects of elicited emotions on cognitive functioning of preschool children with different types of temperament. *Journal of Cognitive Education and Psychology*, *10*, 157–166. doi:10.1891/1945-8959.10.2.157

Blair, B. L., Perry, N. B., Brien, M. O., Calkins, S. D., Keane, S. P., & Shanahan, L. (2014). The indirect effects of maternal emotion socialization on friendship quality in middle childhood. *Developmental Psychology, 50*, 566–576. doi:10.1037/a0033532

Bongers, I. L., Koot, H. M., van der Ende, J., & Verhulst, F. C. (2003). The normative development of child and adolescent problem behavior. *Journal of Abnormal Psychology*, *112*, 179–192. doi:10.1037/0021-843X.112.2.179

Bouchard, T. J., Jr., & Loehlin, J. C. (2001). Genes, evolution, and personality. *Behavior Genetics*, *31*, 243–273. doi:10.1023/A:1012294324713

Bould, H., Araya, R., Pearson, R. M., Stapinski, L., Carnegie, R., & Joinson, C. (2014). Association between early temperament and depression at 18 years. *Depression and Anxiety, 31*, 729–736. doi:10.1002/da.22294

Bould, H., Joinson, C., Sterne, J., & Araya, R. (2013). The Emotionality Activity Sociability Temperament Survey: Factor analysis and temporal stability in a longitudinal cohort. *Personality and Individual Differences*, *54*, 628–633. doi:10.1016/j.paid.2012.11.010

Bradley, M. M., Codispoti, M., Sabatinelli, D., & Lang, P. J. (2001). Emotion and motivation II: Sex differences in picture processing. *Emotion*, *1*, 300–319. doi:10.1037/1528-3542.1.3.300

Brand, A. E., & Klimes-Dougan, B. (2010). Emotion socialization in adolescence: The roles of mothers and fathers. In A. K. Root & S. A. Denham (Eds.), *The role of gender in the socialization of emotion: Key concepts and critical issues* (pp. 85–100). San Francisco, CA: Jossey-Bass. doi:10.1002/cd.265

Brenner, E. M., & Salovey, P. (1997). Emotion regulation during childhood: Developmental, interpersonal, and individual considerations. In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 168-195). New York, NY: Basic Books.

Bridgett, D. J., Burt, N. M., Edwards, E. S., & Deater-Deckard, K. (2015). Intergenerational transmission of self-regulation: A multidisciplinary review and integrative conceptual framework. *Psychological Bulletin*, *141*, 602–654. doi:10.1037/a0038662

Bridgett, D. J., Gartstein, M. A., Putnam, S. P., McKay, T., Iddins, E., Robertson, C., ... Rittmueller, A. (2009). Maternal and contextual influences and the effect of temperament development during infancy on parenting in toddlerhood. *Infant Behavior and Development, 32,* 103–116. doi:10.1016/j.infbeh.2008.10.007

Briley, D. A., & Tucker-Drob, E. M. (2014). Genetic and environmental continuity in personality development: A meta-analysis. *Psychological Bulletin*, *140*(5), 1303–1331. doi:10.1037/a0037091

Brody, G. H., & Ge, Z. (2001). Linking parenting processes and self-regulation to psychological functioning and alcohol use during early adolescence. *Journal of Family Psychology*, *15*, 82–94. doi:10.1037/0893-3200.15.1.82

Bronfenbrenner, U. (1960). Freudian theories of identification and their deviations. *Child Development*, *31*, 15–40.

Bronstein, P., Fitzgerald, M., Briones, M., Pieniadz, J., & D'Ari, A. (1993). Family emotional expressiveness as a predictor of early adolescent social and psychological adjustment. *The Journal of Early Adolescence, 13*, 448-471. doi:10.1177/0272431693013004006

Bryant, F. B., & Veroff, J. (2007). *Savoring: A new model of positive experience*. Mahwah, NJ: Lawrence Erlbaum Associates.

Buck, R. (1984). *The communication of emotion*. New York, NY: Guilford Press.

Buckholdt, K. E., Parra, G. R., & Jobe-Shields, L. (2014). Intergenerational transmission of emotion dysregulation through parental invalidation of emotions: Implications for

adolescent internalizing and externalizing behaviors. *Journal of Child and Family Studies, 23*, 324–332. doi:10.1007/s10826-013-9768-4

Bukowski, W. (2014, June). *Estimating what should have been there: A beginner's guide to imputing missing data*. Workshop presented at the CRDH Summer School on Statistics and Methodology, Montreal, Canada.

Buss, A.H. (1991). The EAS theory of temperament. In J. Strelau & A. Angleitner (Eds.), *Explorations in temperament: International perspectives on theory and measurement* (pp. 43-60). New York, NY: Springer US. doi:10.1007/978-1-48990-0643-4_4

Buss, A. H., & Plomin, R. (1984).*Temperament: Early developing personality traits*. Hillsdale, NJ: Lawrence Erlbaum.

Buss, A. H., & Plomin, R. (1986). The EAS approach to temperament. In R. Plomin & J. Dunn (Eds.), *The study of temperament: Changes, continuities, and challenges* (pp. 67–79). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Calkins, S. D., Propper, C., & Mills-Koonce, W. R. (2013). A biopsychosocial perspective on parenting and developmental psychopathology. *Development and Psychopathology, 25* 1399–1414. doi:10.1017/S0954579413000680

Campos, J. J., Campos, R. G., & Barrett, K. C. (1989). Emergent themes in the study of emotional development and emotion regulation. *Developmental Psychology*, *25*, 394-402. doi:10.1037/0012-1649.25.3.394

Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review, 33*, 343–360. doi:10.1016/j.cpr.2013.01.003

Carle, A. C., & Chassin, L. (2004). Resilience in a community sample of children of alcoholics: Its prevalence and relation to internalizing symptomatology and positive affect. *Journal of Applied Developmental Psychology, 25*, 577-595. doi:10.1016/j.appdev.2004.08.005

Carpenter, R. W., & Trull, T. J. (2013). Components of emotion dysregulation in borderline personality disorder: A review. *Current Psychiatry Reports*, *15*, 335–348. doi:10.1007/s11920-012-0335-2

Carrère, S., & Bowie, B. H. (2012). Like parent, like child: Parent and child emotion dysregulation. *Archives of Psychiatric Nursing, 26*, e23–e30. doi:10.1016/j.apnu.2011.12.008

Caspi, A., Henry, B., McGee, R. O., Moffitt, T. E., & Silva, P. A. (1995). Temperamental origins of child and adolescent behavior problems: From age 3 to age 15. *Child Development, 66*, 55–68. doi:10.2307/1131190

Cassano, M., Adrian, M., Veits, G., & Zeman, J. (2006). The inclusion of fathers in the empirical investigation of child psychopathology: An update. *Journal of Clinical Child and Adolescent Psychology*, *35*, 583–589. doi:10.1207/s15374424jccp3504

Chaplin, T. M., & Aldao, A. (2013). Gender difference in emotion expression in children: A meta-analytic review. *Psychological Bulletin, 139*, 735–765. doi:10.1037/a0030737

Cicchetti, D., & Curtis, W.J. (2007). Multilevel perspectives on pathways to resilient functioning. *Development and Psychopathology*, *19*, 627–629. doi:10.1017/S0954579407000314

Cicchetti, D., & Toth, S. L. (2009). The past achievements and future promises of developmental psychopathology: the coming of age of a discipline. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *50*, 16–25. doi:10.1111/j.1469-7610.2008.01979.x

Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology, 100*, 316–336. doi:10.1037/0021-843X.100.3.316

Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*, 103–116. doi:10.1016/j.apnu.2011.12.008

Connell, A. M., & Goodman, S. H. (2002). The association between psychopathology in fathers versus mothers and children's internalizing and externalizing behavior problems: A meta-analysis. *Psychological Bulletin*, *128*, 746–773. doi:10.1037/0033-2909.128.5.746

Crawford, N. A., Schrock, M., & Woodruff-Borden, J. (2011). Child internalizing symptoms: Contributions of child temperament, maternal negative affect, and family functioning. *Child Psychiatry and Human Development*, *42*, 53–64. doi:10.1007/s10578-010-0202-5

Crouter, A. C., & Crowley, M. S. (1990). School-age children's time alone with fathers and single and dual-earner families: Implications for the father-child relationship. *Journal of Early Adolescence, 10*, 296–312. doi:10.1177/0272431690103004

Cumberland-Li, A., Eisenberg, N., Champion, C., Gershoff, E., & Fabes, R. A. (2003). The relation of parental emotionality and related dispositional traits to parental expression of emotion and children's social functioning. *Motivation and Emotion, 27*, 27-56. doi:10.1023/A:1023674308969

Davenport, E., Yap, M. B., Simmons, J. G., Sheeber, L. B., & Allen, N. B. (2011). Maternal and adolescent temperament as predictors of maternal affective behavior during mother–adolescent interactions. *Journal of Adolescence, 34*, 829-839. doi:10.1016/j.adolescence.2011.02.003

Davis, M., & Suveg, C. (2014). Focusing on the positive: A review of the role of child positive affect in developmental psychopathology. *Clinical Child and Family Psychology Review, 17*, 97–124. doi:10.1007/s10567-013-0162-y

Davis, M., Suveg, C., & Shaffer, A. (2015). Maternal positive affect mediates the link between family risk and preschoolers' positive affect. *Child Psychiatry and Human Development*, *46*, 167–175. doi:10.1007/s10578-014-0516-9

Demirtas, H., Freels, S. A., & Yucel, R. M. (2008). Plausibility of multivariate normality assumption when multiply imputing non-Gaussian continuous outcomes: A simulation assessment. *Journal of Statistical Computation and Simulation*, *78*, 69-84. doi:10.1080/10629360600903866

Denham, S. A., Bassett, H. H., & Wyatt, T. (2007). The socialization of emotional competence. In J. Grusec & P. Hastings (Eds.), *The handbook of socialization* (pp. 614– 637). New York, NY: Guilford Press.

Denham, S., & Kochanoff, A. T. (2002). Parental contributions to preschoolers' understanding of emotion. *Marriage & Family Review*, *34*, 311–343. doi:10.1300/J002v34n03_06

Denham, S. A., Mitchell-Copeland, J., Strandberg, K., Auerbach, S., & Blair, K. (1997). Parental contributions to preschoolers' emotional competence: Direct and indirect effects. *Motivation and Emotion, 21*, 65–86. doi:10.1300/J002v34n03_06

Derogatis, L. R. (1983). *SCL-90-R: Administration, scoring & procedures manual-II for the R(evised) version.* Towson, MD: Clinical Psychometric Research.

Derogatis, L. R., & Unger, R. (2010). Symptom Checklist- 90- Revised. *Corsini encyclopedia of psychology,* 1–2. doi:10.1002/9780470479216.corpsy0970

Dougherty, L. R., Bufferd, S. J., Carlson, G. A., Dyson, M., Olino, T. M., Durbin, C. E., & Klein, D. N. (2011). Preschoolers' observed temperament and psychiatric disorders assessed with a parent diagnostic interview. *Journal of Clinical Child & Adolescent Psychology*, *40*, 295-306. doi:10.1080/15374416.2011.546046

Dougherty, L. R., Klein, D. N., Durbin, C. E., Hayden, E. P., & Olino, T. M. (2010). Temperamental positive and negative emotionality and children's depressive symptoms: A longitudinal prospective study from age three to age ten. *Journal of Social and Clinical Psychology, 29*, 462–488. doi:10.1521/jscp.2010.29.4.462

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: Implications for parent–child relationships and prevention research. *Clinical Child and Family Psychology Review*, *12*, 255–270. doi:10.1007/s10567-009-0046-3

Dunsmore, J. C., Booker, J. A., Ollendick, T. H., & Greene, R. W. (2016). Emotion socialization in the context of risk and psychopathology: Maternal emotion coaching predicts better treatment outcomes for emotionally labile children with oppositional defiant disorder. *Social Development, 25*, 8–26. doi:10.1111/sode.12109

Durbin, C. E., Hayden, E. P., Klein, D. N., & Olino, T. M. (2007). Stability of laboratory-assessed temperamental emotionality traits from ages 3 to 7. *Emotion, 7*, 388–399. doi:10.1037/1528-3542.7.2.388

Durbin, C. E., Klein, D. N., Hayden, E. P., Buckley, M. E., & Moerk, K. C. (2005). Temperamental emotionality in preschoolers and parental mood disorders. *Journal of Abnormal Psychology, 114*, 28–37. doi:10.1037/0021-843X.114.1.28

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9*, 241–273. doi:10.1207/s15327965pli0904_1

Eisenberg, N., & Fabes, R. A. (1994). Mothers' reactions to children's negative emotions: Relations to children's temperament and anger behavior. *Merrill-Palmer Quarterly*, *40*, 138–156.

Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology*, *78* 136–157. doi:10.1037/0022-3514.78.1.136

Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I. K., Murphy, B. C., & Reiser, M. (1999). Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development, 70*, 513–534. doi:10.1111/1467-8624.00037

Ellenbogen, M. A., & Hodgins, S. (2004). The impact of high neuroticism in parents on children's psychosocial functioning in a population at high risk for major affective disorder: A family–environmental pathway of intergenerational risk. *Development and Psychopathology, 16*, 113-136. doi:10.1017/S0954579404044438

Elovainio, M., Jokela, M., Rosenström, T., Pulkki-Råbäck, L., Hakulinen, C., Josefsson, K., … Keltikangas-Järvinen, L. (2015). Temperament and depressive symptoms: What is the direction of the association? *Journal of Affective Disorders*, *170*, 203–212. doi:10.1016/j.jad.2014.08.040

Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin*, *132*, 33–72. doi:10.1037/0033-2909.132.1.33

Enns, L. N., Barrieau, L. E., Stack, D. M., Serbin, L. A., Ledingham, J. E., & Schwartzman, A. E. (2016). Verbal and nonverbal communication in at-risk mother-child dyads:

Implications for relationship quality and developing positive social behaviours in middle-childhood. *European Journal of Developmental Psychology, 13*, 1-19. doi:10.1080/17405629.2015.1049153

Enns, L. N., & Stack, D. M. (2007). *Emotion Behavior Coding Scheme (EBCS)*. Unpublished document, Concordia University, Montreal, Quebec, Canada.

Fabes, R. A., Leonard, S. A., Kupanoff, K., & Martin, C. L. (2001). Parental coping with children's negative emotions: Relations with children's emotional and social responding. *Child Development, 72*, 907–920. doi:10.1111/1467-8624.00323

Fabes, R., Poulin, R., Eisenberg, N., & Madden-Derdich, D. A. (2002). The Coping with Children's Negative Emotions Scale (CCNES): Psychometric properties and relations with children's emotional competence. *Marriage & Family Review*, *34*, 285–310. doi:10.1300/J002v34n03_05

Feldman, R. S. (1997). *Development across the life span.* Upper Saddle River, NJ: Prentice Hall.

Feldman, R. S. (2003). Infant-mother and infant-father synchrony: The coregulation of positive arousal. *Infant Mental Health Journal, 24*, 1–23. doi:10.1002/imhj.10041

Feng, X., Shaw, D. S., Kovacs, M., Lane, T., O'Rourke, F. E., & Alarcon, J. H. (2008). Emotion regulation in preschoolers: the roles of behavioral inhibition, maternal affective behavior, and maternal depression. *Journal of Child Psychology and Psychiatry, 49*, 132–141.

Fischer, K. W., Shaver, P. R., & Carnochan, P. (1990). How emotions develop and how they organise development. *Cognition and Emotion*, *4*, 81-127. doi:10.1080/02699939008407142

Foster, P. A., Reese-Weber, M., & Kahn, J. H. (2007). Fathers' parenting hassles and coping: Associations with emotional expressiveness and their sons' socioemotional competence. *Infant and Child Development, 16*, 277–293. doi:10.1002/icd.507

Fox, N. A., Henderson, H. A., Rubin, K. H., Calkins, S. D., & Schmidt, L. A. (2001). Continuity and discontinuity of behavioral inhibition and exuberance: Psychophysiological and behavioral influences across the first four years of life. *Child Development, 72*, 1–21. doi:10.1111/1467-8624.00262

Franck, K. L., & Buehler, C. (2007). A family process model of marital hostility, parental depressive affect, and early adolescent problem behavior: The roles of triangulation and parental warmth. *Journal of Family Psychology, 21* 614–625. doi:10.1037/0893-3200.21.4.614

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218–226. doi:10.1098/rstb.2004.1512

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *359*, 1367–1378. doi:10.1098/rstb.2004.1512

Fredrickson, B. L., Mancuso, R. A., Branigan, C., & Tugade, M. M. (2000). The undoing effect of positive emotions. *Motivation and Emotion, 24*, 237–258.

Frodi, A., & Lamb, M. (1980). Child abusers' responses to infant smiles and cries. *Child Development, 51*, 238-241. doi:10.2307/1129612

Gagne, J. R., Spann, C. A., & Prater, J. C. (2013). Parent depression symptoms and child temperament outcomes: A family study approach. *Journal of Applied Biobehavioral Research*, *18*, 175–197. doi:10.1111/jabr.12013

Ganiban, J. M., Saudino, K. J., Ulbricht, J., Neiderhiser, J. M., & Reiss, D. (2008). Stability and change in temperament during adolescence. *Journal of Personality and Social Psychology*, *95*, 222–236. doi:10.1037/0022-3514.95.1.222

Garber, J., Keiley, M. K., & Martin, N. C. (2002). Developmental trajectories of adolescents' depressive symptoms: Predictors of change. *Journal of Consulting and Clinical Psychology*, *70*, 79-95. doi:10.1037/0022-006X.70.1.79

Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: Insights from the broaden-and-build theory and affective neuroscience on the treatment of emotion dysfunctions and deficits in psychopathology. *Clinical Psychology Review, 30*, 849–864. doi:10.1016/j.cpr.2010.03.002

Gartstein, M. A., Bridgett, D. J., Rothbart, M. K., Robertson, C., Iddins, E., Ramsay, K., & Schlect, S. (2010). A latent growth examination of fear development in infancy: Contributions of maternal depression and the risk for toddler anxiety. *Developmental Psychology, 46*, 651–668. doi:10.1037/a0018898

Gartstein, M. A., & Fagot, B. I. (2003). Parental depression, parenting and family adjustment, and child effortful control: Explaining externalizing behaviors for preschool children. *Journal of Applied Developmental Psychology, 24*, 143–177. doi:10.1016/S0193-3973(03)00043-1

Gentzler, A. L., Ramsey, M. A., & Black, K. R. (2015). Mothers' attachment styles and their children's self-reported security, as related to maternal socialization of children's positive affect regulation. *Attachment & Human Development, 17*, 376-398. doi:10.1080/14616734.2015.1055507

Ghassabian, A., Székely, E., Herba, C. M., Jaddoe, V. W., Hofman, A., Oldehinkel, A. J., … Tiemeier, H. (2014). From positive emotionality to internalizing problems: The role of executive functioning in preschoolers. *European Child & Adolescent Psychiatry, 23*, 729–741. doi:10.1007/s00787-014-0542-y

Gilbert, K. E. (2012). The neglected role of positive emotion in adolescent psychopathology. *Clinical Psychology Review*, *32*, 467–481. doi:10.1016/j.cpr.2012.05.005

Gjone, H., & Stevenson, J. (1997). A longitudinal twin study of temperament and behavior problems: Common genetic or environmental influences? *Journal of the American Academy of Child & Adolescent Psychiatry, 36*, 1448-1456. doi:10.1097/00004583-199710000-00028

Goldsmith, H. H., Buss, A. H., Plomin, R., Rothbart, M. K., Thomas, A., Chess, S., ... McCall , R. B. (1987). What is temperament? Four approaches. *Child Development, 58*, 505–529. doi:10.2307/1130527

Goldsmith, H. H., & Campos, J. J. (1990). The structure of temperamental fear and pleasure in infants: A psychometric perspective. *Child Development*, *61*, 1944–1964. doi:10.2307/1130849

Gondoli, D. M., Silverberg, S. B., (1997). Maternal emotional distress and diminished responsiveness: The mediating role of parenting efficacy and parental perspective taking. *Developmental Psychology. 33*, 861–868. doi:10.1037/0012-1649.33.5.861

Goodenough, F. L. (1931). *Anger in young children*. Minneapolis, MN: University of Minnesota Press.

Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., & Heyward, D. (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review, 14*, 1–27. doi:10.1007/s10567-010-0080-1

Gottman, J. M., Katz, L. F., & Hooven, C. (1996). Parental meta-emotion philosophy and the emotional life of families: Theoretical models and preliminary data. *Journal of Family Psychology, 10*, 243–268. doi:10.1037/0893-3200.10.3.243

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology, 60*, 549-576. doi:10.1146/annurev.psych.58.110405.085530

Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science, 8*, 206–213. doi:10.1007/s11121-007-0070-9

Graham, J. W., & Schafer, J. L. (1999). On the performance of multiple imputation for multivariate data with small sample size. In R. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 1-29). Thousand Oaks, CA: Sage.

Greene, A. L. (1990). Patterns of affectivity in the transition to adolescence. *Journal of Experimental Child Psychology, 50*, 340-356. doi:10.1016/0022-0965(90)90074-I

Gruber, J. (2011). Can feeling too good be bad: Positive emotion persistence (PEP) in bipolar disorder. *Current Directions in Psychological Science, 20*, 217–221. doi:10.1177/0963721411414632

Guerin, D. W., Gottfried, A. W., & Thomas, C. W. (1997). Difficult temperament and behaviour problems: A longitudinal study from 1.5 to 12 years. *International Journal of Behavioral Development, 21*, 71-90. doi:10.1080/016502597384992

Gumora, G., & Arsenio, W. F. (2002). Emotionality, emotion regulation, and school performance in middle school children. *Journal of School Psychology*, *40*, 395–413. doi:10.1016/S0022-4405(02)00108-5

Gurian, A. (1987). Depression in young girls: Early sorrows and depressive disorders. In R. Formanek & A. Gurian (Eds.), *Women and depression: A lifespan perspective* (pp. 57–84). New York: Springer.

Hagan, M. J., Luecken, L. J., Modecki, K. L., Sandler, I. N., & Wolchik, S. A. (2016). Childhood negative emotionality predicts biobehavioral dysregulation fifteen years later. *Emotion*, *16* 877–885. doi:10.1037/emo0000161

Halberstadt, A. G., Crisp, V. W., & Eaton, K. L. (1999). Family expressiveness: A retrospective and new directions for research. In P. Philippot & R. S. Feldman (Eds.), *Social context of nonverbal behavior* (pp. 109–155). New York, NY: Cambridge University Press.

Han, Z. R., Qian, J., Gao, M., & Dong, J. (2015). Emotion socialization mechanisms linking Chinese fathers', mothers', and children's emotion regulation: A moderated mediation model. *Journal of Child and Family Studies, 24*, 3570–3579. doi:10.1007/s10826-015-0158-y

Hanington, L., Ramchandani, P., & Stein, A. (2010). Parental depression and child temperament: Assessing child to parent effects in a longitudinal population study. *Infant Behavior & Development, 33*, 88–95. doi:10.1016/j.infbeh.2009.11.004

Harris, P. L. (2008). Children's understanding of emotion. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions,* (3rd ed., pp. 320–331). New York, NY: Guilford Press.

Hastings, P. D., Klimes-Dougan, B., Kendziora, K. T., Brand, A., & Zahn-Waxler, C. (2014). Regulating sadness and fear from outside and within: Mothers' emotion socialization and adolescents' parasympathetic regulation predict the development of internalizing difficulties. *Development and Psychopathology*, *26*, 1369–1384. doi:10.1017/S0954579414001084

Havighurst, S. S., Kehoe, C. E., & Harley, A. E. (2015). Tuning in to teens: Improving parental responses to anger and reducing youth externalizing behavior problems. *Journal of Adolescence*, *42*, 148–158. doi:10.1016/j.adolescence.2015.04.005

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Holder, M. D., & Klassen, A. (2010). Temperament and happiness in children. *Journal of Happiness Studies, 11* 419-439. doi:10.1007/s10902-009-9149-2

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. doi:10.1080/10705519909540118

Hughes, E. K., & Gullone, E. (2010). Parent emotion socialisation practices and their associations with personality and emotion regulation. *Personality and Individual Differences, 49*, 694–699. doi:10.1016/j.paid.2010.05.042

Hurrell, K. E., Hudson, J. L., & Schniering, C. A. (2015). Parental reactions to children's negative emotions: Relationships with emotion regulation in children with an anxiety disorder. *Journal of Anxiety Disorders, 29*, 72–82. doi:10.1016/j.janxdis.2014.10.008

Hooper, E., Feng, X., Christian, L., & Slesnick, N. (2015). Emotion expression, emotionality, depressive symptoms, and stress: Maternal profiles related to child outcomes. *Journal of Abnormal Child Psychology, 43*, 1319–1331. doi:10.1007/s10802-015-0019-6

Isley, S., O'Neil, R., Clatfelter, D., & Parke, R. D. (1999). Parent and child expressed affect and children's social competence: Modeling direct and indirect pathways. *Developmental Psychology, 35*, 547–560. doi:10.1037/0012-1649.35.2.547

Izard, C. E. (1997). Emotions and facial expressions: A perspective from Differential Emotions Theory. In J. A. Russell & J. M. Fernández-Dols (Eds.), *The psychology of facial expression* (pp. 57-77). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511659911.005

Izard, C. E. (2009). Emotion theory and research: Highlights, unanswered questions, and emerging issues. *Annual Review of Psychology, 60,* 1–25. doi:10.1146/annurev.psych.60.110707.163539

Johnson, A. M., Hawes, D. J., Eisenberg, N., Kohlhoff, J., & Dudeney, J. (2017). Emotion socialization and child conduct problems: A comprehensive review and meta-analysis. *Clinical Psychology Review, 54*, 65–80. doi :10.1016/j.cpr.2017.04.001

Jones, S., Eisenberg, N., Fabes, R. A., & MacKinnon, D. P. (2002). Parents' reactions to elementary school children's negative emotions: Relations to social and emotional functioning at school. *Merrill-Palmer Quarterly, 48*, 133–159. doi:10.1353/mpq.2002.0007

Kagan, J., Reznick, J. S., Snidman, N., Gibbons, J., & Johnson, M. O. (1988). Childhood derivatives of inhibition and lack of inhibition to the unfamiliar. *Child Development, 59*, 1580–1589. doi:10.2307/1130672

Kane, P., & Garber, J. (2004). The relations among depression in fathers, children's psychopathology, and father-child conflict: A meta-analysis. *Clinical Psychology Review*, *24*, 339–360. doi:10.1016/j.cpr.2004.03.004

Karevold, E., Røysamb, E., Ystrom, E., & Mathiesen, K. S. (2009). Predictors and pathways from infancy to symptoms of anxiety and depression in early adolescence. *Developmental Psychology, 45*, 1051-1060. doi:10.1037/a0016123

Kashdan, T. B. (2007). Social anxiety spectrum and diminished positive experiences: Theoretical synthesis and meta-analysis. *Clinical Psychology Review, 27*, 348–365. doi:10.1016/j.cpr.2006.12.003

Katz, L. F., Shortt, J. W., Allen, N. B., Davis, B., Hunter, E., Leve, C., & Sheeber, L. (2014). Parental emotion socialization in clinically depressed adolescents: Enhancing and dampening positive affect. *Journal of Abnormal Child Psychology, 42*, 205–215. doi:10.1007/s10802-013-9784-2

Keefe, F. J., Lefebvre, J. C., Egert, J. R., Affleck, G., Sullivan, M. J., & Caldwell, D. S. (2000). The relationship of gender to pain, pain behavior, and disability in osteoarthritis patients: The role of catastrophizing. *Pain, 87*, 325–334. doi:10.1016/S0304-3959(00)00296-7

Kehoe, C. E., Havighurst, S. S., & Harley, A. E. (2014). Tuning in to teens: Improving parent emotion socialization to reduce youth internalizing difficulties. *Social Development*, *23*, 413–431. doi:10.1111/sode.12060

Keiley, M. K., Lofthouse, N., Bates, J. E., Dodge, K. A., & Pettit, G. S. (2003). Differential risks of covarying and pure components in mother and teacher reports of externalizing and internalizing behavior across ages 5 to 14. *Journal of Abnormal Child Psychology, 31*, 267–283. doi:10.1023/A:1023277413027

Khazanov, G. K., & Ruscio, A. M. (2016). Is low positive emotionality a specific risk factor for depression? A meta-analysis of longitudinal studies. *Psychological Bulletin, 142*, 991–1015. doi:10.1037/bul0000059

Kim, K. J., Conger, R. D., Lorenz, F. O., & Elder Jr., G. H. (2001). Parent–adolescent reciprocity in negative affect and its relation to early adult social development. *Developmental Psychology, 37*, 775–790. doi:10.1037//0012-1649.37.6.775

Kim, G., Walden, T., Harris, V., Karrass, J., & Catron, T. (2007). Positive emotion, negative emotion, and emotion control in the externalizing problems of school-aged children. *Child Psychiatry and Human Development*, *37*, 221–239. doi:10.1007/s10578-006-00318

Klein, D. N., Dyson, M. W., Kujawa, A. J., & Kotov, R. (2012). Temperament and internalizing disorders. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 541–561). New York, NY: Guilford Press.

Klimes-Dougan, B., Brand, A. E., Zahn-Waxler, C., Usher, B., Hastings, P. D., Kendziora, K., & Garside, R. B. (2007). Parental emotion socialization in adolescence: Differences in sex, age and problem status. *Social Development, 16*, 326–342. doi:10.1111/j.1467-9507.2007.00387.x

Klimes-Dougan, B., & Zeman, J. (2007). Introduction to the special issue of Social Development: Emotion socialization in childhood and adolescence. *Social Development, 16*, 203–209. doi:10.1111/j.1467-9507.2007.00380.x

Kline, R. B. (2009). *Becoming a behavioral science researcher: A guide to producing research that matters.* New York, NY: Guilford Press.

Kochanska, G. (1997). Mutually responsive orientation between mothers and their young children: Implications for early socialization. *Child Development, 68*, 94–112. doi:10.2307/1131928

Kochanska, G., Friesenborg, A. E., Lange, L. A., & Martel, M. M. (2004). Parents' personality and infants' temperament as contributors to their emerging relationship. *Journal of Personality and Social Psychology, 86*, 744–759. doi:10.1037/0022-3514.86.5.744

Koerner, K., & Linehan, M. M. (1992). Integrative therapy for borderline personality disorder: Dialectical behavior therapy. In J. C. Norcross & M. R. Goldfried (Eds.), *Handbook of psychotherapy integration* (pp. 433–459). New York, NY: Basic Books

Kopala-Sibley, D. C., Danzig, A. P., Kotov, R., Bromet, E. J., Carlson, G. A., Olino, T. M., ... Klein, D. N. (2016). Negative emotionality and its facets moderate the effects of exposure to Hurricane Sandy on children's postdisaster depression and anxiety symptoms. *Journal of Abnormal Psychology, 125*, 471-481. doi:10.1037/abn0000152

Kovacs, M., & Devlin, B. (1998). Internalizing disorders in childhood. *Journal of Child Psychology and Psychiatry, 39*, 47–63. doi:10.1017/S0021963097001765

Kovacs, M., & Lopez-Duran, N. (2010). Prodromal symptoms and atypical affectivity as predictors of major depression in juveniles: Implications for prevention. *Journal of Child Psychology and Psychiatry, 51*, 472–496. doi:10.1111/j.1469-7610.2010.02230.x

Kovan, N., Chung, A., & Sroufe, L. (2009). The intergenerational continuity of observed early parenting: A prospective, longitudinal study. *Developmental Psychology, 45*, 1205–1213. doi:10.1037/a0016542

Krause, E. D., Mendelson, T., & Lynch, T. R. (2003). Childhood emotional invalidation and adult psychological distress: The mediating role of emotional inhibition. *Child Abuse & Neglect, 27*, 199-213. doi:10.1016/S0145-2134(02)00536-7

Kurdek, L. A. (2003). Correlates of parents' perceptions of behavioral problems in their young children. *Journal of Applied Developmental Psychology, 24*, 457–473. doi:10.1016/S0193-3973(03)00071-6

Ladouceur, C., Reid, L., & Jacques, A. (2002). Construction and validation of the Parents' Reaction to Children's Positive Emotions Scale. *Canadian Journal of Behavioural Science, 31*, 8–18.

Lahey, B. B. (2004). Commentary: Role of Temperament in Developmental Models of Psychopathology. *Journal of Clinical Child & Adolescent Psychology*, *33*, 88–93. http://doi.org/10.1207/S15374424JCCP3301

Lamb, M. E., & Lewis, C. (2013). Father-child relationships. In N. J. Cabrera & C. S. Tamis-LeMonda (Eds.), *Handbook of father involvement: Multidisciplinary perspectives* (2nd ed., pp. 119–134). New York, NY: Routledge.

Laptook, R. S., Klein, D. N., Durbin, C. E., Hayden, E. P., Olino, T. M., & Carlson, G. (2008). Differentiation between low positive affectivity and behavioral inhibition in preschool-age children: A comparison of behavioral approach in novel and non-novel contexts. *Personality and Individual Differences*, *44*, 758–767. doi:10.1016/j.paid.2007.10.010

Larsen, J. T., & McGraw, A. P. (2011). Further evidence for mixed emotions. *Journal of Personality and Social Psychology, 100*, 1095–1110. doi:10.1037/ a0021846

Larson, R. W., Moneta, G., Richards, M. H., & Wilson, S. (2002). Continuity, stability, and change in daily emotional experience across adolescence. *Child Development, 73*, 1151–1165. doi:10.1111/1467-8624.00464

Larson, R., & Richards, M. H. (1994). *Divergent realities: The emotional lives of mothers, fathers, and adolescents.* New York, NY: Basic Books.

Laurent, H., & Powers, S. (2007). Emotion regulation in emerging adult couples: Temperament, attachment, and HPA response to conflict. *Biological Psychology*, *76*, 61-71. doi:10.1016/j.biopsycho.2007.06.002

Lengua, L. J. (2003). Associations among emotionality, self-regulation, adjustment problems, and positive adjustment in middle childhood. *Journal of Applied Developmental Psychology, 24*, 595–618. doi:10.1016/j.appdev.2003.08.002

Lengua, L. J., & Kovacs, E. A. (2005). Bidirectional associations between temperament and parenting and the prediction of adjustment problems in middle childhood. *Journal of Applied Developmental Psychology, 26*, 21–38. doi:10.1016/j.appdev.2004.10.001

Lengua, L. J., Sandler, I. N., West, S. G., Wolchik, S. A., & Curran, P. J. (1999). Emotionality and self-regulation, threat appraisal, and coping in children of divorce. *Development and Psychopathology, 11*, 15-37. doi:10.1017/S0954579499001935

Lerner, J. V. (1993). The influence of child temperamental characteristics on parent behaviors. In T. Luster & L. Okagaki (Eds.), *Parenting: An ecological perspective* (pp. 101–120). Hillsdale, NJ: Erlbaum.

Leung, D. W., & Slep, A. S. (2006). Predicting inept discipline: The role of parental depressive symptoms, anger, and attributions. *Journal of Consulting and Clinical Psychology, 74*, 524–534. doi:10.1037/0022-006X.74.3.524

Leve, L. D., DeGarmo, D. S., Bridgett, D. J., Neiderhiser, J. M., Shaw, D. S., Harold, G. T., ... Reiss, D. (2013). Using an adoption design to separate genetic, prenatal, and temperament influences on toddler executive function. *Developmental Psychology*, *49*, 1045-1057. doi:10.1037/a0029390

Linehan, M. M. (1993). *Cognitive behavioural therapy of borderline personality disorder*. New York, NY: Guilford Press.

Lougheed, J. P., Craig, W. M., Pepler, D., Connolly, J., O'Hara, A., Granic, I., & Hollenstein, T. (2016). Maternal and peer regulation of adolescent emotion: Associations with depressive symptoms. *Journal of Abnormal Child Psychology, 44*, 963–974. doi:10.1007/s10802-015-0084-x

Lunkenheimer, E. S., Shields, A. M., & Cortina, K. S. (2007). Parental emotion coaching and dismissing in family interaction. *Social Development, 16*, 232–248. doi:10.1111/j.1467-9507.2007.00382.x

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*, 803–855. doi:10.1037/0033-2909.131.6.803

Maccoby, E. E., & Martin, J. (1983). Socialization in the context of the family: Parent-child interaction. In E. M. Hetherington (Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality and social development* (pp. 1-101). New York, NY: Plenum Press.

Magai, C. (1996). *Emotions as a Child: Adult Version*. Unpublished scale, Long Island University, Brooklyn, New York, US.

Malatesta, C. Z., Grigoryev, P., Lamb, C., Albin, M., & Culver, C. (1986). Emotion socialization and expressive development in preterm and full-term infants. *Child Development, 57*, 316–330. doi:10.2307/1130587

Mangold. (2010). INTERACT (Version 9) [Computer software]. Arnstorf, Germany: Mangold.

Marakovitz, S. E., Wagmiller, R. L., Mian, N. D., Briggs-Gowan, M. J., & Carter, A. S. (2011). Lost toy? Monsters under the bed? Contributions of temperament and family factors to early internalizing problems in boys and girls. *Journal of Clinical Child and Adolescent Psychology, 40*, 233–244. doi:10.1080/15374416.2011.546036

Martin, J. P., Stack, D. M., Serbin, L. A., Schwartzman, A. E., & Ledingham, J. (2012). Social problem solving in high-risk mother-child dyads: An intergenerational study. *Social Development, 21*, 47-67. doi:10.1111/j.1467-9507.2011.00600.x

Mathiesen, K. S., & Tambs, K. (1999). The EAS Temperament Questionnaire - factor structure, age trends, reliability, and stability in a Norwegian sample. *Journal of Child Psychology and Psychiatry*, *40*, 431–439. doi:10.1111/1469-7610.00460

Metsäpelto, R. L., & Pulkkinen, L. (2003). Personality traits and parenting: Neuroticism, extraversion, and openness to experience as discriminative factors. *European Journal of Personality, 17*, 59–78. doi:10.1002/per.468

Mervielde, I., & De Pauw, S. S. W. (2012). Models of child temperament. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 21–40). New York, NY: Guilford Press

Mills, R. S. L., Hastings, P. D., Helm, J., Serbin, L. a., Etezadi, J., Stack, D. M., … Li, H. H. (2012). Temperamental, parental, and contextual contributors to early-emerging internalizing problems: A new integrative analysis approach. *Social Development, 21*, 229–253. doi:10.1111/j.1467-9507.2011.00629.x

Mirabile, S. P. (2014). Parents' inconsistent emotion socialization and children's socioemotional adjustment. *Journal of Applied Developmental Psychology, 35*, 392–400. doi:10.1016/j.appdev.2014.06.003

Moed, A., Gershoff, E. T., Eisenberg, N., Hofer, C., Losoya, S., Spinrad, T. L., & Liew, J. (2015). Parent–adolescent conflict as sequences of reciprocal negative emotion: Links with conflict resolution and adolescents' behavior problems. *Journal of Youth and Adolescence, 44*, 1607–1622. doi: 10.1007/s10964-014-0209-5.

Morales, S., Pérez- Edgar, K., & Buss, K. (2016). Longitudinal relations among exuberance, externalizing behaviors, and attentional bias to reward: The mediating role of effortful control. *Developmental science, 19*, 853-862. doi:10.1111/desc.12320

Müller, J. M., Romer, G., & Achtergarde, S. (2014). Correction of distortion in distressed mothers' ratings of their preschool-aged children's Internalizing and Externalizing scale score. *Psychiatry Research, 215*, 170-175. doi:10.1016/j.psychres.2013.10.035

Muthén, B. O., & Muthén, L. K. (2010). Mplus (Version 6.00) [Computer software]. Los Angeles: Authors.

Nelis, S., Bastin, M., Raes, F., Mezulis, A., & Bijttebier, P. (2016). Trait affectivity and response styles to positive affect: Negative affectivity relates to dampening and positive affectivity relates to enhancing. *Personality and Individual Differences, 96*, 148–154. doi:10.1016/j.paid.2016.02.087

Nelson, J. A., Leerkes, E. M., Perry, N. B., O'Brien, M., Calkins, S. D., & Marcovitch, S. (2013). European-American and African-American mothers' emotion socialization practices relate differently to their children's academic and social-emotional competence. *Social Development*, *22*, 485–498. doi:10.1111/j.1467-9507.2012.00673.x

Neppl, T. K., Donnellan, M. B., Scaramella, L. V., Widaman, K. F., Spilman, S. K., Ontai, L. L., & Conger, R. D. (2010). Differential stability of temperament and personality from toddlerhood to middle childhood. *Journal of Research in Personality*, *44*, 386–396. doi:10.1016/j.jrp.2010.04.004

Neumann, A., van Lier, P. A. C., Gratz, K. L., & Koot, H. M. (2011). Multidimensional assessment of emotion regulation difficulties in adolescents using the Difficulties in Emotion Regulation Scale. *Assessment, 17*, 138–149. doi:10.1177/1073191109349579

Nigg, J. T. (2006). Temperament and developmental psychopathology. *Journal of Child Psychology and Psychiatry, 47*, 395-422. doi:10.1111/j.1469-7610.2006.01612.x

Oldehinkel, A. J., Hartman, C. a, De Winter, A. F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology*, *16*, 421–440. doi:10.1017/S0954579404044591

Olino, T. M., Klein, D. N., Dyson, M. W., Rose, S. A., & Durbin, C. E. (2010). Temperamental emotionality in preschool-aged children and depressive disorders in parents: Associations in a large community sample. *Journal of Abnormal Psychology, 119,* 468–478. doi:10.1037/a0020112

Olson, S. L., Sameroff, A. J., Kerr, D. C. R., Lopez, N. L., & Wellman, H. M. (2005). Developmental foundations of externalizing problems in young children: The role of effortful control. *Development and Psychopathology, 17*, 25–45. doi:10.1017/S0954579405050029

O'Neal, C. R., & Magai, C. (2005). Do parents respond in different ways when children feel different emotions? The emotional context of parenting. *Development and Psychopathology, 17*, 467–487. doi:10.1017/S0954579405050224

Ong, A. D., & Allaire, J. C. (2005). Cardiovascular intraindividual variability in later life: The influence of social connectedness and positive emotions. *Psychology and Aging, 20*, 476–485. doi:10.1037/0882-7974.20.3.476

Papp, L. M., Cummings, E. M., Goeke-Morey, M. C. (2005). Parental psychological distress, parent–child relationship qualities, and child adjustment: Direct, mediating, and reciprocal pathways. *Parenting: Science and Practice, 5*, 259–283. doi:10.1207/s15327922par0503_2

Parent, J., McKee, L. G., N. Rough, J., & Forehand, R. (2016). The association of parent mindfulness with parenting and youth psychopathology across three developmental stages. *Journal of Abnormal Child Psychology*, *44*, 191–202. doi:10.1007/s10802-015-9978-x

Parke, R. D., & O'Leary, S. (1976). Father–mother–infant interaction in the newborn period: Some findings, some observations, and some unresolved issues. In K. Riegel & J. Meacham (Eds.), *The developing individual in a changing world: Vol. 2. Environmental issues* (pp. 653–663). The Hague, The Netherlands: Mouton.

Pauli-Pott, U., Mertesacker, B., Bade, U., Bauer, C., & Beckmann, D. (2000). Contexts of relations of infant negative emotionality to caregiver's reactivity/sensitivity. *Infant Behavior and Development, 23*, 23–39. doi:10.1016/S0163-6383(00)00029-1

Paulussen-Hoogeboom, M. C., Stams, G. J. J. M., Hermanns, J. M. A, & Peetsma, T. T. D. (2007). Child negative emotionality and parenting from infancy to preschool: A meta-

analytic review. *Developmental Psychology, 43*, 438–453. doi:10.1037/0012-1649.43.2.438

Perry, N. B., Calkins, S. D., Nelson, J. A., Leerkes, E. M., & Marcovitch, S. (2012). Mothers' responses to children's negative emotions and child emotion regulation: The moderating role of vagal suppression. *Developmental Psychobiology, 54*, 503–513. doi:10.1002/dev.20608

Potapova, N. V., Gartstein, M. a., & Bridgett, D. J. (2014). Paternal influences on infant temperament: Effects of father internalizing problems, parenting-related stress, and temperament. *Infant Behavior and Development*, *37*, 105–110. doi:10.1016/j.infbeh.2013.12.014

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891. doi:10.3758/BRM.40.3.879

Premo, J. E., & Kiel, E. J. (2016). Maternal depressive symptoms, toddler emotion regulation, and subsequent emotion socialization. *Journal of Family Psychology*, *30*, 276–285. doi:10.1037/fam0000165

Prinzie, P., Deković, M., van den Akker, A. L., de Haan, A. D., Stoltz, S. E. M. J., & Jolijn Hendriks, A. A. (2012). Fathers' personality and its interaction with children's personality as predictors of perceived parenting behavior six years later. *Personality and Individual Differences, 52*, 183–189. doi:10.1016/j.paid.2011.10.012

Prinzie, P., Stams, G. J. J. M., Deković, M., Reijntjes, A. H. a, & Belsky, J. (2009). The relations between parents' Big Five personality factors and parenting: a meta-analytic review. *Journal of Personality and Social Psychology, 97*, 351–362. doi:10.1037/a0015823

Prior, M. (1992). Childhood temperament. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 33*, 249–279. doi:10.1111/j.1469-7610.1992.tb00863.x

Propper, C., & Moore, G. A. (2006). The influence of parenting on infant emotionality: A multi-level psychobiological perspective. *Developmental Review, 26*, 427–460. doi:10.1016/j.dr.2006.06.003

Putnam, S. P. (2012). Positive Emotionality. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 105–123). New York, NY: Guilford Press.

Putnam, S. P., & Stifter, C. A. (2005). Behavioral approach-inhibition in toddlers: Prediction from infancy, positive and negative affective components, and relations with behavior problems. *Child Development, 76*, 212–226. doi:10.1111/j.1467-8624.2005.00840.x

Ramsey, M. A., & Gentzler, A. L. (2015). An upward spiral: Bidirectional associations between positive affect and positive aspects of close relationships across the life span. *Developmental Review, 36*, 58–104. doi:10.1016/j.dr.2015.01.003

Ransom, D., Ashton, K., Windover, A., & Heinberg, L. (2010). Internal consistency and validity assessment of SCL-90-R for bariatric surgery candidates. *Surgery for Obesity and Related Diseases, 6*(6), 622-627. doi:10.1016/j.soard.2010.02.039

Rhee, S. H., Cosgrove, V. E., Schmitz, S., Haberstick, B. C., Corley, R. C., & Hewitt, J. K. (2007). Early childhood temperament and the covariation between internalizing and externalizing behavior in school-aged children. *Twin Research and Human Genetics*, *10*, 33–44. doi:10.1375/twin.10.1.33

Rijlaarsdam, J., Stevens, G. W. J. M., Van Der Ende, J., Hofman, A., Jaddoe, V. W. V, MacKenbach, J. P., … Tiemeier, H. (2013). Economic disadvantage and young children's

emotional and behavioral problems: Mechanisms of risk. *Journal of Abnormal Child Psychology, 41*, 125–137. doi:10.1007/s10802-012-9655-2

Ritchie, T. D., & Bryant, F. B. (2012). Positive state mindfulness: A multidimensional model of mindfulness in relation to positive experience. *International Journal of Wellbeing*, *2*, 150-181.doi:10.5502/ijw.v2.i3.1

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological Bulletin*. doi:10.1037/0033-2909.126.1.3

Root, A. K., & Denham, S. A. (2010). The role of gender in the socialization of emotion: Key concepts and critical issues. In A. K. Root & S. A. Denham (Eds.), *The role of gender in the socialization of emotion: Key concepts and critical issues.* (pp. 1–9). San Francisco, CA: Jossey-Bass. doi:10.1002/cd .265

Roque, L., & Veríssimo, M. (2011). Emotional context, maternal behavior and emotion regulation. *Infant Behavior & Development, 34*, 617-626. doi:10.1016/j.infbeh.2011.06.002

Rothbart, M. K. (1989). Temperament in childhood: A framework. In G. Kohnstamm, J. Bates, M. K. Rothbart (Eds.), *Handbook of temperament in childhood* (pp. 59–73). New York, NY: Wiley.

Rothbart, M. K. (2011). *Becoming who we are: Temperament and personality in development*. New York, NY: Guilford Press.

Rothbart, M. K., Ahadi, S. A., & Hershey, K. L. (1994). Temperament and social behavior in childhood. *Merrill Palmer Quarterly, 40*, 21–39.

Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional and personality development* (5th ed., pp. 37–86). New York, NY: Wiley.

Rothbart, M. K., & Bates, J. E. (2006). Temperament in children's development. In W. Damon, R. Lerner, & N. Eisenberg (Eds.), *Handbook of child psychology, Vol. 3. Social, emotional, and personality development* (6th ed.). New York, NY: Wiley.

Rottenberg, J., Gross, J. J., & Gotlib, I. H. (2005). Emotion context insensitivity in major depressive disorder. *Journal of Abnormal Psychology, 114*, 627–639. doi:10.1037/0021-843X.114.4.627

Ruocco, A. C., Amirthavasagam, S., Choi-Kain, L. W., & McMain, S. F. (2013). Neural correlates of negative emotionality in borderline personality disorder: An activation-likelihood-estimation meta-Analysis. *Biological Psychiatry*, *73*, 153–160. doi:10.1016/j.biopsych.2012.07.014

Rydell, A.-M., Berlin, L., & Bohlin, G. (2003). Emotionality, emotion regulation, and adaptation among 5- to 8-year-old children. *Emotion*, *3*, 30–47. doi:10.1037/1528-3542.3.1.30

Sallquist, J., Eisenberg, N., Spinrad, T. L., Gaertner, B. M., Eggum, N. D., & Zhou, N. (2010). Mothers' and children's positive emotion: Relations and trajectories across four years. *Social Development, 19*, 799–821. doi:10.1111/j.1467-9507.2009.00565.x

Sallquist, J. V., Eisenberg, N., Spinrad, T. L., Reiser, M., Hofer, C., Liew, J., … Eggum, N. D. (2009). Positive and Negative Emotionality: Trajectories Across Six Years and Relations With Social Competence. *Emotion, 9*, 15–28. doi:10.1037/a0013970.Positive

Sameroff, A. (1975). Transactional models in early social relations. *Human Development, 18*, 65–79. doi:10.1159/000271476

Sanders, W., Zeman, J., Poon, J., & Miller, R. (2015). Child regulation of negative emotions and depressive symptoms: The moderating role of parental emotion socialization. *Journal of Child and Family Studies, 24*, 402-415. doi:10.1007/s10826-013-9850-y

Schofield, T. J., Conger, R. D., Donnellan, M. B., Jochem, R., & Conger, K. J. (2012). Parent personality and positive parenting as predictors of positive adolescent personality development over time. *Merrill-Palmer Quarterly, 58*, 255–283. doi:10.1353/mpq.2012.0008.

Schwartz, O. S., Dudgeon, P., Sheeber, L. B., Yap, M. B. H., Simmons, J. G., & Allen, N. B. (2012). Parental behaviors during family interactions predict changes in depression and anxiety symptoms during adolescence. *Journal of Abnormal Child Psychology, 40*, 59-71. doi:10.1007/s10802-011-9542-2

Schwartzman, A. E., Ledingham, J. E., & Serbin, L. A. (1985). Identification of children at risk for adult schizophrenia: A longitudinal study. *Applied Psychology, 34*, 363-379. doi:10.1111/j.1464-0597.1985.tb01333.x

Scrimgeour, M. B., Davis, E. L., & Buss, K. A. (2015). You get what you get and you don't throw a fit!: Emotion socialization and child physiology jointly predict early prosocial development. *Developmental Psychology, 52*, 102-116. doi:10.1037/dev0000071

Serbin, L. A., Cooperman, J. M., Peters, P. L., Lehoux, P. M., Stack, D. M., & Schwartzman, A. E. (1998). Intergenerational transfer of psychosocial risk in women with childhood histories of aggression, withdrawal, or aggression and withdrawal. *Developmental Psychology, 34*, 1246. doi:10.1037/0012-1649.34.6.1246

Shaw, D. S., Keenan, K., Vondra, J. I., Delliquadri, E., & Giovannelli, J. (1997). Antecedents of preschool children's internalizing problems: A longitudinal study of low-income families.

Journal Of The American Academy Of Child & Adolescent Psychiatry, 36, 1760-1767. doi:10.1097/00004583-199712000-00025

Sheeber, L., Davis, B., & Hops, H. (2002). Gender-specific vulnerability to depression in children of depressed mothers. In S. H. Goodman & I. H. Gotlib (Eds.), Children of depressed parents: Mechanisms of risk and implications for treatment (pp. 253–274). Washington, DC: APA Books.

Shenk, C. E., & Fruzzetti, A. E. (2011). The impact of validating and invalidating responses on emotional reactivity. *Journal of Social & Clinical Psychology, 30*, 163–183. doi:10.1521/jscp.2011.30.2.163

Shiner, R. L., & DeYoung, C. G. (2013). The Structure of Temperament and Personality Traits. In P. D. Zelazo (Ed.), *The Oxford handbook of developmental psychology, Vol. 2: Self and other* (pp. 113–141). New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780199958474.013.0006

Shortt, J. W., Katz, L. F., Allen, N. B., Leve, C., Davis, B., & Sheeber, L. B. (2016). Emotion socialization in the context of risk and psychopathology: Mother and father socialization of anger and sadness in adolescents with depressive disorder. *Social Development*, *25*, 27–46. doi:10.1111/sode.12138

Silk, J. S., Shaw, D. S., Forbes, E. E., Lane, T. L., & Kovacs,M. (2006). Maternal depression and child internalizing: The moderating role of child emotion regulation. *Journal of Clinical Child & Adolescent Psychology, 35*, 116–126. doi:10.1207/s15374424jccp3501_10

Silk, J. S., Shaw, D. S., Prout, J. T., O'Rourke, F., Lane, T. J., & Kovacs, M. (2011). Socialization of emotion and offspring internalizing symptoms in mothers with

childhood-onset Depression. *Journal of Applied Developmental Psychology*, *32*, 127–136. doi:10.1016/j.appdev.2011.02.001

Spence, R., Owens, M., & Goodyer, I. (2013). The longitudinal psychometric properties of the EAS temperament survey in adolescence. *Journal of Personality Assessment, 95*, 633–639. doi:10.1080/00223891.2013.819513

Sroufe, L. A., Schork, E., Motti, F., Lawroski, N., & LaFreniere, P. (1985). The role of affect in social competence. In C. E. Izard, J. Kagan, & R. B. Zajonc (Eds.*).Emotions, cognition, and behavior* (pp. 289–319). New York, NY: Cambridge University Press.

Stack, D.M., Serbin, L.A., Mantis, I., & Kingdon, D. (2015). Breaking the cycle of adversity in vulnerable children and families: A thirty-five year study of at-risk lower income families. *International Journal for Family Research and Policy, 1*, 31-56.

Stack, D.M., Serbin, L.A., Matte-Gagné, C., Kingdon, D., Doiron, K., & Schwartzman, A.E. (in press). Development under adverse circumstances as a risk for psychopathology: An intergenerational study of children from disadvantaged high-risk backgrounds. In L.M. Centifanti and D. Williams (Eds.), *The handbook of developmental psychopathology.* Chichester, UK: Wiley-Blackwell.

Sterba, S. K., Prinstein, M. J., & Cox, M. J. (2007). Trajectories of internalizing problems across childhood: Heterogeneity, external validity, and gender differences. *Development and Psychopathology, 19*, 345-366. doi:10.1017/S0954579407070174

Stepp, S. D., Whalen, D. J., Pilkonis, P. a, Hipwell, A. E., & Levine, M. D. (2012). Children of mother with borderline personality disorder: Identifying parenting behaviors as potential targets for intervention. *Personality Disorders*, *3*, 76–91. doi:10.1037/a0023081

Stifter, C. A., Putnam, S., & Jahromi, L. (2008). Exuberant and inhibited toddlers: Stability of temperament and risk for problem behavior. *Development and psychopathology*, *20*, 401-421. doi:10.1017/S0954579408000199

Stright, A. D., Gallagher, K. C., & Kelley, K. (2008). Infant temperament moderates relations between maternal parenting in early childhood and children's adjustment in first grade. *Child Development, 79*, 186-200. doi:10.1111/j.1467-8624.2007.01119.x

Tackett, J. L., Kushner, S. C., De Fruyt, F., & Mervielde, I. (2013). Delineating personality traits in childhood and adolescence: Associations across measures, temperament, and behavioral problems. *Assessment 20*. doi:1073191113509686.

Thomas, E. B., Leiderman, P. H., & Olson, J. P. (1972). Neonate–mother interaction during breastfeeding. *Developmental Psychology, 6*, 110–118.

Tomkins, S. S. (1963). *Affect, imagery, consciousness: Vol. 2. Negative affects.* New York, NY: Springer.

Tomkins, S. S. (1991). *Affect, imagery, consciousness: Vol. 3. Anger and fear.* New York, NY: Springer.

Treiman, D. J. (1977). *Occupational prestige in comparative perspective*. New York, NY: Academic Press.

Watson, D., & Clark, L. A. (1992). On traits and temperament: General and specific factors of emotional experience and their reaction to the five-factor model. *Journal of Personality, 60*, 441–476. doi:10.1111/j.1467-6494.1992.tb00980.x

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS Scales. *Journal of Personality and Social Psychology, 54*, 1063-1070. doi:10.1037/0022-3514.54.6.1063

Watson, D., & Naragon-Gainey, K. (2010). On the specificity of positive emotional dysfunction in psychopathology: Evidence from the mood and anxiety disorders and schizophrenia/schizotypy. *Clinical Psychology Review, 30*, 839–848. doi:10.1016/j.cpr.2009.11.002

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, *98*, 219–235. doi.org:10.1037/0033-2909.98.2.219

Wenzlaff, R. M., & Eisenberg, A. R. (1998). Parental restrictiveness of negative emotions: Sowing the seeds of thought suppression. *Psychological Inquiry, 9*, 310-313. doi:10.1207/s15327965pli0904_15

Whittle, S., Yap, M. B. H., Yücel, M., Sheeber, L., Simmons, J. G., Pantelis, C., & Allen, N. B. (2009). Maternal responses to adolescent positive affect are associated with adolescents' reward neuroanatomy. *Social Cognitive and Affective Neuroscience*, *4*, 247–256. doi:10.1093/scan/nsp012

Widen, S. C., & Russell, J.A. (2008). Children's understanding of emotion. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 348-363). New York, NY: Guilford Press.

Wilkinson, L., & the Task Force on Statistical Inference. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American Psychologist, 54*, 594–604. doi:10.1037/0003-066X.54.8.594

Williford, A. P., Calkins, S. D., & Keane, S. P. (2007). Predicting change in parenting stress across early childhood: Child and maternal factors. *Journal of abnormal child psychology*, *35*, 251-263. doi:10.1007/s10802-006-9082-3

Wilson, K. R., Havighurst, S. S., & Harley, A. E. (2012). Tuning in to kids: An effectiveness trial of a parenting program targeting emotion socialization of preschoolers. *Journal of Family Psychology, 26*, 56–65. doi:10.1037/a0026480

Woodruff-Borden, J., Morrow, C., Bourland, S., & Cambron, S. (2002). The behavior of anxious parents: Examining mechanisms of transmission of anxiety from parent to child. *Journal of Clinical Child and Adolescent Psychology, 31*, 364-374. doi:10.1207/153744202760082621

Yap, M. B. H., Allen, N. B., & Ladouceur, C. D. (2008). Maternal socialization of positive affect: The impact of invalidation on adolescent emotion regulation and depressive symptomatology. *Child Development, 79*, 1415–1431. doi:10.1111/j.1467-8624.2008.01196.x

Yap, M. B. H., Allen, N. B., Leve, C., & Katz, L. F. (2008). Maternal meta-emotion philosophy and socialization of adolescent affect: The moderating role of adolescent temperament. *Journal of Family Psychology, 22*, 688–700. doi:10.1037/a0013104

Yap, M. B. H., Allen, N. B., & Sheeber, L. (2007). Using an emotion regulation framework to understand the role of temperament and family processes in risk for adolescent depressive disorders. *Clinical Child and Family Psychology Review, 10*, 180–196. doi:10.1007/s10567-006-0014-0

Yap, M. B. H., Schwartz, O. S., Byrne, M. L., Simmons, J. G., & Allen, N. B. (2010). Maternal positive and negative interaction behaviors and early adolescents' depressive symptoms: Adolescent emotion regulation as a mediator. *Journal of Research on Adolescence, 20*, 1014–1043. doi:10.1111/j.1532-7795.2010.00665.x

Yi, C. Y., Gentzler, A. L., Ramsey, M. A., & Root, A. E. (2016). Linking maternal socialization of positive emotions to children's behavioral problems: The moderating role of self-control. *Journal of Child and Family Studies, 25*, 1550–1558. doi:10.1007/s10826-015-0329-x

Yoo, Y. S., Popp, J., & Robinson, J. (2014). Maternal distress influences young children's family representations through maternal view of child behavior and parent-child interactions. *Child Psychiatry and Human Development, 45*, 52–64. doi:10.1007/s10578-013-0377-7

Zeman, J., Cassano, M., & Adrian, M. C. (2013). Socialization influences on children's and adolescents' emotional self-regulation processes: A developmental psychopathology perspective. In K. C. Barrett, N. A. Fox, G. A. Morgan, D. J. Fidler, & L. A. Daunhauer (Eds.), *Handbook of self-regulatory processes in development: New directions and international perspectives* (pp. 79–106). New York, NY: Psychology Press.

Zeman, J., Klimes-Dougan, B., Cassano, M., & Adrian, M. (2007). Measurement issues in emotion research with children and adolescents. *Clinical Psychology: Science and Practice, 14*, 377–401. . doi:10.1111/j.1468-2850.2007.00098.x

Zhou, Q., Lengua, L. J., & Wang, Y. (2009). The relations of temperament reactivity and effort-ful control to children's adjustment problems in China and the United States. *Developmental Psychology, 45*, 724–739. doi: 10.1037/a0013776

Zuckerman, M. (2012). Models of adult temperament. In M. Zentner, R. L. Shiner, M. Zentner, R. L. Shiner (Eds.) *Handbook of temperament.* (pp. 41-66). New York, NY: Guilford Press.

Zussman, J. U. (1980). Situational determinants of parental behavior: Effects of competing cognitive activity. *Child Development, 51*, 792-797. doi:10.2307/1129466

Appendix A

Informed Consent (Time 1)

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.
- Dale M. Stack, Ph.D.
- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT

Je,_____, m'engage volontairement avec mon enfant, _____, à participer à l'étude "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués. L'étude comprend une série de questionnaires, une évaluation du fonctionnement intellectuel de mon enfant, ainsi que trois périodes de jeux lors desquelles nous serons observés et filmés. L'étude comporte deux sessions d'une durée maximale de 3 heures chacune et une rémunération totale de $50.00 me sera allouée aussitôt que les questionnaires seront remis. En signe de courtoisie, les résultats sommaires de l'évaluation de mon enfant me seront communiqués par téléphone. De plus, les chercheurs seront prêts à effectuer une ou deux visites additionnelles, au besoin, pour terminer l'évaluation, discuter de résultats problématiques, ou m'offrir un service de référence.

Je comprends que toutes les informations que nous fournissons, qu'elles soient écrites ou filmées, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature:_____

Nom:_____ Date:_____

Assistant(e) de recherche:_____

Appendix B

Informed Consent (Time 2)

L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants+

Directeurs du projet: -Lisa A. Serbin, Ph.D.
-Dale M. Stack, Ph.D.

Numéro d=identification:

Formulaire de consentement

Je, soussigné(e), autorise les chercheurs du projet **L'individu dans son milieu+* de l'université Concordia à rencontrer mon enfant _____,à l'école durant la période de classe et à avoir accès à son dossier scolaire. Je suis informée que durant la rencontre, mon enfant aura à remplir quelques questionnaires permettant d`évaluer son rendement scolaire et aussi, à répondre à différentes questions portant sur sa vie à l'école. Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche.

Dans l'éventualité où j'aurai des questions concernant cette recherche, je pourrai m'adresser soit à Nadine Girouard ou bien à Christina Saltaris au (514) 848-2253.

Nom: _____ Date:
EN LETTRES MOULÉES

Signature:

****

Nom de l'enseignant/e:

Nom du directeur/de la directrice:

Nom de l'école:

Numéro de téléphone:

Adresse:

Appendix C

Informed Consent (Time 3)

***L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants+**

Directeurs du projet: -Lisa A. Serbin, Ph.D.
-Dale M. Stack, Ph.D.

Numéro d'identification:

Formulaire de consentement (SSHRC-2)

Je, soussigné(e), autorise les chercheurs du projet **L'individu dans son milieu+* de l'université Concordia à rencontrer mon enfant _____ à l'école, en deux sessions, durant la période de classe. Je comprends que mon enfant remplira des tests de fonctionnement intellectuel et académique ainsi que des questionnaires sur son comportement et son tempérament. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à avoir une copie du dernier bulletin de l'année en cours. Finalement, lors d'une troisième visite, je consens à rencontrer les chercheurs de l'université Concordia à la maison avec mon enfant afin de remplir des questionnaires additionnels portant sur notre vie familiale et de recueillir des échantillons de salive sur moi-même, lors de la rencontre, et sur mon enfant, lors de la rencontre et pendant deux jours de la semaine. J'accepte aussi d'être filmé(e) avec mon enfant lors d'une session incluant un jeu et des discussions portant sur des résolutions de problèmes.

Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche. Cependant, si après évaluation des examens votre enfant raquerait une attention spéciale, les chercheurs de l'université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m'adresser soit à Mina Popliger ou bien à Jean-François Rhéaume au (514) 848-2253.

Nom: _____ Date_____
EN LETTRES MOULÉES

Signature:_____

****

Nom de l'enseignant/e:

Année: _____

Nom du directeur/de la directrice: _____

Nom de l'école: _____

Numéro de téléphone: (_____)_____
Code régional

Adresse: _____
rue

_____
ville code postal

Appendix D

Informed Consent (Time 4)

«L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants»

Directrices du projet SSHRC3/Mills: -Lisa A. Serbin, Ph.D.
-Dale M. Stack, Ph.D.

Numéro d'identification:

Formulaire de consentement

Je,_____, soussigné(e), autorise les chercheurs du projet *«L'individu dans son milieu»* de l'université Concordia à rencontrer mon enfant à l'école, en deux visites, durant la période de classe. Je comprends que mon enfant remplira des tests de fonctionnement intellectuel et académique ainsi que des questionnaires sur son comportement et son tempérament. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à avoir une copie du dernier bulletin de l'année en cours. Finalement, je consens à ce que les chercheurs recueillent des échantillons de salive sur mon enfant pendant deux jours de la semaine.

Ma participation consiste à remplir et à retourner deux séries de questionnaires, après quoi je recevrai par courrier pour chaque série de questionnaires un chèque de $35.00, et ce pour un montant total de $70.00. Concernant la participation de mon enfant, il recevra un montant total de $45.00 qui lui sera remis de la façon suivante : un chèque de $15.00 ou un certificat cadeau d'un montant équivalent lui sera remis lors de chaque rencontre à l'école ainsi que pour les questionnaires qu'il a à remplir et à retourner. Par ailleurs, un autre montant de $5.00 lui sera également accordé si mon enfant à dû compléter des questionnaires de rattrapage.

Je comprends que ma participation à cette étude est volontaire et que je peux m'y soustraire ainsi que mon enfant en tout temps et cela, sans avoir à donner d'autres explications. De plus, le montant accordé pour ma participation et celle de mon enfant sera proportionnel au nombre de partie complétée au protocole de recherche.

J'autorise également les chercheurs de l'université Concordia à prendre une photo numérique du visage de mon enfant. Cette photo sera gardée confidentielle dans le dossier de mon enfant et ne servira qu'à identifier mon enfant.

Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche. Cependant, si après évaluation des examens votre enfant requérait une attention spéciale, les chercheurs de l'université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires. Toutefois, en accord avec la loi sur la protection de la jeunesse, toute information laissant croire à de l'abus physique ou sexuel doit être rapportée à l'Office de la protection de la jeunesse.

Dans certains cas, si mon enfant présente une problématique particulière, la coordonnatrice du projet, Dre Nadine Girouard, entrera en communication avec moi pour y donner suite. Le cas échéant, il pourra y avoir deux entrevues téléphoniques, une avec moi et une autre avec mon enfant, ou même une visite à la maison.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m'adresser soit à Julie Aouad ou bien au Dre Nadine Girouard au (514) 848-2424 extension 2254. De plus, si j'ai des questions au sujet de mes droits et ceux de mon enfant à titre de participant(e) volontaire ou une plainte à formuler, je peux appeler au bureau de la recherche de l'Université au (514) 848-2424, poste 7481**.** Mme Adela Reid sera la personne-ressource de ma famille pour ce projet.

Nom: _____ Date:
EN LETTRES MOULÉES

Signature:

SVP, veuillez compléter la page suivante concernant les informations de l'école fréquentée par votre enfant.