

THE RELATIONSHIP BETWEEN IDENTITY DEVELOPMENT, PARENTING  
QUALITY, AND CHILD FUNCTIONING: TESTING AN EXPANSION OF THE  
PROCESS MODEL OF PARENTING WITH A COMPARATIVE SAMPLE OF  
ADULT AND ADOLESCENT MOTHERS

BRAMILEE DHAYANANDHAN

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## Abstract

Identity achievement has been described as a critical developmental task of adolescence, but has seldom been discussed in the context of adolescent parenthood. Little is known about how teen mothers negotiate identity development, nor about the role that the latter plays in parenting quality and the functioning of infants of adolescent mothers. In order to address these gaps in the literature, the present study proposed an adaptation to a well-established theoretical framework, Belsky's (1984) process model of parenting, in order to understand the unique role of maternal age and identity development in the differential parenting experiences of adolescent and adult mothers. Key questions that the present study sought to answer included: a) What does identity development look like in adolescent mothers? b) What are the sociocontextual determinants of identity development in adolescent mothers? c) What role does identity development play in adolescent mothers' parenting quality? d) Is identity achievement related to child functioning in the offspring of adolescent mothers? e) Can extant parenting models be adapted to better reflect the experiences of adolescent mothers and their families?

To answer these questions, data were collected from 95 participants, comprising 42 adolescent mothers (younger than 20 years of age) and 53 adult mothers (older than 24 years of age), and their children (younger than 42 months of age). A third sample of 14 former adolescent mothers were included in some comparisons where indicated. Results suggest that adolescent mothers follow a unique developmental sequence that deviates from that of adult mothers as well as that of non-parenting adolescent peers. Identity commitment, a component of identity achievement, emerged as a protective mechanism

for young mothers and their children, while identity exploration emerged as a risk factor. Specifically, identity commitment was found to mediate the relationship between maternal age and parenting quality, and moderate the relationship between perceived stress and parenting quality. Moreover, sociocontextual variables, in particular trauma history and social support, played a significant role in determining whether young caregivers were able to make role commitments, which in turn had implications for the cognitive and dyadic functioning of their infants. Results of structural equation modelling indicate that vulnerabilities in the maternal context, including socioeconomic status, social support, and trauma history, pose greater risk for parenting quality than parent characteristics such as age, identity development, and socioemotional functioning. These latter variables are confounded by contextual variables. Thus, resilience in parent characteristic variables, in particular, delayed childbearing age and identity achievement, are heavily shaped by the contextual environment in which they emerge. Furthermore, results elucidate a pathway through which sociocontextual factors exert their influence on infant functioning.

Taken together, the findings from the present study reveal a number of risks that unfold within the context of early parenthood. Poverty, trauma, and limited social support pose tremendous developmental barriers that are intensified by the experience of adolescent parenting. However, identity commitment may help young mothers calibrate stress and adjust to the demands of parenting. Several implications for clinical prevention and intervention, theory, and policy, are discussed.

## Acknowledgements

My early experiences have been instrumental in forging this path. In the midst of poverty and loss, I began to ask questions about resilience and vulnerability, wonder about the differential impact of trauma, and what could be done to support healthy outcomes for children and their families. I never, in my wildest dreams, imagined that a little girl could have her hopes realized in this way. I've learned so much about humility, kindness, courage, and humanity along the way, and am grateful to those who made this journey possible:

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## CHAPTER I

### INTRODUCTION

Nestled between the periods of childhood dependence and adulthood autonomy, the developmental interval of adolescence is marked by significant cognitive, physical, and psychological transformation. During this period, the adolescent brain refines its regulatory pathways resulting in improved executive functioning and social cognition. Synaptic pruning of the prefrontal cortex allows for the development of abstract multidimensional thought, improved decision making, reasoning, and information processing (Steinberg, 2005; Paus, 2005). The onset of puberty brings physical growth and sexual maturation. Adolescents develop emotional competence as they are confronted with new social roles, intimate relationships, and decision-making related to vocational and academic choices (Sebastian, Burnett, & Blakemore, 2008). Important psychological changes associated with adolescence include identity formation and the development of self-concept. As the developing adolescent enters the process of constructing their emerging identity, they begin to see themselves as differentiated from the contexts in which they were formerly enmeshed (Mahler, Pine, & Bergman, 1975). This phenomenological shift gives rise to individuation and the adolescent's recognition of their membership with the world-at-large. In Western countries, the process of negotiating identity has been widely regarded as a critical stage-salient developmental task that must be integrated into the adolescent schema in order to successfully move onto the developmental stage of young adulthood (Werner & Kaplan, 1963; Cicchetti & Cohen, 1995). In the present study, I examined the process of identity formation in adolescent mothers, and its relationship to childrearing.

Although adolescence is marked by significant transformation, changes in adolescent brain and behaviour do not all occur at the same pace, and are heavily influenced by the larger social context in which the adolescent is embedded. Vulnerabilities may emerge as a result of disparities between physical, cognitive and emotional development. Individuals who become pregnant or young parents during adolescence may be particularly vulnerable to asynchronies in development. Adolescent mothers represent a unique developmental cluster who must balance the difficult task of adjusting to changes and stressors associated with the adolescent stage of development, while simultaneously learning to adjust to the often unexpected role of parenthood, which they would not typically expect to confront until adulthood. An implication of teen parenting is that its associated responsibilities may impede or delay adolescent mothers' ability to surmount the critical stage-salient task of identity achievement. Furthermore, the experience of being entangled by their own adolescent egocentric developmental needs may constrict young mothers' ability to be available, attuned, and responsive their child's developmental needs.

Although there has been some theoretical discourse regarding the developmental stage progression of adolescent mothers, this has not to our knowledge been systematically evaluated, or linked to their children's development. The available literature suggests that because of developmental immaturity and limited cognitive readiness to parent, some young mothers are less sensitive to the needs of their children, demonstrate higher levels of frustration and stress in the parenting role, and have greater difficulty forming a secure attachment relationship with their child than older mothers (Holub et al., 2007; Osofsky, Hann, & Peebles, 1993). Our earlier research in this area

has linked developmental task attainment in adolescent mothers to increased maternal sensitivity and decreased child abuse potential (Dhayanandhan, Bohr, & Connolly, 2015). However, a broader understanding of the relationship between identity development, maternal functioning, the parent-child relationship, and child functioning is an important area for investigation by researchers and clinicians in order to support young mothers and their children towards adaptive outcomes as they navigate the developmental trajectory.

In order to understand the role that identity development plays in adolescent mothers' experiences of parenting, it is worthwhile to examine this construct from a lens that recognizes the numerous determinants of caregiving and how they might impinge and interact to influence parenting practices and child behaviour. Jay Belsky's (1984) process model of parenting provides a useful conceptual framework for understanding the impact of environmental and contextual factors on parenting quality and child outcomes. Belsky (1984) argues that parental functioning is multiply determined by various ecological sources of influence including: 1) The broader social context within which the parent and child are embedded; 2) characteristics/functioning of the parent; and 3) characteristics/functioning of the child (Figure 1). Risk factors in these ecologies may compromise parental functioning, which can ultimately impact child outcomes. In this model, *parent characteristics* include variables such as personality, psychological functioning, and maturity of the parent, and represent the most critical determinants as they not only directly influence parenting quality, but also have an indirect impact through contextual factors and the parent-child interaction (Belsky et al., 1984; Hipke et al., 2002). Although they were not explicitly conceptualized within Belsky's (1984) framework, it is reasonable to assume that maternal age and identity development can be

subsumed under *parent characteristics* because these constructs are inextricably tied to maturity level in young caregivers. *Child characteristics* include variables such as psychological functioning, physical health, cognitive functioning, age, and gender of the child. *Contextual factors* include variables such as parent relationships, social support, socioeconomic status, and parent developmental history (Belsky, 1984; 1993). Contextual factors comprise the backdrop of the parent-child relationship and can offer instrumental sources of sustenance and/or stress. In particular, parent developmental history (i.e., experiences within the family of origin, and/or histories of trauma) is considered to be a direct antecedent of parent functioning, and thus plays a pivotal role in shaping parent characteristics and subsequently parenting quality. Parent characteristics were considered by Belsky (1984) to be the primary mechanism through which the broader social context and parents' own developmental history exert their influence on the caregiving relationship and child functioning. Thus, identity achievement may be a key construct in a process model of adolescent parenting.

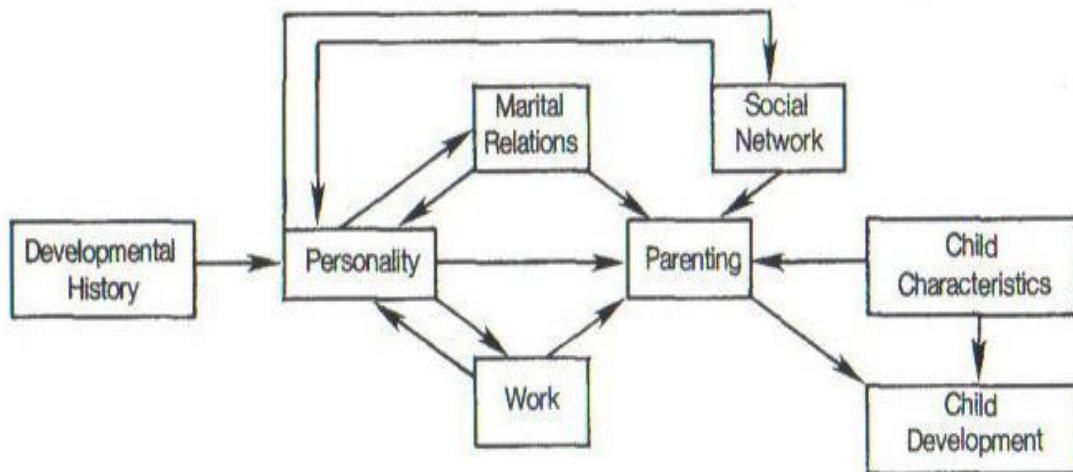
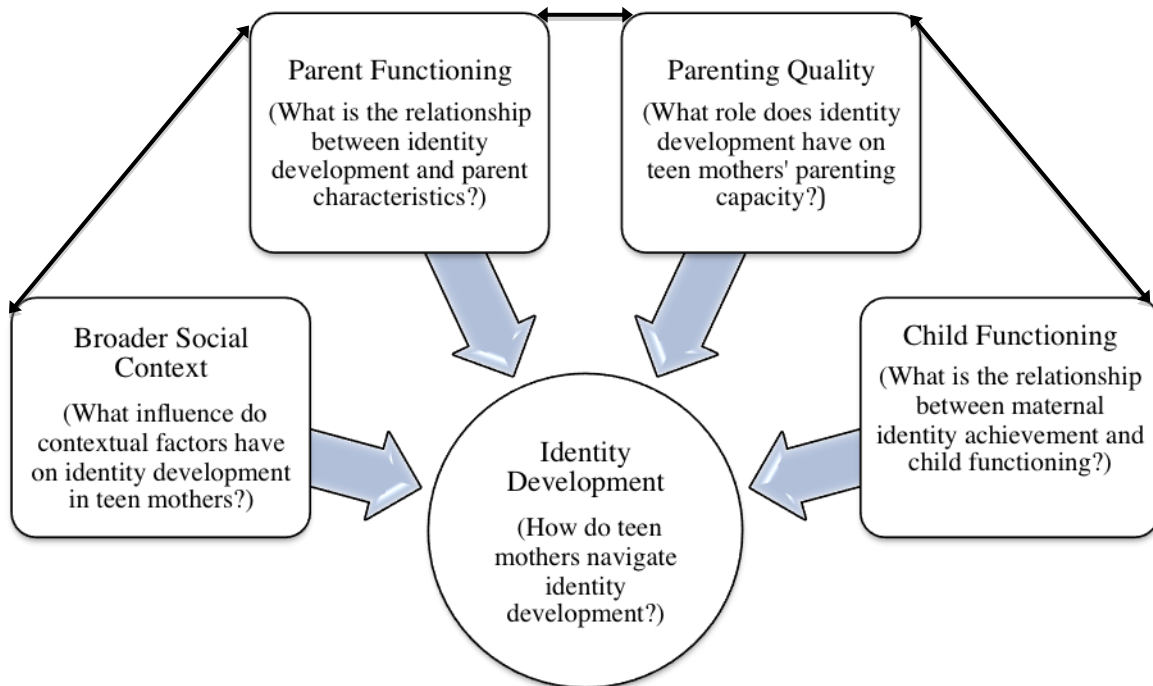


Figure 1. Belsky's process model of the determinants of parenting (Belsky, 1984).

While previous research examining the relationship between teenage childbearing and parent/child outcomes has identified numerous ecological factors that affect optimal child development, there is very limited extant literature examining the role of developmental task attainment (i.e., identity achievement) in predicting healthy outcomes for adolescent mothers and their babies. While Belsky's (1984) process model provides a useful framework for understanding the role of contextual factors on parenting processes and child development, it does not capture the unique influence of identity formation in adolescent mothers' parenting experiences. Key questions that emerge are: 1) How do teen mothers navigate the developmental trajectory of adolescence and what are their patterns of identity development? 2) What are the social-contextual determinants of identity development in adolescent mothers (i.e., what environmental contextual variables buffer/support identity achievement in adolescent mothers and what environmental contextual variables delay/impede the normative development of identity in adolescent mothers)? 3) How is (lack of) identity development related to psychological functioning in adolescent mothers? 4) What role does (lack of) identity development play in adolescent mothers' parenting quality? 5) How is mothers' (lack of) identity development related to child functioning in the offspring of adolescent mothers? Figure 2 illustrates a schematic depiction of these key questions and their associations. In the present study, I test an expansion of Belsky's (1984) process model of the determinants of parenting by giving consideration to the role of developmental task attainment as a pertinent variable that may uniquely influence adolescent mothers' parenting experiences and child outcomes. To achieve this, I compared a group of adolescent mothers under the age of 20 years and their children to a group of adult mothers over the age of 24 years and their

children. A third group of adult mothers who gave birth to their first children during their teens was added for further comparison.



*Figure 2.* Schematic depiction of key questions emerging from the literature.

### **Theoretical Framework**

Over forty years ago in his seminal work on psychosocial development, Erik Erikson postulated that identity formation was the central developmental task of adolescence (Erikson, 1968). Specifically, he theorized that during the adolescent years, individuals are tasked with developing and refining an internalized set of values, beliefs and future goals that will influence critical decisions made both during adolescence and later in the developmental trajectory, including identification with an occupation, religious, and political ideologies; and interpersonal decisions related to friends, family, and intimate partner relationships. Erikson specified that these tasks were psychosocial in



nature because they were negotiated through one's interactions within a social milieu that included peers, family, authority figures, friends, and romantic partners (Erikson, 1950; 1963).

James Marcia expanded Erikson's theory of adolescent development with the proposal of an identity status paradigm (1966; 1967; 1994). He asserted that Erikson's formulation of identity development hinged on two separate but related underlying processes, identity exploration and identity commitment (Marcia, 1967). According to Marcia (1967), an individual's level of exploration and commitment fluctuates throughout adolescence as one moves through a series of developmental shifts. Early in this developmental period, adolescents are in a state of identity diffusion, characterized by low levels of exploration and low levels of commitment. Following this, many adolescents move to a state of identity foreclosure, wherein their choices and decision-making are still guided by caregivers and other authority figures. Thus, low levels of exploration and high levels of commitment characterize foreclosure. Identity formation is refined as adolescents move into a state of moratorium, characterized by high identity exploration and low identity commitment. During moratorium, adolescents are consumed by teenage issues and in an active struggle towards making commitments. Finally, an individual moves into a state of high commitment after a period of extensive exploration of family roles, close relationships, ideological values, career options, as well as refinement of values and goals towards an internalized set of core beliefs. This final period of high commitment and high exploration occurs in late adolescence and is regarded as identity achievement (Bartoszuk & Pittman, 2010; Marcia, 1966; Klimstra et al., 2010). Thus, identity is thought to evolve through adolescence from a state of

diffusion, which is the least adaptive or differentiated, to intermediate states of foreclosure and moratorium, and finally to achievement which is the most adaptive, and arrived at following thoughtful exploration and refinement (Marcia, 1993).

In a longitudinal study mapping identity status onto the adolescent developmental trajectory, Meeus and colleagues (1999) found that identity proceeds through the teen years in a similar pattern as that first theorized by Erikson (1963) and Marcia (1968; 1993), from relatively diffuse and undifferentiated, towards fixed levels of identity commitment in the late teen years. These researchers also found that unresolved identity achievement in post-adolescence led to greater risk for psychopathology (Meeus, Iedema, Helsen, & Vollebergh, 1999). This finding is consistent with the work of numerous developmental theorists who posit that through the course of development, individuals proceed from a relatively scattered, undifferentiated state to a state of greater structure, articulation and complexity (Cicchetti, 1993; Sroufe & Rutter, 1984). This process of increasing refinement hinges upon the successful resolution of specific stage-salient issues that arise at different points in development (Cicchetti, 1993; Cicchetti & Schneider-Rosen, 1986). Normative development is regarded as the result of the successful resolution of early stage-salient issues, as well as the continual refinement and integration of newly acquired skills (Cicchetti & Cohen, 1995; Cicchetti & Schneider-Rosen, 1986). Conversely, pathological development is believed to arise from the lack of integration of the social, emotional and cognitive competencies that underlie stage-salient developmental tasks (Cicchetti & Cohen, 1995; Cicchetti & Schneider-Rosen, 1986). Thus, disturbances in identity development during adolescence lay an unsteady

foundation that may ultimately result in much larger disturbances later in the developmental trajectory.

### **Current Study**

Identity development, the refinement of an internalized set of values, beliefs, and future goals, negotiated through interactions with one's environment, is considered, in Western parts of the world, to be the central stage-salient task of adolescence. Identity achievement influences critical decisions made both during adolescence and later in the developmental trajectory (Erikson, 1963; Marcia, 1998). Individuals with unresolved identity commitment and identity exploration have been found to be at greater risk for psychopathology (Meeus, Iedema, Helsen, & Vollebergh, 1999). Adolescent mothers are particularly vulnerable to asynchronies in development because they are prematurely thrust into adulthood by the demands of having to care for and meet the needs of their growing child. These competing needs may hinder their ability to successfully reach identity achievement as a necessary developmental task of adolescence.

In order to support adolescent mothers successfully navigate this period, and also support their children attain optimal outcomes in circumstances where identity development does not follow a normative sequence, it is important to understand how identity emerges in young mothers. Yet, little is known about how adolescent primiparous mothers, as a unique developmental cluster, traverse this period. There are, to our knowledge, no published reports examining the relationship between sociocontextual factors and identity development in adolescent mothers, and the influence of these variables on young mothers' parenting quality and their children's functioning. Through this study, I sought to address these gaps in the literature.

## Conceptual Framework

This study was guided by Belsky's (1984) process model of the determinants of parenting (Figure 1). Such a process-oriented ecological framework is useful for understanding interactions between caregivers, their children, and their environment, as well as the prediction of optimal versus compromised trajectories. Belsky's model (1984) does not, however, capture the unique parenting experiences of adolescent mothers, and in particular, the role of the central adolescent task of identity development on parenting quality and child functioning in this population. In the current study, I sought to adapt Belsky's model to an adolescent caregiving context. Building upon Belsky's original framework, in this study I proposed that *contextual factors* (including socioeconomic status, social support, intimate relationships, and maternal trauma history); and *parent characteristics* (including maternal age, identity development, and socioemotional functioning), can influence *parenting quality* (i.e., maternal sensitivity, child growth fostering, and responsiveness to child's distress), and *child characteristics* (i.e., developmental functioning, socioemotional functioning, and dyadic behaviour) via direct and indirect mechanisms.

With the proposed conceptual model for the current study (*Figure 2*), I sought to extend Belsky's (1984) original framework and past research in the following ways: 1) Adapting it to integrate the unique developmental experiences of adolescent mothers and their role in parenting and child functioning; 2) Using multiple latent constructs as indicators of variables of interest, and testing all variables simultaneously; and 3) Examining the impact of contextual factors, parent characteristics, and parenting quality among children less than 42 months of age. This sample of children was selected with the

hope that findings and recommendations from the current study could support early intervention efforts that focus on the dyadic attachment relationship of this vulnerable group. Furthermore, whereas previous studies have largely examined parent, child, parenting, and contextual variables independently, the structural equation modeling approach employed by this study allowed for all variables of interest and their latent indicators to be tested simultaneously. Thus, for example, socioeconomic status was represented not only by income, but also by level of education and job status, and in doing so, provided a more complete picture of the latent construct of SES. The ensuing literature review (Chapter II) addresses why the selected variables of interest are especially pertinent to adolescent mothers and their children in light of current research.

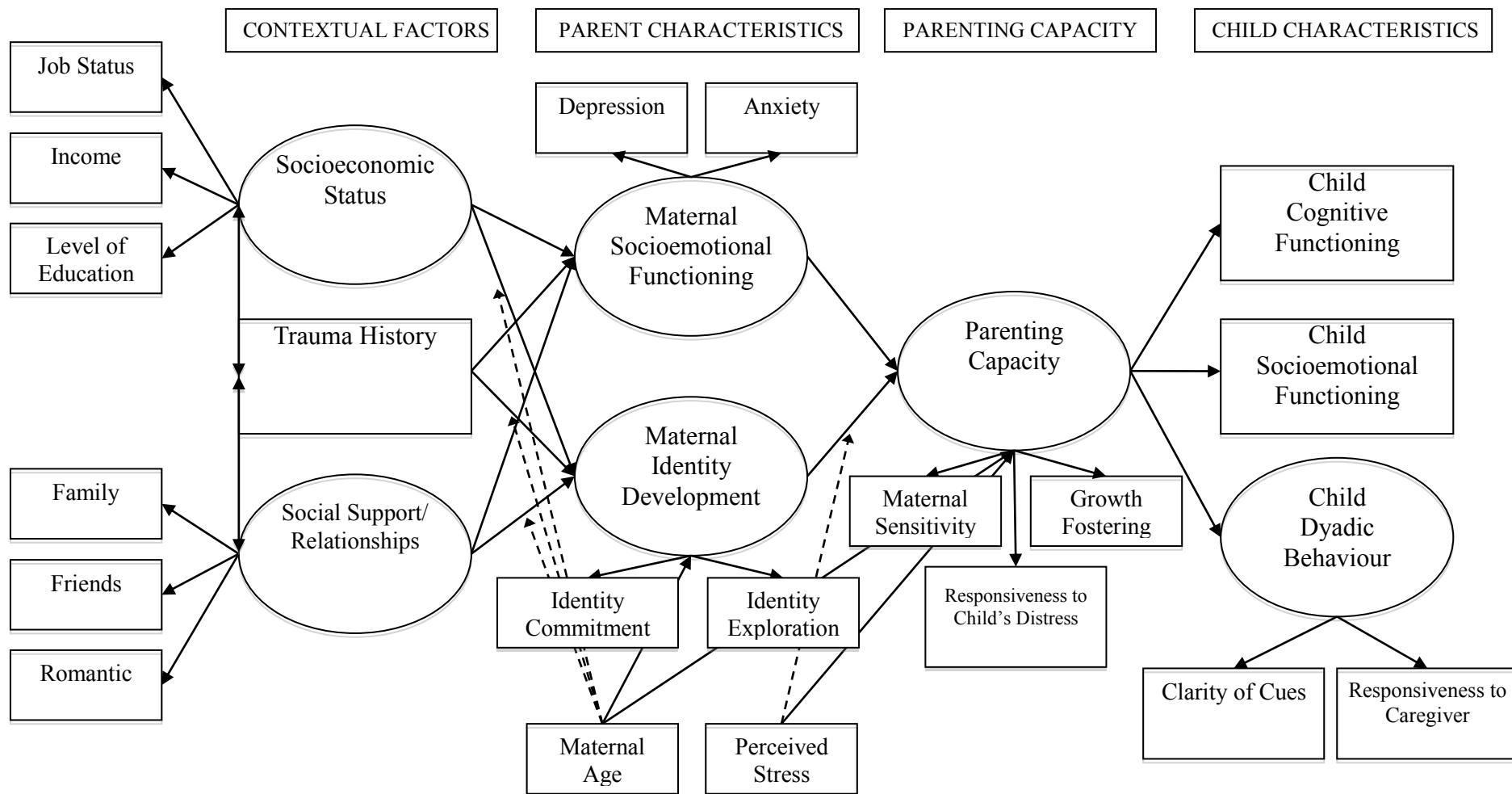


Figure 3. Proposed conceptual model for current study.

## Objectives

With the proposed conceptual framework in mind, I had two overarching goals in the present study: (A) To examine the effect of identity development on adolescent mothers' parenting quality and their children's functioning; (B) To understand how adolescent mothers fit into traditional process models of parenting, and put forth an adapted conceptual model that more accurately reflects the parenting experiences of young mothers. The specific objectives of this study were:

1. To examine identity development among adolescent and older mothers. To compare adolescent mothers' identity development to patterns of identity development established in the literature among adolescents generally.
2. To examine the relationship between contextual factors and parent characteristics. Contextual factors include social support, relationship security, history of trauma, and socioeconomic status. Parent characteristics include maternal age, socioemotional functioning (depression, anxiety) and identity development (exploration, commitment).
3. To examine the relationship between parent characteristics and parenting quality (i.e., maternal sensitivity, growth fostering, and responsiveness to children's distress) among adolescent and older mothers.
4. To examine the influence of parenting quality (i.e., maternal sensitivity, growth fostering, and responsiveness to children's distress) on child functioning (i.e., cognitive ability, socioemotional functioning, and dyadic behaviour).
5. To test all variables of interest simultaneously in order to delineate pathways and understand mechanisms underlying the relationship between parenting and child functioning in an adolescent sample.

## Hypotheses

H1: *Identity development in adolescent and older mothers.* Due to the timing of parenthood at the critical juncture of adolescence, adolescent mothers will have different patterns of identity development than adult mothers. Parenting obligations will result in greater rates of identity commitment, but will limit opportunities for identity exploration.

- a) Compared to rates established in the literature for same-age non-parenting adolescents, adolescent mothers' median levels of identity commitment will be higher and median levels of identity exploration will be lower.
- b) There will be significant differences in identity commitment and identity exploration among adolescent and older mothers, with adolescent mothers having similar rates of commitment and lower rates of exploration.
- c) Adolescent mothers will be more likely to endorse states of identity diffusion and identity foreclosure; older mothers will be more likely to endorse states of identity moratorium and identity achievement.

H2: *The relationship between contextual factors and parent characteristics.*

Challenges in the sociocontextual environments of adolescent mothers will be reflected in their socioemotional functioning. The confluence of age and sociocontextual burden account for differences in identity development in adolescent mothers.

- a) There will be significant differences in the socioemotional functioning of adolescent and older mothers, with younger mothers experiencing higher rates of depression and anxiety.
- b) Adolescent mothers will experience greater sociocontextual barriers. Thus, contextual factors will account for a significant proportion of the variance in



socioemotional functioning in adolescent mothers.

- c) Contextual factors will account for a significant proportion of the variance in maternal identity development in adolescent mothers.
- d) Maternal age will interact with contextual factors (i.e., social support, history of trauma, socioeconomic status) to predict differences in identity development. Thus, maternal age will moderate the relationship between contextual factors and identity development.

*H3: The relationship between parent characteristics and parenting quality.*

Parenting quality is compromised in adolescent mothers because early parenthood constrains opportunities for identity development. Thus, identity development accounts for account for a portion of the relationship between age and Parenting quality. Identity achieved adolescent mothers will have high rates of parenting quality.

- a) There will be significant differences in the parenting quality of adolescent and older mothers, with younger mothers having lower parenting quality.
- b) Identity development will account for a portion of the relationship between maternal age and parenting quality. Thus, identity development will partially mediate the relationship between maternal age and parenting quality.
- c) Identity development will interact with perceived stress to predict differences in parenting quality in adolescent mothers. Thus identity status will moderate the relationship between perceived stress and parenting quality in adolescent, but not adult mothers.
- d) Maternal socioemotional functioning will account for a significant proportion of the variance in parenting quality in both adolescent and adult mothers.

H4: *The relationship between parenting quality and child characteristics.*

Compromised parenting quality, as a result of inadequate identity achievement, will affect child functioning.

- a) There will be significant differences in the socioemotional functioning, developmental (i.e., cognitive) functioning, and dyadic behaviour of children of adolescent mothers and adult mothers.
- b) There will be significant differences in the socioemotional functioning, developmental functioning, and dyadic behaviour of children as a function of maternal identity status. Thus, lower child functioning will be associated with maternal identity diffusion and identity foreclosure, and higher child functioning will be associated with identity moratorium and identity achievement.
- c) Parenting quality will predict child characteristics over and above maternal age and socioeconomic status.

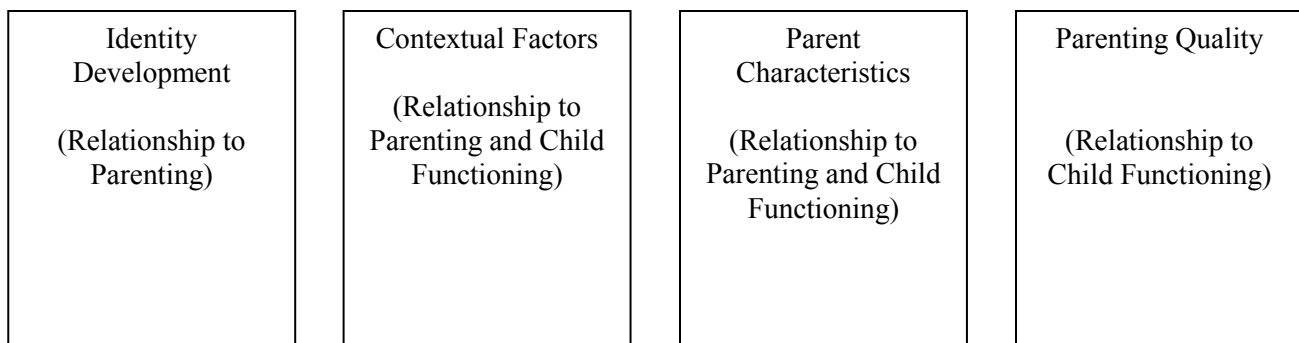
H5: *Test of the proposed conceptual model.*

The proposed conceptual model will be tested using structural equation modeling to examine the mechanisms underlying the relationship between contextual factors, parent characteristics, parenting quality, and child characteristics. It is hypothesized that the proposed conceptual model will fit the sample data, thereby offering an expansion to Belsky's (1984) process model of the determinants of parenting.

## CHAPTER II

### REVIEW OF THE LITERATURE

In this chapter, I review literature examining the relationship between parenting processes and child development. The first section reviews the literature on identity development. The second section reviews literature examining the impact of contextual factors (i.e., socioeconomic status, social support, relationship security, and trauma exposure) on parenting experiences among adolescent and adult mothers, as well as children's functioning. The third section reviews the literature examining the impact of parent characteristics (socioemotional functioning including depression and anxiety) on parenting and child functioning among adolescent and adult mothers. The final section reviews factors associated with parenting quality (i.e., maternal sensitivity, growth fostering, and responsiveness to children's distress) in adolescent and adult mothers, and their relationship to child outcomes.



*Figure 4.* Summary of aims of the literature review.

## **Identity Development**

Research investigating identity formation has generally found support for Marcia's (1967) identity statuses as salient aspects of adolescent development. Individuals in the identity moratorium (i.e., high exploration and low commitment) and identity achievement states (i.e., high exploration and high commitment) have been shown to have higher levels of moral reasoning, decision-making, and autonomy than lower identity statuses (Kroger, 2000; Marcia, 1993; Skoe & Marcia, 1991). Individuals with high levels of identity commitment and identity exploration are more likely to describe their relationships as having depth or meaning, and demonstrate higher levels of self esteem and psychological well-being compared to individuals in other identity states (Meeus, 1996; Meeus et al., 1999). In contrast, individuals in the moratorium stage (i.e., high exploration and low commitment) are likely to report the lowest levels of psychological well-being, and in particular, the highest levels of anxiety compared to those in other identity states (Berzonsky & Neimyer, 1994; Meeus, Iedema, Helsen, & Vollebergh, 1999). Identity diffusion (i.e., low levels of commitment and low levels of exploration) late in adolescence has been associated with weak interpersonal skills (Auslander & Dunham, 1996), decreased academic achievement (Berzonsky, 1985), higher levels of egocentrism, and lower levels of intimacy (Adams, Shea, & Fitch, 1979; Kerpelman et al., 2012).

There has been some discord in the literature regarding the timing of identity development across adolescence. Marcia and colleagues (1989; 1993) assert that identity conflict is resolved between 18 to 20 years of age, while recent studies have found increasing rates of moratorium (high exploration and low commitment) during college

and university years (Luyckx et al., 2006). An increase in identity exploration in emerging adulthood has been thought to arise as a result of Western social-structural changes resulting from industrialization that have prompted delays in developmental tasks such as marriage and entry into the labour market (Arnett, 2000; Schwartz, Côté, & Arnett, 2005).

Most identity researchers agree, however, that late adolescence (between 18-22 years of age) is marked by higher rates of commitment and exploration than that witnessed during early and middle adolescence (Koepke & Denissen, 2012; Kroger, 2007; Meeus, 1999). Moreover, a recent meta-analysis (Kroger, Martinussen, & Marcia, 2010) demonstrated that identity diffusion and moratorium decrease steadily after mid-adolescence. With respect to gender differences, girls have been found to engage in identity exploration and commitment earlier in adolescence than boys, likely due to gender differences in maturational processes; however, gender differences in identity development level off by late adolescence (Klimstra et al., 2010).

**Identity development from an ecological perspective.** Identity development is inherently embedded within the social-contextual milieu of the growing adolescent, and relies on transactions between individuals and their environment. Thus, it is important to consider the influence of ecological factors; in particular the family, peer, school and community contexts, as well as the role of traumatic stress, in identity processes in adolescence. Numerous studies have found support for the quality of the parent-adolescent relationship in fostering the development of identity, such that a secure attachment to one's caregiver encourages exploration of identity alternatives (e.g., Beyers & Goossens, 2008; Sartor & Youniss, 2002). Caregivers who demonstrate an

authoritative parenting style; in particular, responsiveness, closeness, and encouragement of autonomy, are more likely to have adolescents who engage in in-depth exploration of existing commitments than parents who demonstrate role-reversal, enmeshment, and low psychological control (Luyckx, Goossens, Soenens, & Beyers, 2006). Identity commitment has been found to hinge on relationship security, that is, the formation of trusting relationships with others, and is cultivated through the development of self-esteem and social validation by peers and family (Leary, Haupt, Strausser, & Chokel, 1998). In a study by Meeus and colleagues (2002), adolescents' attachment to their parent was found to predict peer attachment, which in turn predicted greater levels of identity exploration amongst adolescents. In another study by Kroger (2004), a secure relationship style was characteristic of identity-achieved individuals and was linked to social competence, dating competence, and adjustment in college, while dismissing and preoccupied relationship styles were linked to low levels of competence and assertion.

Although it is within the family context that individuals first become exposed to political, social, and religious ideologies, these are further refined through interactions with peers and the broader community context (Kroger, 2007). During the teenage years, the peer context becomes an important arena for adolescents to test out and explore their emerging identity. High levels of both commitment and exploration have been found to buffer against group pressure and control in adolescent peer contexts (Good, Grand, Newby-Clark, & Adams, 2008). Conversely, in a study examining teen risky behaviours and identity status, Dumas and colleagues (2012) found that adolescents with low levels of identity commitment were more likely to engage in risky behaviours such as illicit substance use, and adolescents with low levels of identity exploration were more likely to

submit to group peer pressure and engage in general deviancy. Research on romantic intimacy and identity formation suggests that they are parallel and mutually influencing processes. However, greater relationship intimacy and social support from friends have been found to predict higher identity commitment and exploration, particularly among females (Montgomery, 2005).

The school context has been found to play a critical role in the development of identity, as it is in this venue that adolescents begin to make important decisions that will affect them later in life, such as the negotiation of post-secondary academic and vocational options (Kroger, 2007). In optimal circumstances, the school environment can promote responsible decision-making, self-determination, self-reflection, and exposure to diverse political, social, religious, and ideological viewpoints, key components of identity formation (Dryer, 1994).

In a study examining identity development in three high school contexts of differing socioeconomic backgrounds, higher levels of exploration and commitment were found to emerge in more favourable socioeconomic contexts (Lannegrand-Willems & Bosma, 2006). In this study, students from lower socioeconomic backgrounds were more likely to disengage from the school context, which suggests that schools in low SES neighbourhoods may not always provide optimal conditions for identity development. Other studies examining SES have demonstrated a modest relationship between the limited opportunity structures, excess stress, and financial burden associated with poverty and challenges in negotiating identity, in particular, identity exploration (Phillips & Pittman, 2003).

Studies examining the relationship between trauma exposure and identity development have shown that complex trauma can have a profound impact on the integration of self and emergence of identity. Intrusion and avoidance, hallmark features of posttraumatic stress, can seize individuals' ability to integrate their past and present selves, and subsequently impede the development of identity. Unresolved attachment arising from sexual abuse history has been associated with dissociation and confusion regarding self-identity (Neufield-Bailey, Moran, & Pederson, 2007). In a study examining young-adult combat veterans diagnosed with posttraumatic stress disorder (PTSD), Silverstein (1996) found a relationship between identity diffusion and trauma processing. Similarly, Perez-Sales (2010) found that political violence and displacement can bring about confusion regarding one's place in the world, and this dialectic in turn provokes identity disorganization.

**Identity development in adolescent mothers.** Pregnancy and young motherhood can seriously disrupt adolescents' exploration of identity alternatives as a formative developmental task towards identity achievement. Yet, there is limited literature clarifying how adolescent mothers navigate this period, and the role that (lack of) identity development plays in parenting quality and child functioning. The available literature suggests that many adolescent mothers are cognitively and emotionally unprepared for the tasks of parenting, have limited parenting knowledge, and are in the midst of developing their own self-concept and self-efficacy as an autonomous being (Borkowski et al. 2007; Sommer et al. 1993). Competing developmental needs between young parents and their children have been associated with role confusion in parenting, harsher



parenting behaviours, and ensuing disorganized attachment styles in toddlers of young mothers (Aiello and Lancaster 2007; Lounds et al. 2005).

Adolescent mothers are at risk of role-reversal in their interactions with their children, in that they may have greater difficulty articulating their role as parent as being distinct from the role of child (Hurlbut, Culp, Jambunathan, & Butler, 1997). Young caregivers are more likely to have parent-child boundary disturbances, enmeshed relational styles, and rely on their child to gratify their needs (Meyers & Battistoni, 2003). They are also more likely to utilize psychological control and guilt induction in their interactions with their children (Weis, 2002). This role confusion and reliance on harsh parenting tactics has been postulated to be a function of the adolescent's own upbringing that culminates in a failure to negotiate and resolve role identity as the primary task of adolescence (Barber, 2002; Hurlbut, Culp, Jambunathan, & Butler, 1997). In an earlier study, we found that successful developmental task attainment buffered child abuse potential and increased maternal sensitivity among high-risk, low-SES adolescent mothers (Dhayanandhan, Bohr, & Connolly, 2015).

Considering the role that sociocontextual factors may contribute to the formation of identity during adolescence, there is mounting evidence to indicate that growing up in disadvantaged circumstances increases the risk of identity diffusion among young mothers because familial and contextual circumstances often constrain identity development in areas that are important for self-sufficiency, namely social, academic and vocational achievement (Coley & Chase-Landsdale, 1999; Klepinger, Lundberg, & Plotnick, 1995). A large-scale study examining 2795 women found that childbirth in the teenage years had large negative effects on young women's years of schooling, reducing

educational attainment by one to three years (Klepinger, Lundberg, & Plotnick, 1995). Decreased academic achievement among adolescent mothers has been associated with reductions in their vocational aspirations and career attainment (East & Felice, 1996; Seitz, 1996). Academic achievement and career achievement have a host of implications for the long-term financial stability of adolescent parents and their children. This is of great concern considering that adolescent mothers are disproportionately more likely to live below the poverty line and raise their children in low SES neighbourhoods (Hotz, McElroy, & Sanders, 1997).

Socioeconomic disadvantage can severely limit access to resources and social support. In one study, social support received during pregnancy predicted identity achievement in adolescent mothers (McCrary & Weed, 2005). Dalla and colleagues (2013) investigated identity development in a group of Navajo Native-American adolescent mothers residing on a reserve and experiencing multiple social and economic challenges. Twenty-one participants were interviewed at two time-points across a 15-year period. At Time 1, participants reported facing several barriers to identity exploration (e.g., poverty, lack of social resources, lack of skills and opportunities for employment). Approximately half of the participants at Time 1 endorsed foreclosed or diffused identity statuses. Interestingly, all participants in these two statuses reported either being in an unhealthy and challenging intimate relationship, or not being in an intimate relationship at all. Commitment at Time 1 was related to being actively engaged in parenting and making life choices that were in the best interests of their children. By Time 2, 15 years later, 67% of participants had attained employment, compared to 24% of participants at Time 1. Participants at Time 2 described how motherhood motivated them towards

identity commitment (e.g., finishing high school, stopping partying, becoming more self-reliant, finding an occupation that would provide income and stability). Furthermore, identity achievement at Time 2 was related to being in a secure intimate relationship, having greater perceived social support, fewer symptoms of depression, and high self-perception. With respect to stability of identity status over time, diffusion and achievement were found to be the most stable (i.e., participants in these identity states at Time 1 were also found to be in these states at Time 2). Dalla and colleagues' (2013) study provides many interesting conclusions about the role of identity development in the lives of adolescent mothers, and offers several potential implications of unresolved identity achievement. Overall, findings from the literature on identity development and adolescent motherhood suggest that a broader understanding of the relationship between identity formation, maternal functioning, the parent-child relationship, and child functioning is needed.

### **Contextual Factors and Parenting**

**History of trauma.** The term “ghosts in the nursery” was first coined to elucidate the relationship between a mother’s past experiences and current interactions with her young child (Frailberg, Adelson, & Shapiro, 1975). This phenomenon has been well documented in the literature. Early trauma can significantly impact an individual’s representations of self, as an individual and as a parent, particularly if the early trauma occurred at the hands of a loved one or caregiver (Fonagy, Target, Steele, & Steele, 1997). Numerous researchers have demonstrated that unresolved trauma histories can disrupt parenting quality and ultimately, child outcomes (Newcombe & Locke, 2001). Mothers

with a history of physical abuse have a higher propensity to engage in harsh parenting tactics and aggressive or punitive practices (Banyard, 1997; Bernstein et al., 2003; Dixon, Hamilton-Giachritsis, & Brown, 2005). Maternal history of sexual abuse has been associated with several atypical maternal behaviours including permissive parenting, role-boundary confusion, and negative maternal attributions (Burkett, 1991; DiLillo & Damashek, 2003; Runyon & Kenny, 2002). Banyard and colleagues (2003) investigated the influence of cumulative trauma on parenting behaviour and found that higher levels of trauma exposure were linked to reports of child neglect and decreased parenting satisfaction. Similarly, Cohen and colleagues (2008) found that even after controlling for demographic and diagnostic variables, cumulative trauma significantly predicted abuse potential, punitiveness, psychological aggression, and use of physical discipline in a sample of urban mothers.

The relationship between trauma history and current parenting behaviour appears to be most salient among teen mothers. Carothers and colleagues (2009) examined the influence of maternal history of abuse on parenting knowledge and behaviour, and found that past exposure to abuse predicted maternal responsiveness and abusive behaviours among first-time mothers. Furthermore, these researchers found that adolescent low-resource mothers endorsed greater rates of exposure to childhood emotional and physical abuse than both adult low-resource and adult high-resource mothers (Carothers Bert, Guner, & Lanzi, 2009). In another sample of adolescent mothers, higher levels of maltreatment in one's history predicted less enjoyment in dyadic interactions with one's child, greater levels of frustration, and feelings of incompetence in the parenting role (Milan et al., 2004). Exposure to trauma compounded with young maternal age poses a

significant risk factor for harsh parenting behaviour, as younger mothers with trauma histories endorse harsher parenting attitudes and behaviours (Lee & Guterman, 2010). These mothers display less sensitivity and warmth towards their child, and have higher rates of negativity and intrusiveness during dyadic interactions (Coley & Chase-Lansdale, 1998).

However, adolescent mothers are a heterogeneous group, and abuse history alone does not dictate whether hostile parenting will occur in this group. Rather, negative parenting practices appear to arise from a complex interaction of risk factors. In attempting to delineate mediating and moderating mechanisms in the pathway between trauma history and atypical parenting behaviour, researchers have found that factors such as maternal depression (Cohen, Hien, & Batchelder, 2008; Newcomb & Locke, 2001), anxiety (Roberts, 2004), social support (Meyers & Battistoni, 2003; Milan et al., 2004), and socioeconomic status (Borkowski, Whitman, & Farris, 2007) significantly affect this association.

**Socioeconomic status.** Socioeconomic status (SES), comprised of income, level of education, and job status, has been purported to impact parenting behaviour directly and indirectly via access to material resources (Hoff et al., 2002). For example, families enduring socioeconomic hardship are more likely to experience residential mobility and instability, financial uncertainty, large family size, lack of neighbourhood safety, and limited social support (Evans, 2004; Richters & Martinez, 1993). Furthermore, these families tend to be more restricted in their geographic location, quality of housing, access to community resources, and education (Brooks-Gunn & Duncan, 1997; Cochran & Niego, 2002). The family structure of socioeconomic disadvantage tends to be

characterized by the absence of a supportive partner and a dearth of social networks (Duncan & Magnuson, 2005). Low SES neighbourhoods have higher rates of violence, criminality, dilapidated housing, and social isolation (Hill & Herman-Stahl, 2002).

Stress appears to be the central mechanism through which socioeconomic burden exerts its toll on parenting behaviour and child outcomes (Wadsworth & Rienks, 2012). The accumulation of chronic stressors associated with socioeconomic adversity presents unique hardships to parents that may undermine their emotional state and capacity to parent effectively. For example, the stress of poverty is a significant predictor of maternal depression during the first three years of a child's life (Dearing, McCartney, & Taylor, 2004). Parenting stress has been significantly correlated with infant scores on the Bayley Scales of Infant Development – Second Edition (Abidin, 1995).

Maternal depression compounded with stress have been linked to children's socioemotional development and executive functioning (Malik et al., 2007; Spieker et al., 1999). Maternal depression has also been found to mediate the associations between socioeconomic pressure and child adjustment (Dennis, Parke, Coltrane, Blacher, Borthwick, 2003). Socioeconomic hardship and maternal depression have been linked to maternal hostile parenting (Parke et al., 2004). Numerous other researchers have found a significant inverse relationship between SES and parental risk for employing harsher, more punitive and power-assertive disciplinary tactics in regulating child behaviour (Azar, 2002; Koenig, Cicchetti, & Rogosch, 2000; Kotch et al., 1997). Connell-Carrick and Scannapieco (2006) found that impoverished home environments were often characterized by unemployment, hazardous or unsanitary conditions, overcrowding, and inadequate supervision, and that these indicators of socioeconomic burden were

correlated with child neglect. In addition to psychological variables, children exposed to chronic socioeconomic stress have poorer health outcomes resulting from inadequate nutrition and limited access to optimal healthcare (Chen, Matthews, & Boyce, 2002; Danziger & Waldfogel, 2000).

Many adolescent mothers are forced to drop out or delay schooling in order to care for their young child. Because of this factor, compounded with increased likelihood of being a single parent and having decreased educational and employment attainment, adolescent mothers are disproportionately more likely to endure socioeconomic hardship than older mothers (Borkowski, Whitman, & Farris, 2007; Brooks-Gunn & Duncan, 1997; Luster & Haddow, 2005). Sixty one percent of teen mothers complete high school compared to 90% of adult mothers who delay childbearing (Hotz, McElroy, & Sanders, 1997). Limited educational attainment among adolescent mothers leads to reduced employment wages and higher reliance on social assistance (Hotz, McElroy, & Sanders, 1997; Klepinger, Lundberg, & Plotnick, 1999).

Exposure to social risk (including poverty, geographic isolation, single parenthood, and unemployment) has been associated with poorer cognitive development in infants as young as 15 months of age (Burchinal et al., 2008). Children of adolescent parents living in poverty are more likely to have lower reading and math achievement scores and lower overall IQ scores (Burgess, 2005). Poverty has been found to exert its influence on child development through the proximal pathway of parenting processes (Sameroff & Fiese, 2000). Thus, among low-income adolescent mothers, higher quality of parenting practices and home environments have been found to buffer children's language skills and academic motivation (Luster, Lekskul, & Min Oh, 2004). Maternal

warmth and engagement have also been found to moderate the pathway between poverty and child cognitive development (Burchinal et al., 2008).

Some researchers have argued that the negative socioeconomic consequences associated with adolescent parenthood may be preexisting, in that these young mothers are more likely to have grown up in single-parent households with economic and social deprivation, and are also more likely to have preexisting academic difficulties (Furstenberg et al., 1999; Hotz, McElroy, & Sanders, 1997). Following childbirth through to the time their children became adolescents, teen mothers have higher rates of relationship instability and larger family sizes than those mothers who delayed childbirth; factors that further contribute to the insidious nature of socioeconomic hardship among young mothers (Borkowski et al. 2007).

**Social support and relationship security.** Social support can be defined as a “multidimensional collection of resources available to an individual from other individuals and groups” (Perrin & McDermott, 1997). Social support can come from a parent, spouse or intimate partner, extended family, or friends, and serves to enhance a caregiver’s psychological well-being via the provision of emotional, tangible, and instrumental support (Cochran & Niego, 1995; Garbarino & Sherman, 1980). In line with Belsky’s (1984) process model of parenting, maternal perceptions of social support have been found to influence parenting behaviour (DeGarno et al., 2008; Green, Furrer, & McAllister, 2007). In particular, social support, whether real or perceived, has been found to moderate the negative effects of stress among mothers (Duis, Summers, & Summers, 1997). For example, higher levels of supportive care have been associated with reduced



parenting stress, more positive perceptions of relationships, and higher levels of interpersonal trust among mothers (Luster, 1998).

Furthermore, the cumulative effect of low parenting stress and high social support satisfaction has been found to predict greater attachment security in infants of adolescent mothers (Emery, Paquett, & Bigras, 2008). In contrast, limited parental support and social isolation have been associated with decreased psychological well-being and higher rates of maternal depression (Corse, Schmid, & Trickett, 1990). Adolescent low-resource mothers are more likely to experience social isolation and have limited access to social resources. Birkeland and colleagues (2005) found that social isolation predicted depressive symptoms in adolescent mothers. In addition, conflict with members of one's social network has been linked to decreased maternal sensitivity and poorer maternal-child interactions among adolescent mothers and their children (Nitz, Ketterlinus, & Brandt, 1995).

Closely tied to the notion of social support is the concept of relationship security; that is, the perception of meaningful, healthy, and satisfying connections with romantic partners, family, and friends. The construct of relationship "security" derives from the adult attachment literature, which posits that current relationships are influenced by one's developmental history, and in particular, one's early relationships with caregivers (Griffin & Bartholomew, 1994; Hazan & Shaver, 1987). Challenges in other relationship realms can spill over to the parent-child relationship, particularly in the absence of other forms of proximal social support. Subsequently, a sense of insecurity in adult relationships can undermine child-rearing practices. This has been verified in the romantic relationship context in a phenomenon known as the 'spillover hypothesis'

(Krishnakumar & Buehler, 2000). Chronic marital or romantic relationship conflict has predicted decreases in parents' emotional availability towards their children (Sturge-Apple, Davies, & Cummings, 2006). Furthermore, adult relationship insecurity (characterized by fearfulness and preoccupation) has been found to mediate the pathway between interparental conflict and parenting difficulties (Davies, Sturge-Apple, Woitach, & Cummings, 2009). Relationship insecurity in the context of adult romantic relationships has also been linked to parenting stress among parents of infants and toddlers (Nygren, Carstensen, Ludvigsson, & Frostell, 2012; Rholes, Simpson, & Friedman, 2006). In contrast, relationship security (i.e., the perception of stable and meaningful connections in adult relationships) has been associated with feelings of closeness towards one's child, and an overall more positive outlook on parenthood (Rholes et al., 2007).

Among adolescent mothers, relationship security, or, the presence of meaningful relationships, is a clear buffer against the experience of stress in the parenting role (Chase-Lansdale et al., 1991). However, many adolescent mothers have a history of negative relationships with families of origin and intimate partners (Adams & East, 1999). Thus, relationships in this context can often provide an unwanted source of stress and conflict, and lead to high levels of avoidance or preoccupation (i.e., relationship insecurity) (Caldwell, Antonucci, & Jackson, 1998). Relationship insecurity with siblings (older brothers and older sisters) has been associated with increased psychological distress among teen parents (Gee, Nicholson, Osborne, & Rhodes, 2003). Relationship insecurity with romantic partners, characterized by the inability to form trust, has been

linked to higher relationship conflict and a poorer parenting alliance among adolescent mothers and their partners (Sheftall, Schoppe-Sullivan, & Futris, 2010).

The process of adolescent individuation has also been found to affect and be affected by relationships. Individuation, a component of identity development, is the movement towards a balance of autonomy and mutuality with adolescents' families of origin, during the adolescence stage of development (Mahler, Pine, & Bergman, 1977). In a sample of African-American young mothers, individuation was related to emotional closeness and higher relationship quality with families of origin, in particular, adolescent mothers' mothers (Sellers, Black, Boris, Oberlander, & Myers, 2011). Interestingly, individuation was also found to predict low adolescent mother-infant conflict and high parental nurturing (Sellers, Black, Boris, Oberlander, & Myers, 2011). Natural mentor relationships with nonparental supportive adults such as extended family members or neighbours, have also been found to enhance relationship security as well as overall mental health in adolescent parents (Hurd & Zimmerman, 2010).

### **Parent Characteristics and Parenting**

**Maternal socioemotional functioning.** Maternal mental health and well-being are widely regarded as variables known to influence parenting behaviour, with poor socioemotional functioning being a risk factor for poor parenting and child development. Maternal depression is of particular concern because of the documented risk during the post-partum period, with younger mothers demonstrating higher rates. In one study, approximately 13% of mothers aged 35 and older endorsed moderate to severe post-partum depressive symptoms, compared to 16% of mothers aged 25-34 years, and 30% of

mothers aged 18-24 years (Mayberry, Horowitz, & Declercq, 2007). In another study, as many as 53.6% adolescent mothers endorsed experiencing depressive symptoms during the first year post-partum (Cox et al., 2008). A deterioration in socioemotional functioning compounded with the psychosocial stressors often associated with depression, including family conflict, low socioeconomic status, isolation, weakened physical health, and troubled relationships make it challenging for many mothers, particularly adolescent mothers, to successfully handle the tasks of motherhood (Prodromidis, Abrams, Field, Scafidi, & Rahdert, 1994).

Depressed mothers tend to engage in negative interactions with their infants in which they are either under-stimulating, demonstrating withdrawn behaviour; or over-stimulating, demonstrating intrusive behaviour (Field, Healy, Goldstein, & Gurthertz, 1990; Field, Hernandez-Reif, & Diego, 2006). Specifically, withdrawn behaviours have been shown to affect a parent's nurturing quality, as illustrated through depressed mothers' overall limited sensitivity and attunement to their infant's needs (Grace & Sanson, 2003). In addition, depressed low-income mothers are more disengaged and limited in non-verbal behaviours such as eye gaze, touch, physical closeness, and communicative responsiveness, when interacting with their child (Hwa-Froelich, Cook, & Flick, 2008).

Intrusive behaviours have also been shown to affect maternal nurturing quality, with increased risk for child abuse among depressed mothers. For example, neglectful and aggressive parenting behaviour were significantly related to scores on the Edinburgh Postnatal Depression Scale (EPDS) in a sample of Japanese women (Sagami, Kayama, & Senoo, 2004). Similarly, one study indicated that 41% of depressed mothers endorsed

thoughts of harming their child, compared to 7% of control mothers with adequate socioemotional functioning (Jennings, Popper, & Elmore, 1999). Social support, especially from the child's father, has been shown to reduce risk for depression during the post-partum period (Barnet et al., 1996). However, because lack of paternal involvement is characteristic of many adolescent mothers' parenting experience, this places them at further risk for socioemotional challenges.

Both state and trait anxiety in mothers have been associated with distorted cognitions such as catastrophizing and decreased maternal warmth (Whaley, Pinto, & Sigman, 1999). Some research has indicated that anxious mothers are more likely to be intrusive or controlling in their interactions with their children (Feldman, 2007), while other studies have shown increased rates of withdrawn or disengaged behaviour among anxious mothers (Woodruff, Morrow, Bourland, & Cambron, 2001). Murray and colleagues (2007) found lower rates of maternal sensitivity and engagement among mothers with social phobia and generalized anxiety disorder, during dyadic interactions with their infants. Nicol-Harper, Harvey, and Stein (2007) videotaped maternal-infant dyadic interaction during a standardized play situation, and found that high trait anxiety mothers demonstrated less sensitive responding and reduced emotional tone during interactions.

There is extensive research documenting the relationship between maternal socioemotional functioning and child psychopathology (e.g., Azar et al., 2007; Harper, Harvey, & Stein, 2007). Infants of depressed mothers have greater difficulty discriminating emotional cues and facial expressions (Diego et al., 2002). Lifetime major depression among adolescent mothers is associated with cortisol reactivity (Azar et al.,

2007) and abnormal EEG activity (Diego et al., 2002) in infants as young as four months of age. These effects have been shown to persist into adolescence, with teenage children of depressed mothers experiencing higher rates of both internalizing and externalizing disorders (Keiley & Martin, 2002). The effects of maternal anxiety on younger children's behaviour and functioning is less well understood. In addition, depression is highly comorbid with anxiety, and the majority of the literature examining maternal anxiety is limited because they do not control for comorbidity. Among those studies that have controlled for depression, maternal anxiety has been associated with child cognitive development (Brouwers, Baar, & Pop, 2001) and anxious symptoms (Wood et al., 2003). Kaitz and colleagues (2010) found that infants of anxious mothers tend to mirror their mothers' anxious hyperarousal when coping with social challenges.

The mechanisms through which maternal socioemotional functioning is transmitted to offspring have also been investigated, and include genetic predisposition, dysfunctional neuro-regulatory mechanisms, atypical maternal cognitions and behaviours, and stressful environments (Goodman & Gotlib, 1999). Among adolescent mothers, the relationship between maternal socioemotional functioning and child behaviour is made even more complex by predisposing factors of sociocontextual stress, limited social support, emotional immaturity and lack of cognitive coping skills, and family dysfunction and upheaval (Brown et al., 2012; Cox et al., 2008).

### **Parenting Quality and Child Outcomes**

**Maternal sensitivity and responsiveness to children's distress.** A mother's ability to respond to her infant's cues sensitively, promptly, and appropriately, has been

shown to impact child development over time (Ainsworth, 1969; Sumner & Spietz, 1994). Infants rely on and interpret caregiver affective cues to gain information not only about the world around them, but also to gauge their internal feelings (Hobson, 2007; Legerstee, Markova, & Fisher, 2007). Mothers who are sensitive, emotionally available, and responsive to their child's needs are more likely to foster secure attachments with their children, which in turn has been linked to greater cognitive, language and socioemotional development, and fewer behaviour problems by middle childhood (De Wolff & van Ijzendoorn, 1997; Mantymaa et al., 2004).

There is mounting empirical evidence to suggest an intergenerational cycle of maternal sensitivity, wherein parents' recollections of receiving warmth and care from caregivers during early childhood are associated with current perceptions of their own children and levels of sensitivity in the dyadic relationship (Belsky et al., 2005; Leerkes & Crockenberg, 2003). To examine mechanisms that may mediate this relationship, Pereira and colleagues (2012) examined maternal-child interactions in a community sample of mothers and their 16-month old infants. They identified stress reactivity arising from childhood maltreatment history, aggravated by the challenges associated with parenting, as a significant factor that may undermine maternal sensitivity (Pereira et al., 2012).

Risk factors such as adolescent parenting, maternal depression, parental substance use, and poverty have been linked to maternal insensitivity and disorganized mother-infant attachment patterns (Bailey, Moran, Pederson, & Bento, 2007). For example, mothers with elevated depressive symptoms have been found to be less sensitive in their affect and tone, and less responsive responsiveness to their infants (Hwa-Froelich, Cook,

& Flick, 2008). These mothers have limited internal resources to support and adequately soothe a distressed infant and are less able to regulate their emotional reactions in response to infant distress (Laurent & Ablow, 2012; Musser, Ablow & Measelle, 2012).

Numerous studies have shown that maternal sensitivity, reciprocity, and responsiveness may be particularly challenging for adolescent mothers because of the multiple psychosocial stressors they are likely to experience, as well as their history and stage of development (Coley-Chase & Lansdale, 1998; Sadler & Cowlin, 2003). Adolescent mothers are less able to view things from the perspective of their infant or consider the direct impact of their feelings and actions on the well-being of their child (Secco & Moffatt, 2003). Such egocentric limitations make sensitive parenting, which is characterized by attunement, nurturance and empathy, a challenging endeavour for some adolescent mothers. In a longitudinal study investigating parent-child interaction across infancy and toddlerhood, Joosen and colleagues (2012) found that maternal sensitivity at three months, predicted maternal use of harsh discipline at two years. Mothers' engagement in punitive practices in response to child misbehaviour may be related to challenges in accurately perceiving and interpreting infant cues, leading to maternal insensitivity.

**Cognitive and socioemotional growth fostering.** The quality of a child's early environment, and in particular, interactive experiences with their caregiver lay the foundation for healthy development. In addition to accurately reading infants' cues (sensitivity) and recognizing and responding to infants' distress (responsiveness), caregivers' ability to provide developmentally appropriate stimulation, demonstrate warmth and affection, engage in social interaction, use praise and encouragement, and



provide social reinforcement, are important determinants of developmental outcomes (Barnard, 1994; Brooks-Gunn & Duncan, 1997). These parental behaviours, termed cognitive growth fostering and socioemotional growth fostering in the present study, have been linked to children's language acquisition (Moreno & Robinson, 2005); academic achievement (Eisenberg, Sadovsky, & Spinrad, 2005); prosocial behaviour (Lindsay, Mize, & Pettit, 1997); self-regulation (Brophy-Herb, Stansbury, Bocknek, & Horodynski, 2012; Eisenberg et al., 2003); empathy and emotional awareness (Brownell, & Kopp, 2007; Strayer & Roberts, 2004; Tong et al., 2012).

Positive caregiving behaviours and dyadic interactions can be a protective factor that also supports the early development of vulnerable infants who have been exposed to biological and environmental risk. For example, in preterm babies at risk for neurodevelopmental delays, parents' positive affect and facilitation/encouragement as well as synchrony in the dyadic interaction, were related to optimal infant cognitive development and greater social-emotional competence (Treyvaud et al., 2009).

Infants of adolescent mothers are clearly considered vulnerable because of the social-contextual milieu in which they tend to develop. Limited education, lack of resources, financial burden, and a dearth of parenting support can make growth fostering and interaction a difficult process for young mothers (Horowitz et al., 2001). Compared to both high-education and low-education adult mothers, low-education adolescent mothers attained lower scores on social emotional growth fostering and cognitive growth fostering indices (Schiffman, Omar, & McKelvey, 2003). Even after controlling for demographic differences, Stevenson Barrat and Roach (1995) still found that adolescent mothers offered less vocal praise, smiled less, provided less stimulation, and were less

appropriate overall in their interactions with their 4-month old infants. This in turn was associated with challenges in vocal turn-taking and social engagement, and less smiling in infants of adolescent mothers at 12 months of age (Stevenson Barratt & Roach, 1995). This suggests that there may be other mechanisms involved, such as adolescent maturity level and lack of identity consolidation, that may be influencing parenting processes in the dyadic context.

In summary, the preceding literature review suggests that there are numerous distal and proximal parenting factors that affect children's well-being and development, in particular in the context of being raised by an adolescent. However, there is limited available research on (a) how adolescent mothers negotiate and resolve identity development; (b) the influence of sociocontextual factors on identity development and caregiver socioemotional functioning; (c) the influence of the aforementioned variables on parenting quality; and (d), the influence of the aforementioned variables on child functioning. Furthermore, there is a dearth of theoretical/conceptual models that considers the unique array of variables that may influence the parenting process of adolescent mothers specifically. In the present study, I sought to address these gaps in the literature.

## CHAPTER III

### METHODOLOGY

#### **Participants**

Participants consisted of 95 mothers who were primary caregivers and their first-born child less than forty-two months of age. Participants were recruited from community organizations serving families across Scarborough, Toronto, Durham, and Brampton, Ontario. The researchers collecting data for the study had no prior relationship with prospective participants. Exclusionary criteria included mothers with psychiatric disorders and children with psychiatric disorders and/or significant developmental delay. In addition, caregivers between the ages of 21 and 24 years of age were excluded from this study so as to control for possible lingering identity development processes in emerging adults. Two samples of mother-child dyads were recruited in order to examine identity development differences cross-sectionally among teen mothers (TM) and adult mothers (AM). Sample size estimates were calculated prior to data collection using G\*Power version 3.0.1.0. To achieve a power of 0.80, an alpha of 0.05 and a medium effect size of 0.30, the projected number of participants estimated for each condition was 51. The final sample size achieved just slightly less than this projected recruitment figure. The TM group was comprised of 42 *adolescent mothers* ranging in age from 15 to 20 years old (M=18.6 years, SD=1.9 years) and their respective children (n=42) ranging in age from 1 to 42 months old (M=10.7 months, SD=9.5 months). The mean age at childbirth among adolescent mothers was 17.3 years old (SD= 1.2 years). The AM group consisted of 53 *adult mothers* ranging in age from 25 to 45 years old (M=33.1 years, SD=4.1 years), and their respective children (n=53) ranging in age from 2 to 42 months

( $M=14.5$  months,  $SD=12.3$  months). The mean age at childbirth among adult mothers was 29.9 years ( $SD=3.7$  years). For descriptive comparison, a third sample of mother-child dyads was also recruited to examine identity development in adult mothers who first gave birth during their teen years (ATM). The ATM group comprised 14 adult mothers ranging in age from 21 to 42 years old ( $M=28.5$  years,  $SD=6.9$  years) whose mean age at childbirth was 18.5 years ( $SD=1.6$  years). The mean age of children in the ATM condition ( $n=14$ ) was 26.5 months ( $SD=11.5$  months). Because the ATM group comprised of a small and demographically variable subset of participants, they were only included in specific analyses where indicated.

Demographic characteristics of all dyads are presented in Table 1. The full sample of 95 participants (TM and AM groups) was 27.3% Caucasian, 20% Caribbean, 8.4% East Asian/Pacific Islander, 8.4% Latin/Central/South American, 6.3% Aboriginal, 5.3% African Canadian, 4.2% Middle Eastern, 3.2% South Asian, and 16.8% Other. Among the children, 50 (52.6%) were female and 45 (47.4%) were male. The average annual income among adolescent (TM) mothers was \$10,512 ( $SD=8,687$ ) and among adult (AM) mothers was \$78,187 ( $SD=\$47,316$ ). Sixty-nine percent of adolescent mothers reported completing some high school, while 19% reported receiving a high school diploma, and 11.9% reported obtaining some college or university education. Just under 2% of adult mothers reporting completing some high school, while 7.5% reported receiving a high school diploma, 18.9% reported obtaining some college or university education, and 50.9% reported receiving a college diploma or university degree. With respect to employment status, the vast majority of adolescent mothers reported currently being

Table 1

*Demographic Characteristics of Sample*

Variable	Caregiver Condition <i>n</i> (%)			TM-AM Groups <i>n</i> (%)
	Teen Mother (TM) ( <i>n</i> =42)	Adult Mother (AM) ( <i>n</i> =53)	Adult Teen Mother (ATM) ( <i>n</i> =14)	<i>N</i> =95
Current age	<18 years old	6 (14.3)	-	6 (6.3)
	18-20 years old	36 (85.7)	-	36 (37.9)
	25-27 years old	-	6 (11.3)	6 (42.8)
	28-30 years old	-	6 (11.3)	2 (14.3)
	31-33 years old	-	21 (39.6)	4 (28.6)
	34-36 years old	-	9 (17.0)	-
	37-39 years old	-	9 (17.0)	-
>39 years old	-	2 (3.8)	2 (14.3)	2 (2.1)
Age at first pregnancy	<15 years old	1 (2.4)	-	-
	15-17 years old	23 (54.8)	-	4 (28.5)
	18-20 years old	18 (42.9)	-	10 (71.4)
	22-24 years old	-	2 (3.8)	-
	25-27 years old	-	13 (22.0)	-
	28-30 years old	-	14 (26.4)	-
	31-33 years old	-	14 (26.4)	-
	34-36 years old	-	7 (13.2)	-
	37-39 years old	-	3 (5.7%)	-
>39 years old	-	-	-	-
Child's age	<7 months old	18 (42.8)	11 (20.8)	1 (7.1)
	7-12 months old	11 (26.2)	16 (30.2)	2 (14.3)
	13-18 months old	5 (11.9)	11 (20.8)	3 (21.4)
	19-24 months old	5 (11.9)	7 (13.2)	2 (14.3)
	25-30 months old	-	3 (5.7)	3 (21.4)
	31-36 month old	2 (4.8)	3 (5.7)	2 (14.3)
	37-42 months old	1 (2.4)	2 (3.8)	1 (7.1)
Child's sex	Female	22 (52.4)	29 (54.7)	7 (50.0)
	Male	20 (47.6)	24 (45.3)	7 (50.0)
Annual household income		( <i>n</i> =38)	( <i>n</i> =48)	( <i>n</i> =12)
	< \$10,000	15 (39.5)	-	1 (8.3)
	\$10,000 - < \$25,000	20 (52.6)	6 (12.5)	5 (41.7)
	\$25,000 - < \$40,000	3 (7.9)	3 (6.3)	2 (16.7)
	\$40,000 - < \$55,000	-	8 (16.7)	1 (8.3)
	\$55,000 - < \$70,000	-	5 (10.4)	1 (8.3)

Variable	Caregiver Condition <i>n (%)</i>			TM-AM Groups <i>n (%)</i>	
	Teen Mother (TM) ( <i>n</i> =42)	Adult Mother (AM) ( <i>n</i> =53)	Adult Teen Mother (ATM) ( <i>n</i> =14)	<i>N</i> =95	
	\$70,000 - < \$85,000	-	7 (14.6)	2 (16.7)	7 (78.1)
	\$85,000 - < \$100,000	-	8 (16.7)	-	8 (9.3)
	> \$100,000	-	11 (12.8)	-	11 (12.8)
Educational attainment	Some high school	29 (69.0)	1 (1.9)	1 (7.1)	30 (31.6)
	High school	7 (16.7)	4 (7.5)	8 (57.1)	11 (11.6)
	Some college/ university	6 (14.3)	10 (18.9)	2 (14.3)	15 (15.8)
	College/university	-	27 (50.9)	3 (21.4)	28 (29.5)
	Graduate school	-	11 (20.8)	-	11 (11.6)
Employment status	Unemployed/ maternity leave	38 (90.5)	16 (30.2)	11 (78.6)	54 (56.8)
	Part-time	4 (9.5)	6 (11.3)	1 (7.1)	10 (10.5)
	Full-time	-	31 (58.5)	2 (14.3)	31 (32.6)
Ethnicity	Aboriginal	4 (9.5)	2 (3.8)	5 (35.7)	6 (6.3)
	African Canadian	3 (7.1)	2 (3.8)	-	5 (5.3)
	Caribbean	13 (31.0)	6 (11.3)	3 (21.4)	19 (20.0)
	Caucasian	9 (21.4)	17 (32.1)	4 (28.6)	26 (27.3)
	East Asian/ Pacific Islander	-	8 (15.1)	-	8 (8.4)
	Latin/Central/ South American	5 (11.9)	3 (5.7)	1 (7.1)	8 (8.4)
	Middle Eastern	1 (2.4)	3 (5.7)	-	4 (4.2)
	South Asian	-	3 (5.7)	-	3 (3.2)
	Other	7 (16.7)	9 (17.0)	1 (7.1)	16 (16.8)
Marital status	Single	26 (61.9)	7 (13.2)	10 (71.4)	33 (34.7)
	Married	1 (2.4)	38 (71.7)	-	39 (41.1)
	Common law	10 (23.8)	6 (11.3)	4 (28.6)	16 (16.8)
	Separated/divorced	-	2 (3.8)	-	2 (2.1)
	In a relationship	5 (11.9)	-	-	5 (5.3)

unemployed (90.5%), and 9.5% reported working part-time. No adolescent mothers reported currently working full-time. Among adult mothers, 30.2% reported currently being unemployed, while 58.5% reported working full-time, and 11.3% reported working part-time. It should be noted that many caregivers in the TM and AM samples were on maternity leave from work or unavailable to work due to caregiving responsibilities of children under 12 months of age. With respect to marital status, 61.9% of adolescent mothers identified being single, 26.2% identified being married or common-law, and 11.9% identified being in a relationship but not living together. Among adult mothers, 13.2% identified being single, 83% identified being married or living common-law, and 3.8% identified being separated or divorced.

### **Procedure**

This study was part of the larger study, ‘The York Parenting Project’ conducted by the Infant and Child Mental Health Lab at York University. The study received approval from the Research Ethics Board at York University. Consent was obtained from the Executive Directors of all participating agencies for the primary researcher to post flyers as well as recruit participants during weekly programming sessions. Participating agencies included Rosalie Hall and the YWCA Teen Mothers Program in Scarborough, Ontario; Humewood House and Rexdale Women’s Centre in Toronto, Ontario; Rose of Durham, Sunrise Support for Young Moms, and North Durham Teen Parents Services in Oshawa, Ontario; Brampton Neighbourhood Resource Centre in Brampton, Ontario; as well as Ontario Early Years Centres across the Greater Toronto Area.

The primary researcher and one research assistant were present for all data collection sessions. The researcher explained the study and the consent process to interested participants. Participants were advised that their participation in no way affected their relationship and services with the referring agency or organization. Participants who provide informed consent to continue with the study were be asked to complete a general demographic survey which identified information pertaining to psychiatric status and age of caregiver participant, age at childbirth, number of children, age of child participant, income and source of income, ethnicity, employment status, generational status, marital status, education, and number of family members residing in the household.

Following this, caregiver participants were asked to complete a battery of questionnaires which examined identity development, parent characteristics, parenting quality, child socioemotional functioning (a component of child characteristics), and contextual factors. Identity development was measured using the Ego Identity Process Questionnaire (EIPQ; Balistrieri, Busch-Rossnagel, & Geisinger, 1995). Parent characteristics were measured using the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown and Steer, 1988), and Beck Depression Inventory (BDI; Beck, Ward, & Mendelson, 1961). Parenting quality was measured using the Nursing Child Assessment Teaching Scale: Parent-Child Interaction (NCAST-PCI; Barnard, 1994). Child socioemotional functioning was measured using the Bayley Socioemotional Rating Scale (Bayley, 1993). Contextual factors were measured using a demographics survey developed by the researcher to assess SES, the Multidimensional Scale of Perceived Social Support (MSPSS, Zimet, Dahlem, Zimet & Farley, 1988), Childhood Trust Events



Survey (CTES; NCTSN, 2006), and Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994). The entire battery of questionnaires took approximately 45 minutes to complete.

The mother-child dyad participated in three play-based interactions that were videotaped and later coded by the research team who were trained and reliable in NCAST-PCI coding (Barnard, 1994) to obtain parenting quality ratings (the procedure for coding parenting quality is described in the *Measures* section). These interactions included a) a free-play scenario in which mothers were asked to play with their child first without the use of toys, and then using toys; b) a teaching task in which mothers were asked to teach a simple developmental task to their child which they had not yet mastered; and c) a novel toy task in which mothers were asked to incorporate a novel toy into play. This procedure is an adaptation of the protocol first introduced by Pederson and Moran (1995). This novel toy was a remote controlled rat intended to be somewhat unsettling for the child (and thus activate the attachment system). The play-based interactions took approximately 20 minutes to complete.

To assess child developmental functioning (a component of child characteristics), children participated in a standardized assessment of cognitive development with the primary researcher (Bayley Scales of Infant Development – Second Edition; BSID-II; Bayley, 1993). The primary researcher led the child through a series of play-based learning tasks designed to assess cognitive development and language development. The researcher was a Ph.D. student in a clinical psychology program who had previously been trained in administering the Bayley Scales assessment, and found to be reliable. The

assessment took approximately 30-45 minutes to complete. The entire study duration was approximately 2 to 2 ½ hours in length.

Upon completion of the study, participants received a gift certificate valued at \$40.00 as a gesture of appreciation for their time and participation in the research study. In addition, the Zero to Three parenting newsletter was distributed to participants which included parenting tips, information about developmental stages, as well as about new research findings in the area of parenting. Parents were also provided with a handout listing community-specific parenting resources. All child participants received a grab bag gift valued at \$1.00 and a certificate of participation.

## **Measures**

### ***Contextual Factors***

**Socioeconomic status.** Demographic information, including socioeconomic status, was obtained through a demographics survey developed by the primary researcher. Best practice research has suggested that, socioeconomic status is best derived from an examination of the confluence of income, level of education, and job status, versus just income alone (e.g., Hoff et al., 2002). This was the approach used in the current study and is described in detail in the Results section. On a Likert scale, participants were asked to report their total annual household income, highest level of education completed, and current employment status.

**Trauma history.** The Childhood Trauma Events Survey (CTES; NCTSN, 2006) is a 26-item self-report measure of trauma, stressor, and adversity history. The questionnaire was developed by a research team at the Cincinnati Children's Hospital Medical Centre –

Trauma Treatment Training Centre in collaboration with the Centres for Disease Control and Prevention (Felitti et al., 1998). The Adolescent version of the measure was adapted for the present study. Participants were asked to rate whether traumatic or adverse events occurred at any time during their history, with response options provided in a yes/no format. Responses were aggregated to yield cumulative trauma scores. Questions asked about a range of stressful life events including neglect (e.g., “Have you ever had a time in your life when you did not have the care that you needed, such as not having enough to eat, being left in charge of younger siblings for long periods of time, or being left with a grownup who uses drugs?”); physical injury (e.g., “Were you ever in a really bad accident, such as a car accident?”); domestic violence (e.g., “Have you seen or heard family members act like they were going to kill or hurt each other badly, even if they didn’t do it?”); physical, emotional, and sexual abuse (e.g., “Has anyone ever touched your private sexual body parts when you did not want them to?”); alcohol or drug use in the home (e.g., “Have you every had someone living in your home who abused alcohol or used street drugs?”); community violence (e.g., “Have you ever seen someone in your neighbourhood be beaten up, shot, or killed?”); and loss/separation from a caregiver (e.g., “Were you ever completely separated from your parent(s) for a long time, such as going to a foster home, your parent living far apart from you, or never seeing your parent?”). The items that comprise the questionnaire were derived from the USCLA PTSD Index, the Traumatic Events Screening Inventory for Children, and the Adverse Childhood Experiences Survey (Ribbe, 1996). As the CTES is a screening inventory designed to capture a frequency count of historical information related to trauma, psychometric properties are not applicable (Olafson & Connelly, 2012).

**Social support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988) is a 12-item self-report inventory that measures global perceived social support from family, friends, and significant others. With a maximum possible total score of 84, items were rated on a seven-point Likert scale with a range of 1 (strongly disagree) to 7 (strongly agree). Higher ratings indicated high levels of perceived global social support. Sample questions in the Family Support subscale include “I get the emotional help and support I need from my family” and “My family is willing to help me make decisions.” Sample questions in the Friends Support subscale include “I have friends with whom I can share my joys and sorrows” and “I can talk about my problems with my friends.” Sample questions in the Significant Others subscale include “There is a special person who is around when I am in need” and “I have a special person who is a real source of comfort to me.” Internal reliability of these subscales estimated through Cronbach’s Coefficient Alpha was 0.91 for Significant Other, 0.87 for Family, and 0.85 for Friends subscales. The reliability of the total scale was 0.88. The Cronbach’s Alphas in the present study were 0.95, 0.92, and 0.96 respectively for the subscales, and 0.92 for the total scale. The MSPSS has demonstrated moderate construct validity, with high levels of perceived social support associated with low levels of depression and anxiety symptoms (Zimet, Dahlem, Zimet, & Farley, 1988).

**Relationship security.** The Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994) is a 30-item self-report measure that examined perceived closeness in relationships in order to determine adult attachment styles. On a 5-point Likert scale, participants were asked to think about past and present relationships and rate the extent to which a list of statements described their feelings about their relationships, ranging from

“not at all like me” to “very much like me.” Scores yield four subscales that are derived from attachment theory (Bowlby, 1969): secure (e.g., “I find it easy to get emotionally close to others”); dismissing (e.g., “It is very important to me to feel independent in relationships”); preoccupied (e.g., “I worry about others not accepting me”); and fearful (e.g., “I am nervous when anyone gets too close to me”). Internal consistencies for the subscales have been found to range from 0.31 to 0.76, and test-retest reliabilities have been found to range from 0.39 to 0.58 (Brussoni, Jang, Livesley, & Mac Beth, 2000; Scharfe & Bartholomew, 1994). Griffin and Bartholomew have argued that the low alpha values are a reflection of the self-model and other-model paradigm built into the measure. Cronbach Alpha values for the present study ranged from 0.44 to 0.69.

**Perceived stress.** The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 10-item self-report measure that assesses the degree to which situations in one’s life are appraised as stressful. Participants are asked to rate 10 statements on a 5-point Likert scale with 0 representing “never” and 4 representing “very often” with respect to the degree of perceived strain, unpredictability, and pressure that they regard their lives hold. Sample questions include “In the past month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you found that you could not cope with all the things that you had to do?” The PSS has demonstrated high internal consistency with a Cronbach’s alpha of 0.92 (Cohen, Kamarck, & Mermelstein, 1983). The Cronbach’s alpha coefficient for the present study was 0.84. Construct validity has been demonstrated through significant positive correlation with measures of life event difficulty, depressive and physical symptoms, and social anxiety (Cohen, 2000).

### *Parent Characteristics*

**Identity development.** The Ego Identity Process Questionnaire (EIPQ; Balistreri et al., 1995) is a measure of developmental task attainment aligned with Marcia's (1966) model of identity status during adolescence. The self-report questionnaire is a 32-item Likert-scale designed to assess identity achievement in adolescence and adulthood. The questions ask about feelings and decisions related to occupation, politics, religion, values, friendship, romantic relationships, roles, and family. The two subscales that make up the EIPQ are the Exploration subscale and the Commitment subscale. Each subscale is comprised of 16 items with a range of 1 (strongly disagree) to 6 (strongly agree) for a total possible score ranging of 16 to 96 for each subscale. The procedure for deriving each total subscale score is to add the item scores for each scale. However, each subscale on the EIPQ contains items that are negatively worded and require reverse scoring before the subscale scores may be derived. Sample questions from the Exploration subscale include "There has never been a need to question my values" and "I have undergone several experiences that made me change my view on men's and women's roles." Sample questions from the Commitment subscale include "I'm not sure what type of dating relationship is best for me" and "I have definitely decided on the occupation that I want to pursue."

The protocol described by the test developers (Balistreri et al., 1995) for obtaining Identity Diffusion, Identity Foreclosure, Identity Moratorium, and Identity Achievement scores is to use their established medians (Commitment = 62, Exploration = 66.5) to perform a median split of data in order to allocate high and low respondents in categories of commitment and exploration. The EIPQ has shown convergent validity with other

instruments measuring identity constructs. The measure has demonstrated adequate test-retest reliability, inter-rater reliability, and internal reliability for the exploration and commitment scales. For example, Balistreri et al. (1995) reported test-retest reliability coefficients of .78 for the commitment scale and .91 for the exploration scale.

Coefficients of internal reliability (Cronbach's alpha) for Commitment and Exploration were reported by Balistreri et al. (1995) to be 0.75 and 0.76. Berman et al. (2008) reported similar internal consistency of the EIPQ with Cronbach's alpha at 0.70 for the Exploration subscale and 0.72 for the Commitment subscale, and Schwartz (2000) reported a Cronbach's alpha of 0.74 for exploration and 0.64 for commitment. In the present sample, the Cronbach's Alpha was 0.72 for the Commitment subscale and 0.71 for the Exploration subscale.

**Maternal depression.** The Beck Depression Inventory (BDI; Beck et al., 1961) is a 21-item self-report measure that examines current depressive symptoms, and yields a total depression score. With a maximum possible score of 63, items are rated on a four-point Likert scale with higher scores indicating higher levels of depressive symptomatology. Total depression scores ranging from 0-9 indicate minimal depression severity; scores ranging from 10-18 indicate mild depression severity, scores ranging from 19-29 indicate moderate depression severity, and scores ranging from 30-63 indicate severe depression. The BDI has shown excellent psychometric properties and good qualities as a screening method for identifying the possible presence of a clinical diagnosis of depression (Lasa et al., 2000). It is a widely used as a measure to assess the severity of depression of people over the age of 13, and has high reliability and validity (Beck, Steer, & Garbin, 1988; Brown, Schulberg & Madonia, 1995; Richter, Werner,

Heerlim, Kraus, & Sauer, 1998). In the present sample, the Cronbach's Alpha reliability of the 21-item BDI was 0.88.

**Maternal anxiety.** The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) is a 21-item self-report inventory that measures current clinical anxiety and yields a total anxiety score. With a maximum score of 63, items are rated on a four-point Likert scale with higher scores indicating higher levels of clinical anxiety. Total anxiety scores ranging from 0-7 indicate a minimal level of anxiety, scores ranging from 8-15 indicate mild anxiety, scores ranging from 16-25 indicate moderate anxiety, and scores ranging from 26-63 indicate severe anxiety. Internal consistency reliability estimates (Cronbach's alpha) for the BAI range from .92 to .94 in adults. In the present study, the Cronbach's alpha reliability of the 21-item BAI was 0.83. A review of studies on the psychometric properties of the BAI conducted by Wilson, deBuers, Palmer & Chambless (1999) concluded that the BAI has good internal consistency and test-retest reliability. The concurrent validity of the BAI has also been demonstrated through significant correlations with anxiety disorders and self-report instruments (Contreras, Fernandez, Malcarne, Ingram and Vaccarino, 2004).

### ***Parenting Quality***

**Maternal sensitivity, responsiveness to child's distress, and growth fostering.** The Nursing Child Assessment Teaching Scale: Parent-Child Interaction (NCAST-PCI; Barnard, 1994) is an observational coding system used to assess parenting quality indicators such as maternal sensitivity, responsiveness to child's distress, cognitive growth fostering, and socioemotional growth fostering. It is also designed to assess child



dyadic behaviours such as clarity of cues and responsiveness to caregiver, with the overall goal to provide information about strengths and weaknesses in the caregiver-infant dyadic interaction and pattern of communication. Caregivers and their children less than 42 months of age were videotaped in a prescribed brief interaction (lasting less than 5 minutes) in which the caregiver was asked to select a developmental task from a list (e.g., stringing beads, turning pages of a book, playing pat-a-cake) and subsequently teach the selected task to their child.

Scoring of parenting quality variables and child dyadic behaviours involved reviewing videotapes and scoring observable behaviours according to a set of prescribed criteria. Observed behaviours included caregivers' ability to recognize and respond in a timely and effective manner to their infant's needs, and children's ability to provide clear cues about their needs, through postural attention, vocalization, and displays of engagement or disengagement. The primary researcher had previously been trained by a certified NCAST-PCI trainer and deemed reliable to analyze interactions with the NCAST system. In addition, every fifth videotaped interaction was blind-coded by a second trained undergraduate coder to verify the reliability of scores. The NCAST-PCI has demonstrated good internal consistency reliability with Cronbach Alpha scores ranging from 0.76 to 0.87 for the total scores and 0.59 to 0.80 for the individual subscales (Barnard, 1994). The NCAST-PCI has also demonstrated good content validity, correlating with subsequent language and IQ outcomes in infants (Bee et al., 1982). Additionally, the Teaching scores have demonstrated a significant concurrent association with scores on the Bayley Mental and Psychomotor Development Index (Barnard et al., 1985).

### *Child Characteristics*

**Child cognitive and socioemotional functioning.** The Bayley Scales of Infant Development – Second Edition (BSID-II; Bayley, 1993) is a standardized developmental assessment tool used to describe the current developmental functioning of infants in the areas of cognitive development, motor development, language development, and socioemotional functioning. In the present study, the Cognitive Scale and Language Scale (both receptive and expressive communication) of the BSID-II were administered to children between one and 42 months of age. The Socio-Emotional rating scale was a parent-report questionnaire completed by caregivers. It included 35 items, which corresponded to infants' developmental age, and were derived from the Greenspan social-emotional growth chart (Bayley, 1993). The Socio-Emotional rating scale has demonstrated strong internal consistency with coefficients ranging from 0.76 to 0.94 (Greenspan, 2004). Examiners who were experienced Ph.D. level graduate students in a clinical developmental psychology program, and had received training in BSID-II testing procedures, administered the assessment. Raw scores were obtained through presenting a series of test materials to the child, observing his or her responses and contingent behaviours, and scoring the presence or absence of a behaviour. Raw scores were converted to scaled scores and to composite scores. These scores were used to determine the child's performance compared with norms taken from typically developing children of their age. The BSID-II was standardized on a U.S. normative sample of 1700 children between the ages of 0-42 months (Bayley, 1993). The BSID-II has been found to have strong construct and concurrent validity. Internal consistency reliability estimates are .91 (cognitive), .87 (receptive communication), .87 (expressive communication) and .93

(language composite). Internal consistency coefficients range from .83 to .94 for the social-emotional items. Test-retest reliability and average stability coefficients were .80 or greater across all ages (Albers & Grieve, 2008).

**Child dyadic behaviour.** Child dyadic behaviour (clarity of cues and responsiveness to caregiver) was measured using the Nursing Child Assessment Teaching Scale: Parent-Child Interaction (NCAST-PCI; Barnard, 1994). See “Parenting Quality” above for information regarding this measure.

### **Statistical Analyses**

The Statistical Package for the Social Sciences Data (IBM SPSS, version 22) and RStudio (version 0.98) were used to compute all statistical analyses. An alpha level of .05 was used for all significance tests. The data were screened for missing values, outliers, and normality. Kurtosis, skew, and descriptive statistics suggest that assumptions of normality were met. In cases of missing data, the statistical package *Mice* in RStudio was used to perform multiple imputation procedures. Multiple imputation was only performed when there was less than 2% of data missing per case.

Data were analyzed in several steps. First, descriptive statistics and bivariate correlations were calculated across the whole sample as well as for TM, AM, and ATM groups, to determine means, standard deviations, and relationships among variables of interest. One-way analyses of variance were conducted to compare TM, AM, and ATM groups on all variables of interest, to understand how contextual factors, parent characteristics, parenting quality, and child characteristics varied as a function of maternal age. Where multiple regressions were conducted, regression diagnostics were

always performed prior to analyses to screen for possible violation of assumptions. Scatterplots and residuals were also examined for all regression analyses. While slight variations in the data were apparent on the regression curves, overall relationships appeared to be generally linear, or were otherwise amended. Studentized residuals appeared to be normally distributed for all analyses; however, some variations were observed in the data and were considered to be a result of the small sample size. Multicollinearity was assessed with all VIF statistics falling well below 5. Thus, no problematic correlations were found between predictor and dependent variables.

To address Hypothesis 1, independent samples t-tests and analyses of variance were performed to compare patterns of identity development between teen mothers (TM) and adult mothers (and for descriptive purposes, former teen mothers (ATM)). To address Hypothesis 2, independent samples t-tests and analyses of variance were performed to compare socioemotional functioning and contextual variables in the lives of adolescent and adult mothers. Multiple regression analyses were conducted to examine the relationship between contextual factors and parent characteristics. The regression model was then expanded to investigate whether contextual factors and parent characteristics moderated the relationship between maternal age and identity development. To address Hypothesis 3, independent samples t-tests and multiple regression analyses were performed to examine the relationship between parent characteristics and parenting quality. Multiple regression was also used to examine whether the relationship between maternal age and parenting quality was mediated by parent characteristics. Baron and Kenny's (1986) criteria for mediation were used to test this relationship. To address Hypothesis 4, multiple regression analyses were performed to examine the relationship

between indicators of parenting quality and child characteristics. To address Hypothesis 5, a structural equation model with observed variables was specified to test the simultaneous relationship between contextual factors, parent characteristics, parenting quality, and child characteristics. Maximum Likelihood Estimation was used to test the hypothesized model. Model fit statistics were examined to evaluate the goodness of model fit, and the model was revised to re-fit the data as necessary.

## CHAPTER IV

### RESULTS

#### **Descriptive Characteristics**

The means, standard deviations, and bivariate correlations of all variables of interest by maternal group (adolescent mothers, adult mothers) are reported in Tables 2 and 3. The demographic characteristics of adolescent mothers and adult mothers were compared using independent samples t-tests, to assess how means varied as a function of age. The results are presented in Table 4a. Significant differences were found between adolescent and adult mothers on socioeconomic variables including total annual income, level of education, and employment status. Adolescent mothers ( $M=11,412$  dollars,  $SD=10,333$  dollars) had significantly lower annual income than adult mothers ( $M=84,437$  dollars,  $SD=66,274$  dollars);  $t(84) = -6.72, p < .001$ . Adolescent mothers ( $M=1.48$ ,  $SD=.80$ ) reported obtaining significantly less education than adult mothers ( $M=3.81$ ,  $SD=.92$ );  $t(93) = -12.97, p < .001$ . They were also more likely to be unemployed ( $M=2.89$ ,  $SD=.31$ ) than older mothers ( $M=1.71$ ,  $SD=.91$ );  $t(89) = 7.69, p < .001$ . For subsequent analyses, these variables were either entered as a covariate where relevant (discussed below), or separate analyses were performed for adolescent and adult mothers, to allow the unique relationship between contextual factors, identity development, and outcome variables to be understood, while isolating the impact of maternal age.

Furthermore, there was a significant correlation between the variables that comprise SES: Level of education ( $M=2.79$ ,  $SD=1.42$ ) was positively correlated with

Table 2

*Means, Standard Deviations, and Bivariate Correlations Among Study Variables (TM, n=42)*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Identity commitment	61.59 (8.78)	-																	
2. Identity exploration	59.83 (9.80)	-.17	-																
3. Trauma history	11.36 (6.37)	-.26	.10	-															
4. Annual income	11,412 (10333)	.10	-.03	-.12	-														
5. Social support	52.75 (15.19)	.14	-.20	-.29*	.16	-													
6. Relationship security	3.05 (.59)	.05	.06	.06	.10	.41*	-												
7. Relationship fearful	3.24 (.85)	-.28	.29	.45*	-.02	-.46*	-.42*	-											
8. Relationship preoccupied	2.88 (.67)	-.26	.06	.18	.21	.07	.02	.39*	-										
9. Relationship dismissing	3.39 (.67)	.02	.01	.09	-.11	-.40*	-.39*	.20	-.25	-									
10. Depression	13.28 (9.85)	.02	.05	.29*	.17	-.04	-.36*	.51*	.43*	.06	-								
11. Anxiety	12.51 (9.89)	-.08	.12	.17	.08	.01	-.16	.39*	.50*	-.21	.66*	-							
12. Sensitivity	8.61 (1.46)	.01	-.21	.06	.16	-.03	.12	-.10	-.11	-.25	-.23	-.27	-						
13. Responsiveness	9.83 (1.38)	-.12	-.21	.19	.07	-.09	-.20	.21	.01	-.08	.09	-.01	.36*	-					
14. Cognitive growth fostering	9.72 (3.41)	.18	-.14	.26	.01	-.22	.02	-.06	.01	.13	-.03	-.20	.49*	.08	-				
15. Socioemotional growth fostering	7.78 (1.49)	.45*	-.23	-.08	.18	-.04	.04	-.34*	-.02	.13	-.24	.32	.27	-.03	.59*	-			
16. Child dyadic behaviour	14.44 (3.31)	.29	.14	-.03	.26	.08	.23	-.32*	-.01	.21	-.18	-.10	.20	.37*	.34*	.56*	-		
17. Child cognitive functioning	95.24 (14.18)	-.03	-.03	.05	-.10	.19	-.15	.06	.36*	-.29	.33*	.30*	-.14	.10	.08	.02	-.21	-	
18. Child socioemotional functioning	103.82 (15.13)	.12	.06	.20	.07	.05	.06	.10	.15	.03	-.22	-.31*	-.06	.14	-.02	.17	.03	1.5	-

Table 3

*Means, Standard Deviations, and Bivariate Correlations Among Study Variables (AM, n=53)*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Identity commitment	68.3 (8.34)	-																	
2. Identity exploration	61.11 (9.99)	-.28*	-																
3. Trauma history	5.64 (5.43)	.10	.05	-															
4. Annual income	84,437 (66274)	.17	-.28	.06	-														
5. Social support	64.46 (13.61)	.23	-.25	-.12	.13	-													
6. Relationship security	3.47 (.57)	-.28*	.32*	-.04	-.04	.03	-												
7. Relationship fearful	2.58 (.86)	.06	-.03	.04	-.28*	-1.6	-.39*	-											
8. Relationship preoccupied	2.90 (.69)	-.12	.08	-.06	-.34*	-.20	-.04	-.11	-										
9. Relationship dismissing	3.32 (.60)	.04	-.10	.34*	-.02	-.16	-.23	.43*	-.24	-									
10. Depression	7.58 (6.57)	.00	.00	.03	-.02	-.30*	-.42*	.33*	.27*	.27*	-								
11. Anxiety	5.65 (6.08)	-.03	.06	.10	-.25	-.06	-.35*	.31*	.2	.21	.67*	-							
12. Sensitivity	8.90 (1.03)	.23	-.22	-.13	.21	-.07	-.14	-.12	-.07	-.11	.14	.00	-						
13. Responsiveness	10.10 (1.11)	.08	-.11	-.21	.16	-.14	.01	.08	.01	-.06	.03	-.07	.10	-					
14. Cognitive growth fostering	11.54 (2.77)	.01	-.06	-.05	.02	-.16	.23	-.21	-.09	-.04	-.06	-.07	.25	-.15	-				
15. Socioemotional growth fostering	8.46 (1.33)	.13	.05	-.23	.06	-.06	.07	-.04	.03	.03	.09	-.18	.41*	-.06	.50*	-			
16. Child dyadic behaviour	15.96 (2.76)	-.07	.09	.05	.07	-.15	.29*	-.22	.07	.13	.12	-.10	.26*	.31*	.56*	.68*	-		
17. Child cognitive functioning	102.10 (12.76)	.28*	.00	-.19	.11	-.04	.00	.10	.07	-.07	.09	.05	.07	.24	-.03	-.05	-.21	-	
18. Child socioemotional functioning	103.00 (15.68)	.06	.14	-.07	-.00	.35*	.24	-.04	-.10	-.30*	-.28*	-.20	-.10	-.15	-.09	.01	-.17	.02	-



employment status ( $M=2.21$ ,  $SD=.93$ ), wherein higher levels of obtained education were associated with greater chance of full-time employment,  $r(95) = .62$ ,  $p < .0001$ . Level of education was also positively correlated with total annual income ( $M=\$52,170$ ,  $SD=61,691$ ), wherein higher levels of obtained education were associated with high annual income,  $r(86) = .58$ ,  $p < .0001$ . Total annual income was also positively correlated with employment status such that higher annual income was associated with greater chance of full-time employment,  $r(95) = .59$ ,  $p < .0001$ . Because of the association among these three variables, total annual income was used as a proxy for socioeconomic status (SES) in subsequent regression analyses to reduce risk for multicollinearity and maximize statistical power. Employment status and level of education were reintroduced in the final structural equation model so that they could be entered, along with income, as indicators of the SES latent construct.

Table 4a

*T-Tests Comparing Demographic Variables as a Function of Maternal Age*

	Adolescent Mothers	Adult Mothers	<i>t</i>
	(TM)	(AM)	
	<i>M(SD)</i>	<i>M(SD)</i>	
Current Age	18.11 (1.2)	33.11 (4.09)	-22.19**
Child's Age in Months	10.7 (9.5)	14.5 (12.3)	-1.01
Total Annual Income	10,512 (10,333)	84,437 (66,274)	-6.72**
Level of Education	1.48 (.80)	3.81 (.92)	-12.97**
Employment Status	2.89 (.31)	1.71 (.91)	7.69**
Ethnicity	5.30 (2.59)	6.32 (8.05)	-1.62
Marital Status	2.05 (1.41)	2.09 (.63)	-.79

\*\* $p < .001$ **H1: Identity Development among Adolescent and Older Mothers**

To investigate Hypothesis 1a, rates of identity commitment and exploration in the current sample of adolescent mothers (TM;  $n=42$ ) were compared to rates established in

the literature for non-parenting adolescents. In their study validating the EIPQ, Balistreri and colleagues (1995) ascertained median scores of 62.0 for Commitment, and 66.5 for Exploration in a sample of 260 high school and college students ranging in age from 17-24 years old ( $M=19.1$ ). These median scores are comparable to subsequent research investigating identity development in adolescent samples (e.g., Berman et al., 2001).

In the present sample of adolescent mothers, the median score for Commitment was 60.0 ( $M=61.59$ ,  $SD=8.78$ ), and the median score for Exploration was 58.0 ( $M=59.84$ ,  $SD=9.80$ ). This finding partially supports Hypothesis 1a: Consistent with the hypothesis, adolescent mothers have lower median identity exploration scores than same-age adolescent peers who are not parenting; however, not consistent with the hypothesis, adolescent mothers had similar median identity commitment scores as same-age non-parenting peers. Among adult mothers in this sample (AM;  $n=53$ ), the median EIPQ Commitment score was 69.0 ( $M=68.34$ ,  $SD=8.34$ ) and the median EIPQ Exploration score was 61.0 ( $M=61.12$ ,  $SD=9.99$ ). Similarly, among former teen mothers (ATM;  $n=14$ ), the median EIPQ Commitment score was 69.5 ( $M=67.44$ ,  $SD=8.17$ ) and the median EIPQ Exploration score was 61.5 ( $M=61.55$ ,  $SD=7.15$ ). This suggests that identity commitment levels in adolescent mothers are comparable to same-age non-parenting peers, but lower than adult mothers. Identity exploration among adolescent mothers is lower than both same-age non-parenting peers and adult mothers. These findings partially support Hypothesis 1a, with mean commitment levels emerging lower than expected, and mean exploration levels emerging as expected.

To address Hypothesis 1b, an independent samples t-test was performed to compare levels of Commitment and Exploration among adolescent and adult mothers. In

partial support of Hypothesis 1b, a significant difference in mean scores was found for Identity Commitment but not Exploration. Adolescent mothers reported significantly lower mean scores of Identity Commitment than adult mothers;  $t(93)=-3.83, p < .0001$ . No significant difference emerged between adolescent and adult mothers on levels of Identity Exploration;  $t(93)=-0.62, p = .55$ . For comparative purposes, the ATM maternal group (adult mothers who first gave birth as teens) was then added to analyses. The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated

Table 4b

*Means and Standard Deviations of EIPQ Scores as a Function of Maternal Age*

Age group	n	Identity commitment			Identity exploration		
		Median	M	SD	Median	M	SD
Non-parenting adolescents*	-	62.0	-	-	66.5	-	-
Adolescent mothers (TM)	42	60.0	61.59	8.78	58.0	59.84	9.80
Adult mothers (AM)	53	69	68.34	8.34	61.0	61.12	9.99
Adult adolescent mothers (ATM)	14	69.5	67.44	8.17	61.5	61.55	7.15

*Notes.* \*Reported by Balistreri et al. (1995)

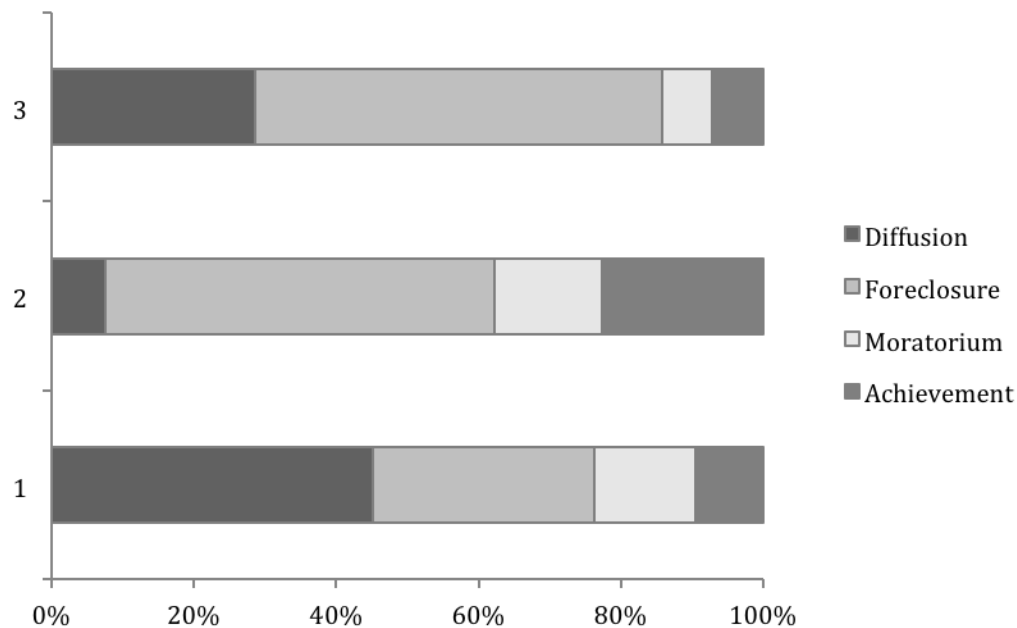
that the data were statistically normal, and the Levene's F test indicated homogeneity of variance. In a one-way between subjects ANOVA, an significant effect of maternal age on Identity Commitment for the three age conditions was found  $F(2,106) = 7.76, p = .001, \omega = 0.18$ . Post hoc comparisons using the Tukey HSD test indicated that the mean Identity Commitment score for the TM group was significantly different than the AM group,  $p = .001$ . A trend towards significance was found when comparing the TM and ATM group,  $p = .071$ . However, the AM and ATM groups did not significantly differ from each other,  $p = .93$ .

A one-way ANCOVA was conducted to determine whether the statistically significant difference between TM, AM, and ATM caregiver groups on Identity Commitment remained after controlling for income (a proxy for socioeconomic status). Results indicated that, even after controlling for these demographic variables, there remained a significant effect of maternal age on Identity Commitment,  $F(5,94) = 2.76, p = .023$ . No significant difference was found between the age conditions on Identity Exploration [ $F(2,106) = .27, p = .76$ ]. Thus, results did not support Hypothesis 1b, which conjectured that adolescent mothers have similar rates of commitment as adult mothers, and lower rates of exploration. In contrast, results indicated that adolescent mothers had lower rates of commitment than adult mothers, and similar rates of exploration.

The protocol described by EIPQ test developers (Balistreri et al., 1995) for obtaining Identity Diffusion, Identity Foreclosure, Identity Moratorium, and Identity Achievement scores is to use their established medians (Commitment = 62, Exploration = 66.5) to perform a median split of data to allocate high and low respondents in categories of commitment and exploration. Using these established criteria, among the 42 TM adolescent participants in the current sample, 45.2% (n=19) were in Identity Diffusion, 31.0% (n=13) were in Identity Foreclosure, 14.3% (n=6) were Identity Moratorium, and 9.5% (n=4) were in Identity Achievement. In contrast, among the 53 AM adult participants in the current sample, 7.5% (n=4) were in Identity Diffusion, 54.7% (n=29) were in Identity Foreclosure, 15.1% (n=8) were in Identity Moratorium, and 22.6% (n=12) were in Identity Achievement. Among the 14 ATM adult mothers who gave birth to their child as adolescents, 28.6% (n=4) were in Identity Diffusion, 57.1% (n=8) were in Identity Foreclosure, 7.1% (n=1) was in Identity Moratorium, and 7.1% (n=1) was in

Identity Achievement. The distribution of identity status by maternal age group is schematically depicted in Figure 5.

To carry out Hypothesis 1c, a one-way between subjects ANOVA was conducted to examine whether there were significant differences in identity status (i.e., Diffusion, Foreclosure, Moratorium, Achievement) based on the current age of the caregiver participant. The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated that the data were statistically normal, and the Levene's F test indicated homogeneity of variance. A significant difference was found for identity status on caregiver age [ $F(3,92) = 7.27, p < .0001, \omega = 0.17$ ]. Post-hoc comparisons using the Tukey HSD test indicated that there was a significant difference in age of participants belonging to Identity Diffusion (M age=20.87, SD=5.47) and Identity Achievement (M age = 27.88, SD=7.36),  $p = .018$ . Mean age of participants in Identity Diffusion and Identity Foreclosure (M age=29.48, SD=7.81) were also significantly different,  $p < .0001$ . No significant differences emerged for mean age of participants in Identity Moratorium (M age = 26.71, SD=7.50) compared to any of the identity categories. These results largely support Hypothesis 1c, with the finding that younger mothers were more likely to endorse states of identity diffusion or foreclosure, and older mothers more likely to endorse states of identity achievement. In these results, we also found that adult mothers strongly endorsed the state of identity foreclosure, characterized by high commitment and low exploration.



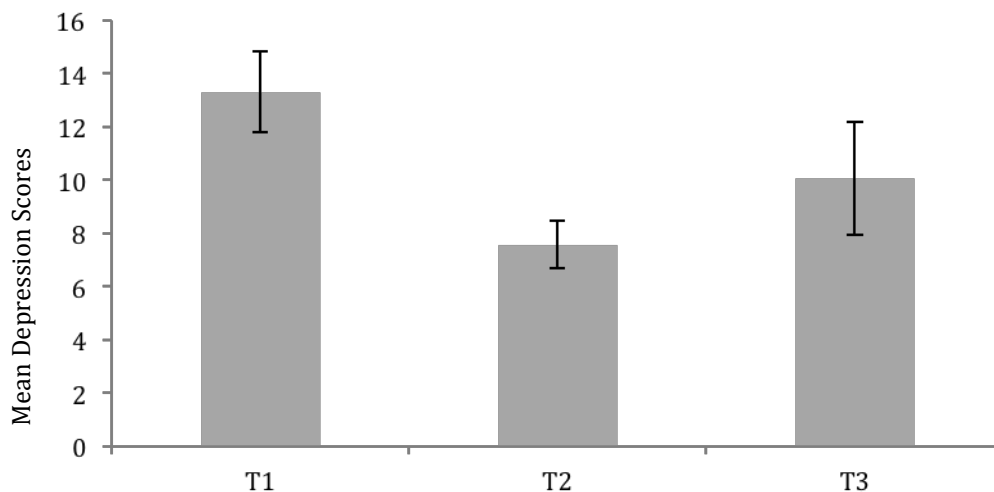
*Figure 5.* Distribution of Identity Status by Maternal Age Group (1: Current Adolescent Mothers; 2: Adult Mothers; 3: Former Adolescent Mothers)

## **H2: The Relationship between Contextual Factors and Parent Characteristics**

A number of analyses were conducted to examine the relationship between contextual factors and parent characteristics. As illustrated in Figure 2, contextual factors included: (i) maternal history of trauma; (ii) SES; and (iii) social support/relationships. Parent characteristics included: (i) parent socioemotional functioning (maternal depression; maternal anxiety) and (ii) parent identity development: (identity commitment; identity exploration). To test Hypothesis 2a, a one-way ANOVA was calculated to examine whether TM, AM, and ATM groups differ with respect to their socioemotional functioning. A series of bivariate correlations were calculated to examine the strength of the relationship between various contextual factors and parent socioemotional functioning. Significant bivariate associations were entered into multiple regression analyses to carry out Hypothesis 2b, examining the predictive value of contextual factors

on parent socioemotional functioning. A series of bivariate correlations were calculated to examine the strength of the relationship between various contextual factors and identity development. Significant bivariate associations were entered into multiple regression analyses to test Hypothesis 2c, examining the predictive value of contextual factors on parent identity development. To address Hypothesis 2d, regression models were expanded to examine whether the effects of contextual factors on identity development is moderated by age. Finally, for exploratory purposes, certain contextual factors (trauma history and social support) were examined in more detail to examine what types of trauma experiences and what types of social support are more closely related to parent characteristics in adolescent mothers and older mothers.

**Maternal age and socioemotional functioning.** A one-way ANOVA was conducted to examine whether there were significant differences in maternal depressive symptoms as a function of age (examining TM, AM, and ATM groups). The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated that the data were statistically normal, and the Levene's F test indicated homogeneity of variance. A one-way ANOVA revealed a statistically significant effect of maternal depressive symptom scores,  $F(2,106) = 5.72, p = .004, \omega = .28$ , indicating significant mean differences in maternal ratings of depression among TM, AM, and ATM groups. Mean depressive symptom scores for TM, AM, and ATM groups are plotted in Figure 6.



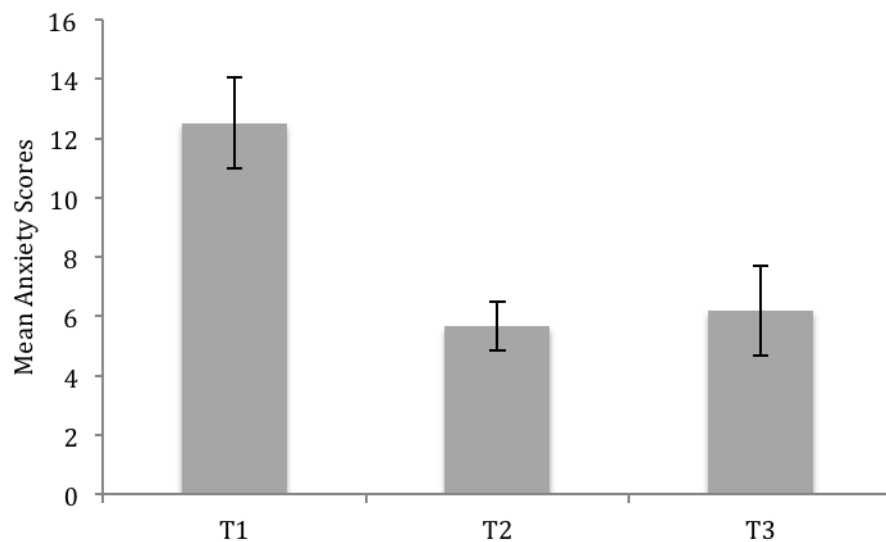
*Figure 6.* Mean depression scores for current teen mothers, adult mothers, and former teen mothers. Error bars represent standard error.

Post hoc comparisons using the Tukey HSD test indicated that the mean depressive symptom scores for the TM group ( $M=13.28$ ,  $SD=9.85$ ) were significantly higher than the AM ( $M=7.58$ ,  $SD=6.57$ ),  $p < .0001$ , and ATM ( $M=10.05$ ,  $SD=7.97$ ) group,  $p = .025$ . However, the AM and ATM groups did not significantly differ from each other,  $p = .970$ . Thus, adolescent mothers reported significantly higher depressive symptom than adult mothers who gave first birth to their child as adults (AM), and adult mothers who gave birth to their first child as adolescents (ATM). Mean depression ratings for AM mothers were in the “minimal depression” severity range, while mean depression ratings for TM and ATM mothers were in the “mild depression” severity range.

A one-way ANOVA was calculated to examine whether there were significant differences in maternal anxiety as a function of age (examining TM, AM, and ATM groups). The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated that the data were statistically normal. However, the Levene’s F test



revealed that the homogeneity of variance assumption was violated ( $p < .0001$ ). Thus, the Welch's F test was calculated. The one-way ANOVA of mean maternal anxiety scores revealed a statistically significant effect, Welch's  $F(2,106) = 7.84$ ,  $p = .001$ ,  $\omega = .36$ , indicating significant mean differences in maternal anxiety scores among TM, AM, and ATM groups. Results are plotted in Figure 7. Post hoc comparisons using the Games-Howell post hoc procedure indicated that adolescent mothers (TM;  $M=12.51$ ,  $SD=9.89$ ) reported significantly higher mean anxiety scores than adult mothers (AM;  $M=5.65$ ,  $SD=6.08$ ;  $p = .001$ ), and adult mothers who gave birth to their first child as adolescents (ATM;  $M=6.20$ ,  $SD=5.67$ ;  $p = .015$ ). AM and ATM did not differ significantly in their mean anxiety scores,  $p = .947$ . Mean anxiety severity ratings for TM mothers were in the "mild anxiety" range, while mean anxiety ratings for AM and ATM mothers were in the "minimal anxiety" range. Overall, these findings support Hypothesis 2a, demonstrating that adolescent mothers in this sample reported higher rates of depression and anxiety symptoms than older mothers.



*Figure 7.* Mean anxiety scores for current teen mothers, adult mothers, and former teen mothers. Error bars represent standard error.

### **Contextual factors and maternal depression.**

Bivariate correlational analyses examined the relationship between contextual factors and maternal depression. Results are summarized in Table 5. Maternal depression ( $M=10.1$ ,  $SD=8.6$ ) was positively correlated with maternal history of trauma ( $M=8.2$ ,  $SD=6.5$ ),  $r(95) = .30$ ,  $p = .004$ . Thus, mothers who reported experiencing more traumatic events in their history endorsed greater current levels of depressive symptoms. Maternal depression was negatively correlated with total annual income, wherein higher rates of depressive symptoms were associated with lower annual income,  $r(95) = -.22$ ,  $p = .04$ . Maternal depression was also negatively correlated with total social support ( $M= 59.29$ ,  $SD=15.40$ ), such that higher rates of depressive symptomatology were associated with lower levels of perceived social support,  $r(95) = -.25$ ,  $p = .01$ . With respect to relationship security variables, maternal depression was negatively correlated with the secure ( $M=3.3$ ,  $SD=.61$ ) relationship style, and positively correlated with the fearful ( $M=2.9$ ,  $SD=.92$ ) and preoccupied ( $M=2.9$ ,  $SD=.68$ ) relationship styles. Thus, mothers who endorsed higher levels of depressive symptoms were less likely to likely to feel secure [ $r(95) = -.45$ ,  $p < .0001$ ], and more likely to feel fearful [ $r(95) = .49$ ,  $p < .0001$ ] or preoccupied in relationships [ $r(95) = .32$ ,  $p = .002$ ]. No association was found between maternal depression and the dismissing ( $M=3.3$ ,  $SD=.63$ ) relationship style [ $r(95) = .15$ ,  $p = .14$ ].

Table 5

*Correlations Among Contextual Factors and Socioemotional Functioning (N=95)*

Variable	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9
1. Depression	10.10 (8.62)	-								
2. Anxiety	8.68 (8.65)	.71**	-							
3. Trauma history	8.17 (6.49)	.30**	.29**	-						
4. Annual income	52,170 (61691)	-.22*	-.34**	-.26*	-					
5. Social support	59.29 (15.40)	-.25*	-.17	-.34**	.31**	-				
6. Rel. security	3.28 (.61)	-.45**	-.34**	-.29**	.21	.31**	-			
7. Rel. fearful	2.87 (.92)	.49**	.44**	.35**	-.40**	-.40**	-.48**	-		
8. Rel. preoccupied	2.89 (.68)	.32**	.32**	.04	-.13	-.06	-.00	.09	-	
9. Rel. dismissing	3.35 (.63)	.15	-.02	.21*	-.07	-.28**	-.30**	.32**	-.25*	-

Notes. \* $p < .05$ . \*\* $p < .01$ .

Two multiple regression models were estimated to determine if contextual variables ‘trauma history’, ‘total annual income’, ‘social support’, and ‘relationship security (secure, fearful, preoccupied, dismissing subtypes)’ significantly predicted maternal depressive symptoms in adolescent mother and adult mother samples. Results are summarized in Table 6. Taken together, this set of contextual predictors explained a significant proportion of the variance in depressive symptoms in adolescent mothers,  $R^2 = .507$ ,  $F(7, 35) = 4.41$ ,  $p = .002$ . Thus, 50.7% of the variance in maternal depression among adolescent mothers was explained by these contextual factors. Controlling for trauma, social support, and relationship security, total annual income was not significantly related to maternal depressive symptoms, unstandardized  $\beta = .122$ ,  $t(35) = 1.1$ ,  $p = .32$ . A 95% confidence interval for the unique effect of total annual income is (-.001, .133). Controlling for total annual income, social support, and relationship security,

trauma was also not related to maternal depressive symptoms, unstandardized  $\beta = .185$ ,  $t(35) = .82$ ,  $p = .42$ . A 95% confidence interval for the unique effect of trauma is (-.278, .648). Controlling for annual income, trauma, and relationship security, perceived social support was not related to maternal depressive symptoms, although there was a trend towards significance, unstandardized  $\beta = .197$ ,  $t(35) = 1.91$ ,  $p = .06$ . A 95% confidence interval for the unique effect of social support is (-.013, .406). Controlling for income, trauma, and social support, the dismissing [unstandardized  $\beta = .136$ ,  $t(35) = .57$ ,  $p = .57$ ], preoccupied [unstandardized  $\beta = 3.20$ ,  $t(35) = 1.32$ ,  $p = .20$ ], and secure styles [unstandardized  $\beta = -5.23$ ,  $t(35) = -1.89$ ,  $p = .07$ ] were not related to maternal depressive symptoms. A 95% confidence interval for the unique effect of dismissing, preoccupied, and secure predictors is (-3.47, 6.18; -1.77, 8.17; and -10.87, .41) respectively. Controlling for total annual income, social support, trauma, and secure, preoccupied, and dismissing relationship styles, relationship fearfulness was significantly related to maternal depressive symptoms, suggesting that adolescent mothers with higher rates of fearfulness in relationships had higher levels of depressive symptoms, [unstandardized  $\beta = 5.68$ ,  $t(35) = 22.44$ ,  $p = .02$ ]. The 95% confidence interval for the unique effect of relationship fearfulness is (.92, 10.44).

In contrast to the adolescent sample, taken together, this set of contextual predictors was not significantly related to depressive symptoms in adult mothers, [unstandardized  $\beta = 2.22$ ,  $t(46) = 1.55$ ,  $p = .18$ ]. Thus, consistent with Hypothesis 2b, contextual factors SES, trauma history, social support, and relationship security significantly predicted rates of depression in adolescent mothers, but not in adult mothers.

Table 6

*Summary of Multiple Regression Analyses for Contextual Variables Predicting Maternal Depression*

Variable	Adolescent Mothers (TM) ( <i>n</i> =42)			Adult Mothers (AM) ( <i>n</i> =53)		
	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Trauma history	0.19	0.23	0.19	-0.19	0.15	-0.19
Annual income	0.00	0.00	0.12	0.00	0.00	0.90
Social support	0.21	0.11	0.20	-0.64	0.06	-0.17
Rel. security	-5.23	2.76	5.20	-2.34	1.46	-0.24
Rel. fearfulness	5.68	2.33	5.68*	0.42	1.17	0.06
Rel. preoccupied	3.20	2.43	3.20	2.39	1.35	0.29
Rel. dismissing	1.35	2.36	0.14	1.60	1.54	0.18

Note. TM  $R^2 = 0.51$ ; AM  $R^2 = 0.22$ , \* $p < .05$

**Contextual factors and maternal anxiety.** Bivariate correlational analyses were estimated to examine the relationship between contextual factors and maternal anxiety. Results are summarized in Table 5. Maternal anxiety ( $M=8.9$ ,  $SD=9.3$ ) was positively correlated with maternal history of trauma,  $r(95) = .29$ ,  $p = .005$ . Thus, mothers who reported experiencing more traumatic events in their history endorsed greater current levels of anxiety. Maternal anxiety was negatively correlated with total annual income, wherein higher levels of anxiety were associated with lower income levels,  $r(95) = -.34$ ,  $p = .001$ . Interestingly, maternal anxiety was not correlated with social support,  $r(95) = -.17$ ,  $p = .15$ . With respect to relationship variables, maternal anxiety was negatively correlated with relationship security,  $r(95) = -.34$ ,  $p = .001$ , and positively correlated with relationship fearfulness,  $r(95) = .44$ ,  $p < .0001$ , and relationship preoccupation,  $r(95) = .32$ ,  $p = .002$ . Thus, mothers who reported higher rates of anxiety also reported feeling

less secure and more fearful and preoccupied by relationships. Maternal anxiety was not significantly correlated with the dismissing relationship style,  $r(95) = -.02, p = .77$ .

Table 7

*Summary of Multiple Regression Analyses for Contextual Variables Predicting Maternal Anxiety*

Variable	Adolescent Mothers (TM) ( <i>n</i> =42)			Adult Mothers (AM) ( <i>n</i> =53)		
	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Trauma history	-0.04	0.26	-0.02	-0.21	0.16	-0.02
Annual income	0.00	0.00	-0.01	0.00	0.00	-0.21
Social support	0.11	0.12	0.17	0.05	0.06	0.12
Rel. security	-3.24	3.11	-0.18	-1.66	1.56	-0.17
Rel. fearfulness	3.76	2.62	-0.30	0.02	1.25	0.00
Rel. preoccupied	4.85	2.74	0.33	1.18	1.44	0.14
Rel. dismissing	-2.15	2.66	-0.14	1.18	1.65	0.13

*Note.* TM  $R^2 = 0.35$ ; AM  $R^2 = 0.13$

Two multiple regression models were estimated to determine if contextual variables ‘total annual income’, ‘maternal history of trauma’, ‘social support’, and ‘relationship security (secure, fearful, preoccupied, and dismissing subtypes)’ significantly predicted maternal anxiety in adolescent and adult mother samples. Results are summarized in Table 7. Taken together, the set of contextual predictors was not significantly related to maternal anxiety in adolescent mothers,  $R^2 = .347, F(7, 35) = 2.27, p = .06$ . Taken together, the set of contextual predictors was also not significantly related to maternal anxiety in adult mothers,  $R^2 = .127, F(7, 46) = .79, p = .60$ . Thus, results did not support Hypothesis 2b, as contextual variables SES, trauma history, social support and relationship security did not account for a significant proportion of the variance in maternal anxiety scores in adolescent mothers.

**Contextual factors and maternal identity development.** To test Hypothesis 2c, two multiple regression models were estimated to determine if contextual variables ‘trauma history’, ‘total annual income’, ‘social support’, and ‘relationship security (secure, fearful, preoccupied, dismissing subtypes)’ significantly predicted maternal identity commitment and identity exploration. Results are summarized in Table 8. Taken together, this set of contextual predictors explained a small but significant proportion of the variance in identity commitment,  $R^2 = .175$ ,  $F(7, 85) = 2.31$ ,  $p = .035$ . Thus, 17.5% of the variance in maternal identity commitment was explained by these contextual factors. Controlling for trauma, social support, and relationship security, total annual income was not significantly related to identity commitment, unstandardized  $\beta = 1.92$ ,  $t(85) = 1.63$ ,  $p = .11$ . A 95% confidence interval for the unique effect of total annual income is (-.001, .201). Controlling for total annual income, social support, and relationship security, trauma was also not related to identity commitment, unstandardized  $\beta = -.157$ ,  $t(85) = -.096$ ,  $p = .34$ . A 95% confidence interval for the unique effect of trauma is (-.482, .167). Controlling for income, trauma, and social support, the dismissing [unstandardized  $\beta = 1.19$ ,  $t(85) = .67$ ,  $p = .51$ ], preoccupied [unstandardized  $\beta = -0.69$ ,  $t(85) = -0.44$ ,  $p = .66$ ], fearful [unstandardized  $\beta = -1.14$ ,  $t(85) = -0.81$ ,  $p = .42$ ] and secure styles [unstandardized  $\beta = -2.44$ ,  $t(85) = -1.30$ ,  $p = .19$ ] were not related to maternal depressive symptoms. A 95% confidence interval for the unique effect of dismissing, preoccupied, fearful and secure predictors is (-2.34, 4.70; -3.81, 2.43; -3.96, 1.67; and -6.18, 1.30) respectively. Controlling for total annual income, trauma, and relationship security, perceived social support was significantly related to maternal identity commitment [unstandardized  $\beta = 0.14$ ,  $t(85) = 2.01$ ,  $p = .05$ ], suggesting that mothers with higher

reported social support had higher levels of identity commitment, The 95% confidence interval for the unique effect of social support is (-.01, .27).

Table 8

*Summary of Multiple Regression Analyses for Contextual Variables Predicting Identity Development and the Moderating Effect of Age (N=95)*

Variable	Identity Commitment			Identity Exploration		
	<i>B</i>	<i>SE(B)</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Trauma history	-0.16	0.16	-0.11	-.01	.18	-.01
Annual income	1.92	0.01	0.19	.00	.00	-.09
Social support	0.14	0.07	0.22*	-.12	.08	-.19
Rel. security	2.44	1.88	-0.15	6.25	2.08	.36*
Rel. fearfulness	-1.14	1.41	-0.15	1.73	1.56	.15
Rel. preoccupied	-0.69	1.57	-0.05	-.46	1.73	-.03
Rel. dismissing	1.18	1.77	0.08	-.64	1.95	-.04
Age*trauma	0.58*	0.29	-	-.07	.35	-
Age*income	-6.63	2.95	-	-1.69	1.61	-
Age*soc. support	0.05	0.12	-	-.06	.14	-
Age*security	4.85	2.99	-	4.73	3.55	-
Age*fearfulness	3.87*	2.00	-	-3.65	2.39	-
Age*preoccupied	1.27	2.53	-	.23	.89	-
Age*dismissing	0.44	2.77	-	-1.76	3.27	-

*Note.*  $R^2 = 0.18$ . \* $p < .05$

In contrast to identity commitment, taken together, this set of contextual predictors was not significantly related to identity exploration,  $R^2 = .14$ ,  $F(7, 86) = 1.78$ ,  $p = .10$ . Thus, in partial support of Hypothesis 2c, contextual factors SES, trauma history, social support, and relationship security significantly predicted a component of identity development – identity commitment – in mothers. However, another component of identity development – identity exploration – was not related to contextual factors among mothers in this sample.



To address Hypothesis 2d, the regression model was expanded to investigate whether the effects of contextual factors (income, trauma, social support, or relationship security) on identity development are moderated by age. Results are summarized in Table 8. Age did not significantly moderate the relationship between income and identity commitment,  $\beta = -6.63$ ,  $t(92) = -0.48$ ,  $p = .64$ , or between income and identity exploration,  $\beta = -1.69$ ,  $t(92) = -0.11$ ,  $p = .92$ . Age also did not significantly moderate the relationship between social support and identity commitment,  $\beta = -0.05$ ,  $t(92) = 0.41$ ,  $p = .68$ , or between social support and identity exploration,  $\beta = -0.06$ ,  $t(92) = -0.39$ ,  $p = .69$ . Age did not moderate the relationship between the secure [ $\beta = 4.73$ ,  $t(91) = 1.33$ ,  $p = .19$ ], fearful [ $\beta = -3.65$ ,  $t(91) = -1.53$ ,  $p = .13$ ], preoccupied [ $\beta = 0.22$ ,  $t(91) = 0.07$ ,  $p = .94$ ] or dismissing [ $\beta = -1.76$ ,  $t(91) = -0.54$ ,  $p = .59$ ] relationship styles and identity exploration. Age also did not moderate the relationship between the secure [ $\beta = -4.85$ ,  $t(91) = -1.62$ ,  $p = .11$ ], preoccupied [ $\beta = 1.27$ ,  $t(91) = 0.50$ ,  $p = .62$ ], or dismissing [ $\beta = 0.44$ ,  $t(91) = 0.16$ ,  $p = .87$ ] relationship styles and identity commitment.

Age was found to significantly moderate the relationship between the fearful relationship style and identity commitment, [ $\beta = 3.88$ ,  $t(91) = 1.99$ ,  $p = .05$ ]. The model was probed to understand how the relationship between relationship fearfulness and identity commitment is differentially associated in adolescent and adult mothers. Results of simple slopes are plotted in Figure 8. Among adolescent mothers, there was a significant negative relationship between the fearful relationship style and identity commitment,  $\beta = -3.10$ ,  $t(92) = -2.06$ ,  $p = .04$ . This indicated that, among adolescent mothers, higher levels of identity commitment are associated with lower levels of relationship fearfulness. When the model was probed for adult mothers, no significant

relationship between identity exploration and relationship fearfulness emerged,  $\beta = 0.77$ ,  $t(92) = 0.58$ ,  $p = .56$ ).

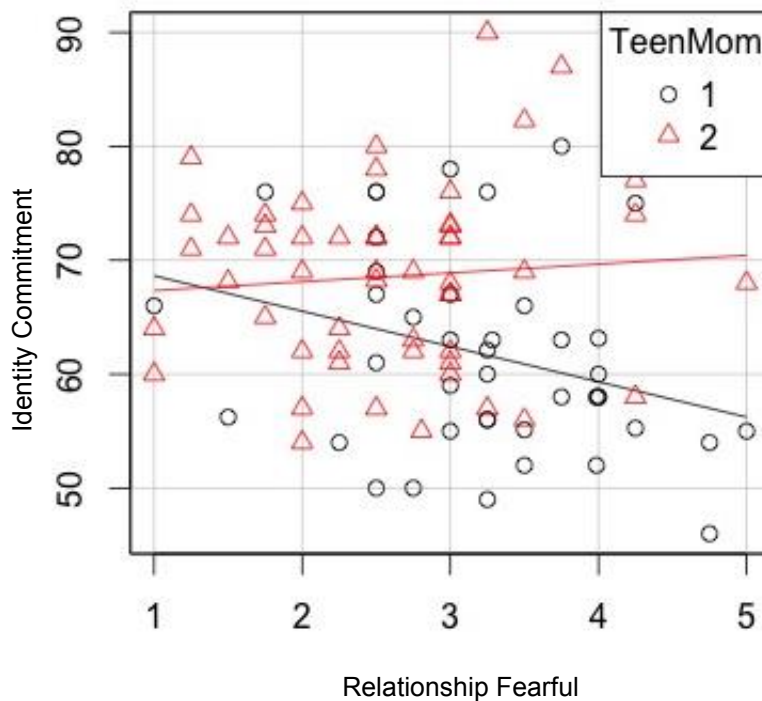
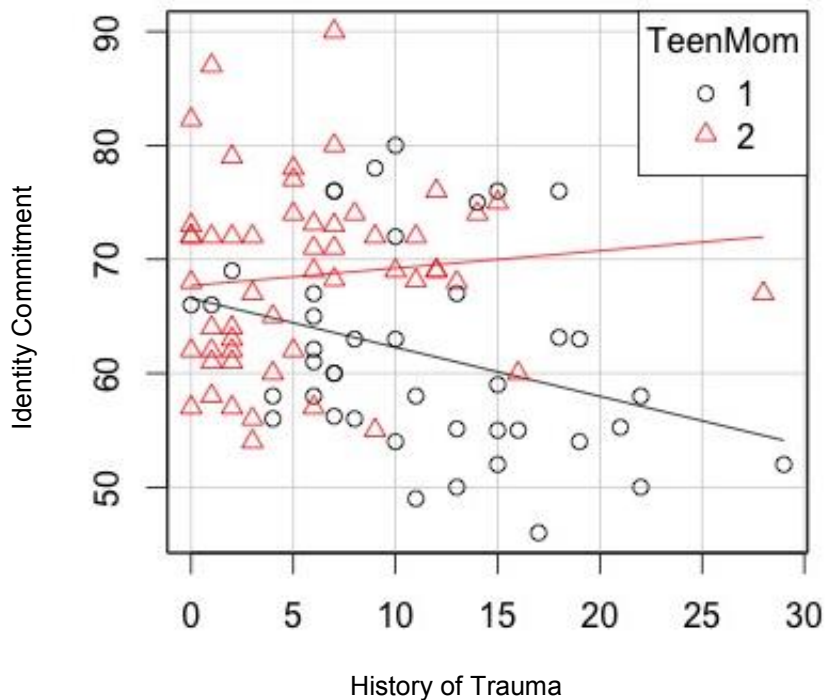


Figure 8. Effect of Maternal Age and Fearful Relationship Style on Identity Commitment

Age did not significantly moderate the relationship between maternal history of trauma and identity exploration,  $\beta = -0.07$ ,  $t(92) = -0.20$ ,  $p = .81$ . However, age was found to significantly moderate the relationship between maternal history of trauma and identity commitment,  $\beta = 0.58$ ,  $t(92) = 2.00$ ,  $p = .05$ . The model was probed in order to understand how the relationship between maternal trauma history and identity commitment differentially affects adolescent and adult mothers. Results of simple slopes are plotted in Figure 9. Among adolescent mothers, there was a significant negative relationship between maternal trauma history and identity commitment,  $\beta = -1.01$ ,  $t(92) = -2.27$ ,  $p = .03$ . When the model was probed for adult mothers, no significant

relationship between identity commitment and trauma history emerged,  $\beta = 0.15$ ,  $t(92) = 0.73$ ,  $p = .47$ ).



*Figure 9.* Effect of Maternal Age and Trauma History on Identity Commitment

These findings suggest that among adolescent mothers, greater trauma exposure is associated with weaker identity commitment, but no relationship exists between these variables among adult mothers. Overall, results partially support Hypothesis 2e, as maternal age was found to interact with two contextual variables, relationship fearfulness and maternal trauma history, to predict differences in identity development.

**A closer examination of contextual factors: Trauma history.** For exploratory purposes, certain contextual factors (trauma history and social support) were examined in more detail to examine what types of trauma experiences and what types of social support are more closely related to parent characteristics in adolescent mothers and older mothers.

Bivariate correlational analyses were used to examine the relationship between types of trauma experiences and maternal age. A significant relationship was found between maternal age and all types of trauma experiences. Maternal age was negatively correlated with maternal history of physical abuse ( $M=2.23$ ,  $SD=2.16$ ),  $r(95) = -.28$ ,  $p = .005$ . Thus, younger mothers reported experiencing higher amounts of physical abuse. Maternal age was negatively correlated with sexual abuse ( $M=.58$ ,  $SD=.75$ ), wherein younger mothers were more likely to report having experienced sexual abuse,  $r(95) = -.29$ ,  $p = .005$ . Maternal age was negatively correlated with parental neglect ( $M=2.76$ ,  $SD=2.55$ ), wherein younger mothers reported experiencing higher levels of neglect from their caregiver whilst growing up,  $r(95) = -.40$ ,  $p < .0001$ . Maternal age was negatively correlated with community violence ( $M=1.62$ ,  $SD=1.66$ ),  $r(95) = -.30$ ,  $p = .003$ . Thus, younger mothers were more likely to report exposure to violence in their neighbourhoods or communities whilst growing up. Maternal age was also negatively correlated with parent mental health difficulties and/or drug use ( $M=.98$ ,  $SD=1.15$ ),  $r(95) = -.33$ ,  $p = .001$ . Thus, younger mothers were more likely to report having caregivers who abused substances and/or had mental health difficulties whilst growing up. Lastly, maternal age was negatively correlated with bullying ( $M=.50$ ,  $SD=.72$ ), wherein younger mothers reported experiencing greater amounts of victimization whilst growing up,  $r(95) = -.26$ ,  $p = .01$ . Overall, these results suggest a potent relationship between maternal age and experience of trauma.

Bivariate correlational analyses were calculated to examine the relationship between maternal age, trauma exposure and identity status. Among adolescent mothers, identity commitment was negatively correlated with exposure to community violence

( $M=.57$ ,  $SD=.50$ ),  $r(42) = -.33$ ,  $p = .03$ . Thus, lower levels of commitment were endorsed by adolescent caregivers who had witnessed severe forms of violence, such as shootings or violent assault, in their neighbourhood. Trauma exposure was not related to identity commitment among adult mothers or former teen mothers. Among adolescent mothers, identity exploration was positively correlated with sexual abuse history ( $M=.84$ ,  $SD=.76$ ),  $r(42) = .34$ ,  $p = .03$ . Thus, adolescent mothers who had experienced some form of sexual abuse in their history were more likely to endorse higher levels of identity exploration. Trauma exposure was not related to identity exploration among adult mothers or former teen mothers.

Bivariate correlational analyses were calculated to examine the relationship between socioemotional functioning and trauma experiences in adolescent mothers and adult mothers. Among adolescent mothers, neither maternal depression nor maternal anxiety was significantly correlated with specific trauma experiences. Among adult mothers, depressive symptoms were positively correlated with a history of experiencing parental neglect,  $r(53) = .30$ ,  $p = .03$ . Also among adult mothers, both anxiety [ $r(53) = .27$ ,  $p = .05$ ] and depressive symptoms [ $r(53) = .34$ ,  $p = .01$ ] were significantly correlated with a history of experiencing bullying. These results suggest that for adolescent mothers, specific trauma experiences did not influence current self-reported socioemotional functioning.

**A closer examination of contextual factors: Social support.** Bivariate correlational analyses were conducted to examine the association between maternal age and sources of social support. Maternal age was positively correlated with family support ( $M=17.2$ ,  $SD=5.62$ ), wherein older mothers reported receiving greater support from

family members than younger mothers,  $r(95) = .33, p = .001$ . Maternal age was also positively correlated with friend support ( $M=16.35, SD=5.57$ ), wherein older mothers reported receiving greater support from friends than younger mothers,  $r(95) = .34, p = .001$ . No relationship was found between maternal age and support from one's significant other ( $M = 18.53, SD = 5.51$ ),  $r(95) = .16, p = .13$ ,

Bivariate correlational analyses were conducted to examine the relationship between sources of support and socioemotional functioning in adolescent and adult mothers. Among adolescent mothers, neither depression nor maternal anxiety was significantly correlated with sources of social support. However, among adult mothers, depressive symptoms were negatively correlated with friend support,  $r(95) = .34, p = .001$ , wherein greater support from friends was associated with decreased depressive symptoms. Among adult mothers, depressive symptomatology was also negatively correlated with significant-other support,  $r(95) = .34, p = .001$ , wherein greater support from one's romantic partner/significant other was associated with decreased depressive symptoms. No relationship was found between anxiety and types of social support among adult mothers. These results suggest that for adult mothers, social support may enhance self-reported socioemotional functioning. However, for adolescent mothers, social support is not related to self-reported socioemotional functioning.

### **H3: The Relationship between Parent Characteristics and Parenting Quality**

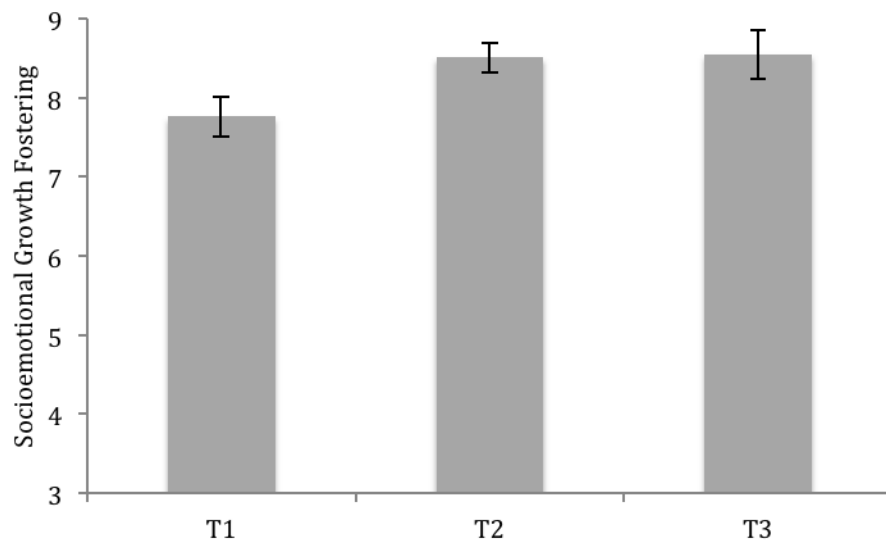
As illustrated in Figure 2, parenting quality was assessed through the following variables: (i) maternal sensitivity; (ii) growth fostering (including cognitive and socioemotional growth fostering); and (iii) responsiveness to child's distress. A number

of analyses were conducted to investigate Hypothesis 3. To test Hypothesis 3a, a one-way between subjects ANOVA was calculated to determine whether TM, AM, and ATM groups differ with respect to parenting quality. A one-way ANCOVA was subsequently conducted to examine whether these differences remained after controlling for maternal income. A mediation model using Baron and Kenny's (1986) mediation procedure was tested to address Hypothesis 3b, examining the relationship between identity development (identity commitment and identity exploration), maternal age, and parenting quality (maternal sensitivity, growth fostering, and responsiveness to child's distress). Following this, a series of bivariate correlations were conducted to examine the relationship between maternal socioemotional functioning (depression and anxiety), and parenting quality (maternal sensitivity, growth fostering, and responsiveness to child's distress). Multiple regression models were estimated to address Hypothesis 3c, testing the relationship between socioemotional functioning and parenting quality. Separate models were tested for adolescent and adult samples to examine the unique influence of timing of first child's birth on these variables.

#### **Maternal age and parenting quality.**

To address Hypothesis 3a, a one-way ANOVA was conducted to determine whether there were significant differences in parenting quality as a function of maternal age (examining TM, AM, and ATM groups). The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated that the data were statistically normal. However, the Levene's F test revealed that the homogeneity of variance assumption was violated ( $p = .04$ ) for one variable: maternal sensitivity to cues. Thus, the Welch's F test was reported for statistical comparisons with this variable. The

Levene's F test for all other parenting quality variables indicated homogeneity of variance. A one-way ANOVA revealed a statistically significant effect for socioemotional growth fostering,  $F(2,101) = 3.12, p = .05, \omega = 0.09$ , indicating significant mean differences in socioemotional growth fostering between TM, AM, and ATM groups. Mean scores for this variable are plotted Figure 10.



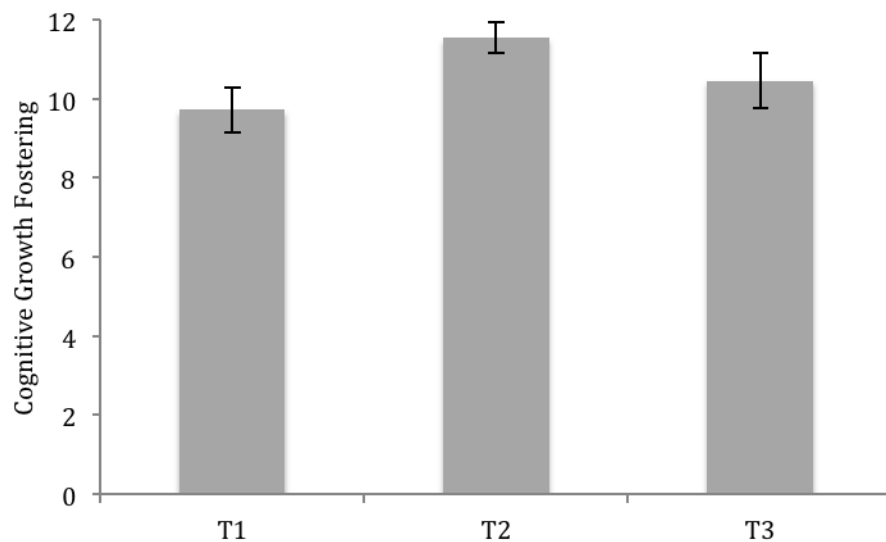
*Figure 10.* Mean socioemotional growth fostering among maternal age groups. Error bars represent standard error.

Post-hoc comparisons using the Tukey HSD test indicated that the mean socioemotional growth fostering scores for teen mothers ( $M=7.76, SD=1.42$ ) were significantly lower than the adult mothers,  $M= 8.51, SD=1.32, p = .05$ , indicating that young mothers were significantly less likely to nurture their child's socioemotional growth than adult mothers. However, the teen mothers and former teen mothers ( $M=8.55, SD=1.14$ ) conditions did not differ significantly in their mean socioemotional growth fostering scores,  $p = .20$ . The adult mothers and former teen mothers also did not differ



significantly on this variable,  $p = .98$ . A one-way ANCOVA was conducted to determine if the statistically significant difference between TM, AM, and ATM caregiver groups on socioemotional growth fostering remained after controlling for income. Results indicated that the effect of maternal age on socioemotional growth fostering was no longer significant after controlling for income,  $F(2,96) = 2.31, p = .11$ .

A one-way ANOVA revealed significant differences in cognitive growth functioning as a function of age,  $F(2,101) = 3.93, p = .02, \omega = 0.06$ . Post-hoc comparisons using the Tukey HSD test indicated that adolescent mothers (TM;  $M=9.72, SD=3.41$ ) were significantly less likely to nurture their child's cognitive growth than adult mothers ( $M=11.54, SD=2.77$ ),  $p = .02$ . Results are plotted in Figure 11. A one-way ANCOVA revealed that the effect of maternal age on cognitive growth fostering was no longer significant after controlling for income  $F(2,96) = 2.29, p = .11$ . No significant differences emerged between TM and ATM ( $M=10.46, SD=2.50; p = .73$ ) conditions, or between AM and ATM groups ( $p = .48$ ).



*Figure 11.* Mean cognitive growth fostering among maternal age groups. Error bars represent standard error.

A one-way ANOVA yielded no significant differences between groups with respect to maternal sensitivity [ $F(2,101) = 2.12, p = .13$ ], or responsiveness to child's distress [ $F(2,101) = 0.66, p = .52$ ]. Thus, results fail to support Hypothesis 3a. Results that initially emerged for cognitive and socioemotional growth fostering were confounded by adolescent mothers' socioeconomic status. All results are summarized in Table 9. Note, however, that the effect sizes are small for this subset of results ( $<0.1$ ), which suggests that the strength of the association in the population is quite small. A larger sample size would have likely increased the observed effect size.

Table 9

*Analysis of Covariance Summary for Maternal Age and Parenting Quality*

	Sum of Squares	df	Mean Square	F	Partial Eta Squared
Cognitive Growth Fostering	40.91	2	20.46	2.29	.05
Socioemotional Growth Fostering	8.89	2	4.44	2.31	.04
Maternal Sensitivity	1.91	2	0.95	0.56	.01
Maternal Responsiveness	0.20	2	0.07	0.66	.00

**Maternal identity development and parenting quality.** To address Hypothesis 3b examining whether identity development mediates the relationship between maternal age and parenting quality, a mediation model was specified using Baron and Kenny's (1986) causal-steps test for evaluating mediation. The following four predictions were made in accordance with the causal-steps test: (a) the independent variable (maternal age) will be significantly related to the outcome variable (parenting quality); (b) the independent variable (maternal age) will be significantly related to the mediator (identity development); (c) the mediator (identity development) will be significantly related to the outcome variable (parenting quality) while controlling for the independent variable

(maternal age); and (d) the effect of the independent variable (maternal age) on the outcome variable (parenting quality) will decrease significantly when controlling for the mediator (identity development). Regression diagnostics were performed to ensure that the assumptions of normally distributed data, independence of residuals, and rejection of multicollinearity were met. Pairwise correlations between all variables of interest were examined. Maternal age was positively correlated with socioemotional growth fostering [ $r(92) = .24, p = .03$ ], cognitive growth fostering [ $r(92) = .33, p = .002$ ], and identity commitment [ $r(95) = .36, p < .0001$ ]. Identity commitment was positively correlated with socioemotional growth fostering [ $r(95) = .34, p = .002$ ]. Thus, maternal age, identity commitment (as a proxy for identity development) and socioemotional growth fostering (as a proxy for parenting quality) were entered into subsequent analyses.

Simple linear regressions were performed to assess the first three criteria of Baron and Kenny's (1986) test of mediation. First, maternal age was significantly related to caregiver's ability to foster their child's socioemotional development [ $\beta = .23, t(92) = 2.17, p = .03$ ], with older mothers having higher rates of socioemotional growth fostering. Second, maternal age was significantly related to identity commitment [ $\beta = .41, t(95) = 3.69, p < .0001$ ], with older mothers having higher rates of commitment. Third, identity commitment was significantly related to caregiver's ability to foster their child's socioemotional development [ $\beta = .34, t(92) = 3.27, p = .002$ ], with higher commitment scores indicating higher growth fostering. To test the fourth criterion of Baron and Kenny's (1986) test of mediation, a multiple regression model was estimated with maternal age and identity commitment predicting socioemotional growth fostering. Results indicated that the effect of the mediator, identity commitment, remained

significant after controlling for the independent variable, maternal age at time of testing [ $\beta = .27, t(92) = 1.90, p = .05$ ]. Maternal age also remained significant when identity commitment was controlled [ $\beta = .24, t(92) = 1.43, p = .05$ ]. Results are illustrated in Figure 12. Thus, the findings support Hypothesis 3b, demonstrating a *partial* mediation effect for identity development in the relationship between maternal age and parenting quality.

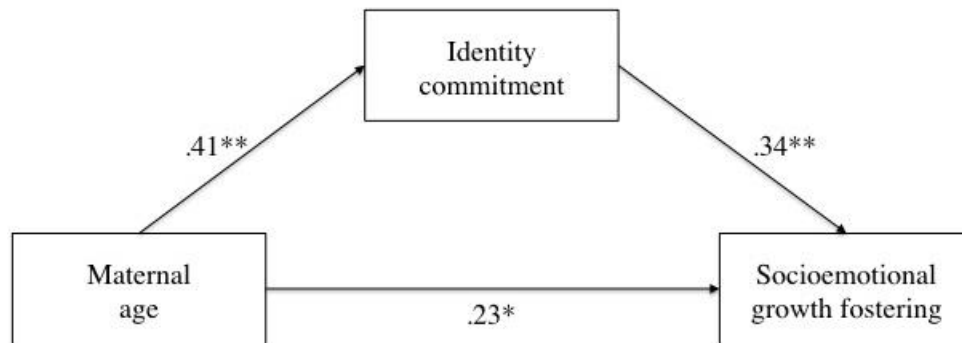
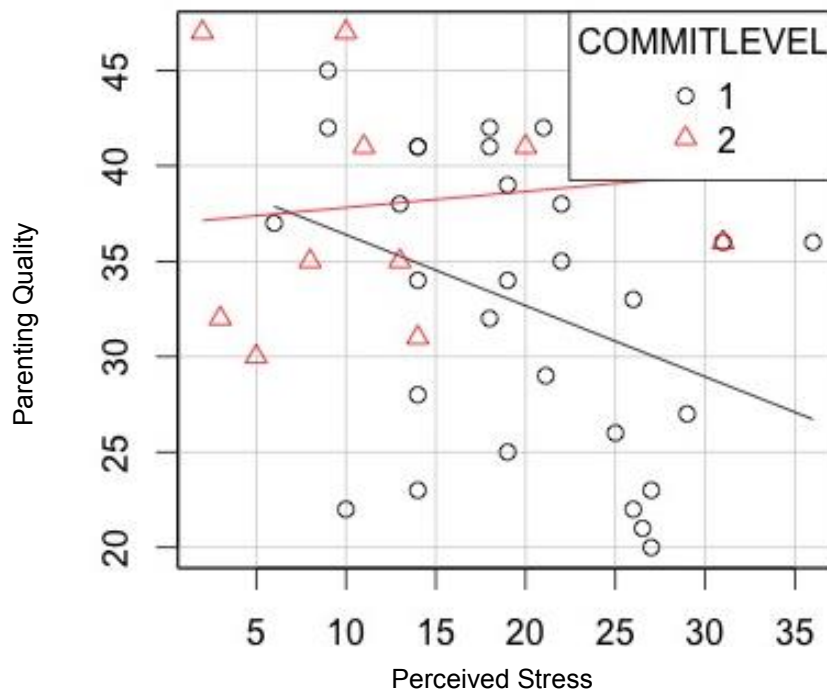


Figure 12. Standardized regression coefficients for the relationship between maternal age on socioemotional growth fostering as mediated by identity commitment. \* $p < .05$  \*\* $p < .01$

**Identity development, perceived stress, and parenting quality.** Among teen mothers, perceived stress significantly predicted parenting quality,  $R^2 = .146, F(1, 40) = 5.82, p = .02$ . Thus, 14.6% of the variance in parenting quality among adolescent mothers was explained by perceived stress. Perceived stress was not significantly related to parenting quality in adult mothers,  $R^2 = .06, F(1, 50) = .278, p = .61$ . To address Hypothesis 3c, the regression model was expanded to investigate whether the effect of stress on parenting in teen mothers was moderated by identity achievement. Identity commitment significantly moderated the relationship between perceived stress and parenting quality,  $\beta = -3.10, t(39) = 1.23, p = .05$ . The model was probed to understand

how this relationship is moderated at different levels of identity commitment. Results of simple slopes are plotted in Figure 13. Tests of simple slopes revealed a significant negative relationship between perceived stress and parenting quality among teen mothers with low levels of identity commitment,  $\beta = -1.83$ ,  $t(39) = -2.52$ ,  $p = .05$ . Thus, low identity commitment and high stress were associated with reduced parenting quality. Among teen mothers with high identity commitment, there was no detrimental effect of perceived stress on parenting quality,  $\beta = -3.14$ ,  $t(39) = -.59$ ,  $p = .56$ . These data suggest that identity resolution may buffer the effects of stress on parenting ability in teen mothers.



*Figure 13.* Effect of Identity Commitment and Perceived Stress on Parenting Quality in Teen Mothers.

**Maternal socioemotional functioning and parenting quality.** A series of bivariate correlations were conducted to understand the relationship between maternal socioemotional functioning and parenting quality. Results are summarized in Table 10. Maternal depression was not significantly correlated with any parenting quality variables. Maternal anxiety was negatively correlated with socioemotional growth fostering,  $r(92) = -.33, p = .002$ . Thus, mothers with higher self-reported anxiety were less likely to nurture their child's socioemotional development. Maternal anxiety was negatively correlated with cognitive growth fostering,  $r(92) = -.25, p = .02$ . Thus, mothers with higher self-reported anxiety were less likely to nurture their child's cognitive development. Maternal anxiety was also negatively correlated with sensitivity,  $r(90) = -.21, p = .05$ . Thus, mothers with higher self-reported anxiety were less likely to be sensitive to their child's needs.

Table 10

*Bivariate Correlations Among Socioemotional Functioning and Parenting (N=95)*

Variable	<i>M (SD)</i>	1	2	3	4	5	6
1. Maternal Depression	10.10 (8.62)	-					
2. Maternal Anxiety	8.68 (8.65)	.71**	-				
3. Sensitivity	8.78 (1.23)	-.14	-.21*	-			
4. Responsiveness	9.99 (1.23)	.02	-.07	.25*	-		
5. Cognitive Growth Fostering	10.78 (3.17)	-.15	-.25*	.40**	.00	-	
6. Socioemotional Growth Fostering	8.17 (1.23)	-.19	-.33**	.35**	-.02	.57**	-

Notes. \* $p < .05$ . \*\* $p < .01$ .

Following this, multiple regression models were estimated to test Hypothesis 3c, examining whether socioemotional functioning (depression and anxiety) predicted maternal sensitivity, responsiveness to child distress, socioemotional growth fostering, and cognitive growth fostering. Separate models were tested for adolescent and adult mothers in order to examine the unique influence of age on these variables.

Socioemotional functioning did not significantly predict maternal sensitivity in adolescent mothers,  $R^2 = .078$ ,  $F(2, 38) = 1.39$ ,  $p = .26$ , or adult mothers,  $R^2 = .03$ ,  $F(2, 50) = 0.66$ ,  $p = .52$ . Socioemotional functioning did not predict responsiveness to child's distress in adolescent mothers,  $R^2 = .019$ ,  $F(2, 38) = .33$ ,  $p = .72$ , or in adult mothers,  $R^2 = .01$ ,  $F(2, 50) = 0.28$ ,  $p = .76$ . Socioemotional functioning did not predict socioemotional growth fostering in adolescent mothers,  $R^2 = .11$ ,  $F(2, 38) = 2.00$ ,  $p = .15$ , or adult mothers,  $R^2 = .08$ ,  $F(2, 50) = 1.99$ ,  $p = .16$ . Socioemotional functioning also did not predict cognitive growth fostering in adolescent mothers,  $R^2 = .06$ ,  $F(2, 38) = 1.11$ ,  $p = .34$ , or in adult mothers,  $R^2 = .05$ ,  $F(2, 50) = .14$ ,  $p = .80$ . Overall, these findings fail to support Hypothesis 3c, as maternal socioemotional variables depression and anxiety were not significantly related to parenting quality.

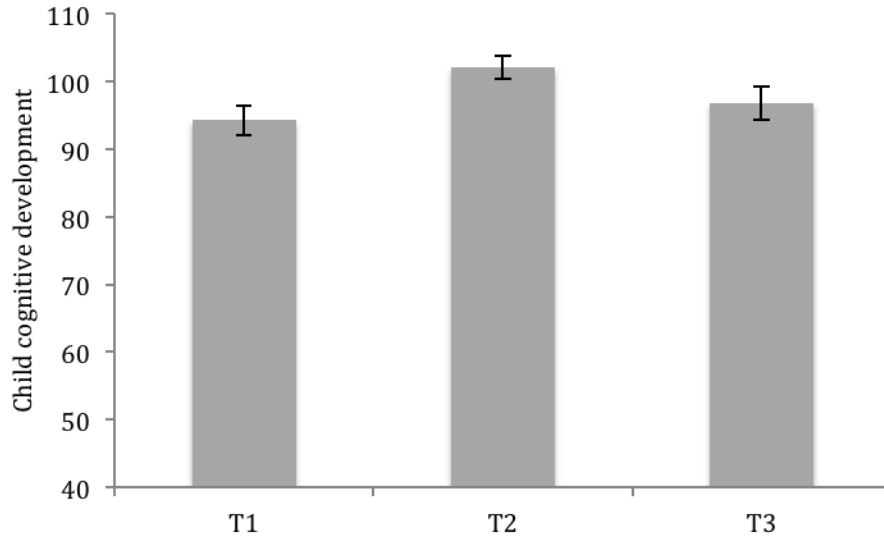
#### **H4: The Relationship between Parenting Quality and Child Characteristics**

A number of analyses were conducted to examine the relationship between parenting quality and child characteristics. As illustrated in Figure 2, child characteristics include: (i) cognitive functioning, (ii) socioemotional functioning, and (iii) dyadic behaviour (including clarity of cues and responsiveness to caregiver). To test Hypothesis 4a, a one-way ANOVA was conducted to examine whether TM, AM, and ATM groups

differ with respect to children's developmental functioning. A one-way ANCOVA was subsequently performed to examine whether effects remained after controlling for socioeconomic status. To test Hypothesis 4b, a one-way ANOVA was calculated to determine whether differences in child functioning emerges as a function of maternal identity status (i.e., diffusion, foreclosure, moratorium, and achievement). One-way ANCOVAs were also conducted to test the strength of these effects after controlling for SES. To examine Hypothesis 4c, a series of hierarchical multiple regression analyses were estimated to understand the predictive value of parenting quality on child functioning, controlling for maternal age.

**Maternal age and child characteristics.** A one-way ANOVA was conducted to address Hypothesis 4a, examining whether significant differences in child characteristics emerge as a function of maternal age (examining TM, AM, and ATM groups). Results are plotted in Figure 14. The data were deemed to be statistically normal after testing for normality, homogeneity of variance, examining standardized skewness, and conducting the Shapiro-Wilks test. No significant differences were found between age conditions on mothers' reports of child's socioemotional functioning,  $F(2,98) = .07, p = .93$ . A one-way ANOVA revealed statistically significant differences in child cognitive functioning as a function of maternal age,  $F(2,106) = 3.45, p = .04, \omega = .05$ . Post-hoc comparisons using the Tukey HSD test indicated that children's cognitive development ratings for the TM condition ( $M=94.24, SD=14.18$ ) were significantly lower than the AM condition ( $M=102.1, SD=12.76$ ),  $p = .03$ . This indicates that children of adolescent mothers had significantly lower ratings on standardized ratings of cognitive functioning than children of adult mothers.





*Figure 14.* Mean Child Cognitive Development Scores by Maternal Age. Errors bars represent standard error.

The model was tested again to examine the variability of child cognitive functioning across maternal age conditions controlling for maternal education, income, and employment status. A one-way ANCOVA revealed that the effect of maternal age on child cognitive functioning was no longer significant when SES was controlled for,  $F(2,96) = 0.94, p = .40$ . Furthermore, there were no significant differences in the cognitive functioning of children from TM and ATM groups, or the AM and ATM ( $M=96.8, SD=9.12$ ) groups.

A one-way ANOVA revealed significant differences in child clarity of cues (an infant dyadic behaviour) as a function of maternal age,  $F(2,98) = 3.25, p = .04, \omega = 0.09$ . No differences emerged between the TM and ATM ( $M=8.7, SD=1.89$ ) groups, or between the AM and ATM groups. Post-hoc comparisons using the Tukey HSD test indicated that the mean child cue clarity scores for the TM groups ( $M=8.00, SD=1.66$ ) were significantly lower than the AM group ( $M=8.90, SD=1.28$ ),  $p = .04$ , indicating that

the children of adolescent mothers were significantly less likely to be clear in their signalling and cues during interactions than children of adult mothers.

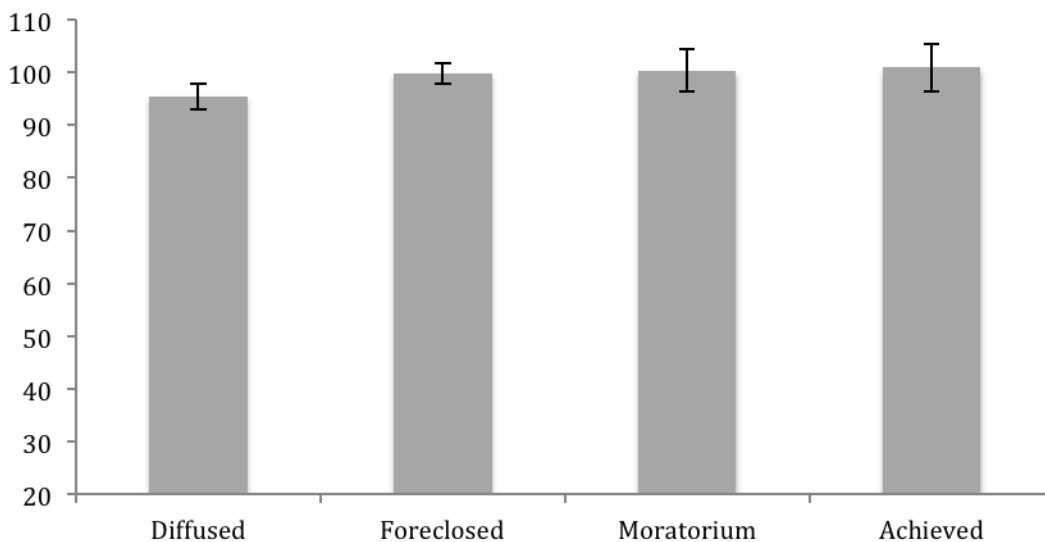
Results also revealed statistically significant differences in child responsiveness to caregiver (child dyadic behaviour) as a function of age,  $F(2,98) = 3.35, p = .04, \omega = 0.09$ . Tukey HSD post-hoc comparisons indicated that mean child responsiveness for the TM group ( $M=6.42, SD=2.13$ ) was significantly lower than the ATM group ( $M=8.08, SD=1.80$ ),  $p = .04$ . No significant differences emerged between the TM and AM group ( $M=7.10, SD=2.02$ ), or between the AM and ATM group. A one-way ANCOVA was conducted to determine whether there was a statistically significant difference among teen mothers, adult mothers, and former teen mothers on their child's level of responsiveness controlling for maternal income. The effect of maternal age on child responsiveness remained significant, even after controlling for SES,  $F(2,96) = 3.72, p = .03$ . Overall, results partially supported Hypothesis 4a. Although a significant relationship between maternal age and child cognitive development was initially found, it was confounded by socioeconomic status. Child's level of responsiveness was still found to vary as a function of maternal age after controlling for SES. ANCOVA results are summarized in Table 11.

Table 11

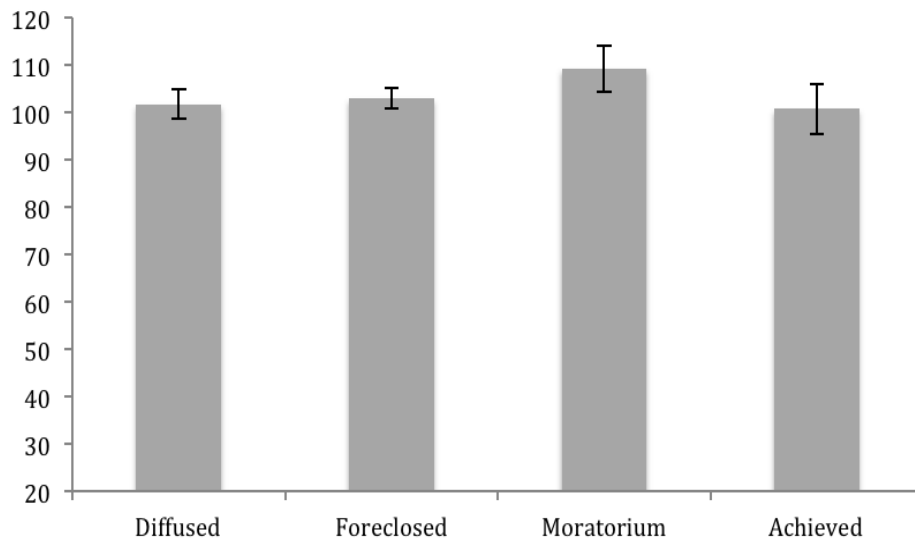
*Analysis of Covariance Summary for Maternal Age and Child Functioning (N=95)*

	Sum of Squares	df	Mean Square	F	Partial Eta Squared
Cognitive Functioning	332.37	2	166.19	.78	.02
Cue Clarity	9.23	2	4.62	1.92	.04
Responsiveness	31.102	2	15.55	.19	.00
Socioemotional Functioning	53.80	2	36.90	.11	.00

**Maternal identity status and child characteristics.** To address Hypothesis 4b, a one-way ANOVA was calculated to examine whether there were significant differences in child characteristics as a function of maternal identity status (comparing identity diffusion, identity foreclosure, identity moratorium, and identity achievement groups). The test for normality, examining standardized skewness and the Shapiro-Wilks test indicated that the data were statistically normal, and the Levene's F test indicated homogeneity of variance. A one-way ANOVA revealed no significant effect for child cognitive development as a function of maternal identity status,  $F(3, 92) = 0.72, p = .55$ . A one-way ANOVA also revealed no significant effect for child socioemotional development as a function of maternal identity status,  $F(3, 92) = 0.91, p = .44$ . There were, however, non-significant increases in child mean scores as maternal identity status changed from identity diffusion to identity achievement. Mean child cognitive development and child socioemotional functioning scores by maternal identity status are plotted in Figure 15 and Figure 16.

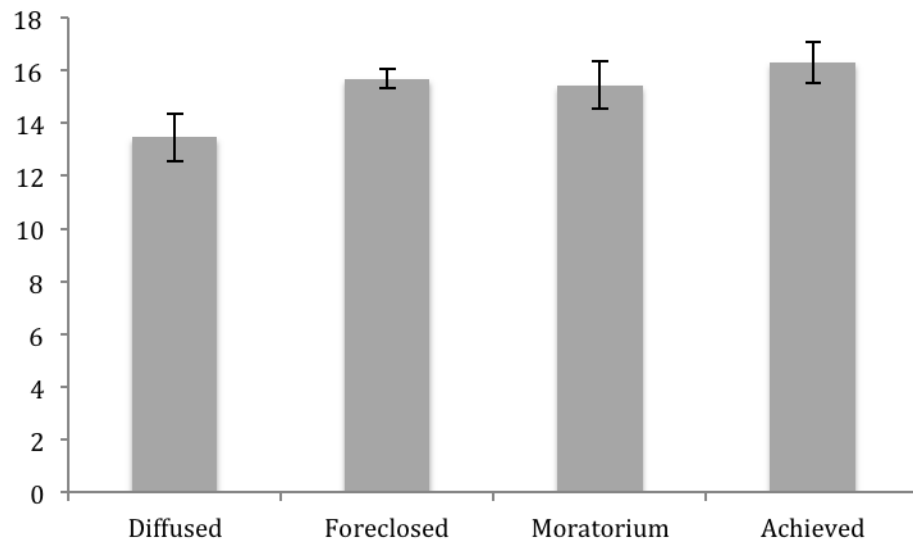


*Figure 15.* Mean Child Cognitive Development Scores by Maternal Identity Status. Errors bars represent standard error.



*Figure 16.* Mean Child Socioemotional Development Scores by Maternal Identity Status. Errors bars represent standard error.

A one-way ANOVA revealed a statistically significant effect of child dyadic behaviour based on maternal identity status,  $F(3, 92) = 3.31, p = .024, \omega = .12$ . Mean child dyadic scores by maternal identity status are plotted in Figure 17.



*Figure 17.* Mean Child Dyadic Functioning by Maternal Identity Status. Errors bars represent standard error.

Post hoc comparisons using the Tukey HSD test indicated that mean child cue clarity scores for the identity diffusion condition ( $M=13.47$ ,  $SD=3.74$ ) were significantly lower than the identity foreclosure condition ( $M=15.99$ ,  $SD=2.30$ ),  $p = .05$ , and the identity achievement condition ( $M=16.31$ ,  $SD=3.18$ ),  $p = .04$ .

A one-way ANCOVA was conducted to examine whether these effects remained after controlling for maternal income (Table 12). Results indicated that the effect of identity status on child dyadic behaviour was no longer significant after controlling for SES,  $F(3,96) = 2.21$ ,  $p = .09$ . Furthermore, there were no significant differences between the identity diffusion and identity moratorium ( $M=15.43$ ,  $SD=3.37$ ) conditions,  $p = .27$ . In addition, no significant differences emerged between identity foreclosure and identity moratorium ( $p = .99$ ), identity foreclosure and identity achievement ( $p = .89$ ), and between identity moratorium and identity achievement ( $p = .85$ ). Thus, results did not support Hypothesis 4b. After controlling for SES variables, differences in child dyadic functioning were no longer a function of maternal identity status.

Table 12

*Analysis of Covariance Summary for Maternal Identity Status and Child Functioning (N=95)*

	Sum of Squares	df	Mean Square	F	Partial Eta Squared
Child Cognitive Functioning	251.85	3	83.95	.44	.02
Child Socioemotional Functioning	645.47	3	215.16	.86	.46
Child Dyadic Functioning	53.96	3	17.99	2.21	.18

**Parenting quality and child cognitive functioning.** To address Hypothesis 4c, a hierarchical multiple regression analysis was conducted to examine the predictive influence of parenting quality on child cognitive functioning over and above what is

predicted by maternal age and SES. In the first step, maternal income was entered as a proxy for socioeconomic status. In the second step, maternal age was entered as an independent variable. In the third step, indicators of parenting quality (maternal sensitivity, responsiveness to child's distress, socioemotional growth fostering, and cognitive growth fostering) were entered. Results are presented in Table 13.

Table 13

*Summary of Hierarchical Multiple Regression Analysis for Variables Predicting Child Cognitive Functioning (N=95)*

	<i>B</i>	<i>SE(B)</i>	$\beta$
<u>Model 1</u>			
Income	4.75	0.00	.21*
<u>Model 2</u>			
Income	2.69	0.00	.12
Maternal Age	0.31	0.20	.18
<u>Model 3</u>			
Income	2.43	0.00	.11
Maternal Age	0.28	0.21	.16
Sensitivity	-0.90	1.20	-.88
Responsiveness	2.02	1.21	.18
Cognitive Growth Fostering	-.021	1.21	-.02
Socioemotional Growth Fostering	0.33	0.58	.07

*Note.*  $R^2$  for Model 1 = .05  $F(1, 90) = 4.20, p = .04, \Delta R^2$  for Model 2 = .024  $F(2, 89) = 3.28, p = .04, \Delta R^2$  for Model 3 = .034  $F(6, 84) = 3.28, p = .15; *p < .05 **p < .01 ***p < .001$

Results indicated that socioeconomic status accounts for 4.5% of the variance in child cognitive functioning,  $R^2 = .05, F(1, 90) = 4.20, p = .04$  (Model 1). Maternal age accounted for an additional 7% of the variance in child cognitive functioning, over and above income,  $R^2 = .07, F(2, 89) = 3.28, p = .04$  (Model 2). When the additional predictors were added, the final model including age, income, sensitivity, responsiveness to child's distress, and growth fostering, did not explain a significant proportion of the

variance,  $R^2 = .12$ ,  $F(6, 84) = 1.62$ ,  $p = .15$ . This indicates that the parenting quality variables failed to account for any additional variance in child cognitive functioning, beyond that contributed by maternal age and income.

**Parenting quality and child socioemotional functioning.** A hierarchical multiple regression model was estimated to determine whether parenting quality predicted child socioemotional functioning, controlling for maternal age and income. Maternal income was entered into step one of the model as a continuous predictor, following by maternal age in step 2, and parenting quality variables in step 3 of the model. Results are summarized in Table 14. None of the models was found to be significant. Thus, maternal income [ $R^2 = .002$ ,  $F(1, 92) = 0.22$ ,  $p = .88$ , maternal age [ $R^2 = .001$ ,  $F(2, 91) = .03$ ,  $p = .87$ ] and parenting quality [ $R^2 = .04$ ,  $F(6, 84) = .47$ ,  $p = .80$ ] failed to account for a significant proportion of the variance in child socioemotional functioning.

Table 14

*Summary of Hierarchical Multiple Regression Analysis for Variables Predicting Child Socioemotional Functioning (N=95)*

	<i>B</i>	<i>SE(B)</i>	$\beta$
<u>Model 1</u>			
Income	0.00	0.00	-.01
<u>Model 2</u>			
Income	2.69	0.00	-.01
Maternal Age	0.31	0.28	.00
<u>Model 3</u>			
Income	0.00	0.00	-.01
Maternal Age	0.01	0.29	.00
Sensitivity	-1.16	1.77	-.09
Responsiveness	0.73	1.61	.06
Cognitive Growth Fostering	-0.84	0.80	.22
Socioemotional Growth Fostering	2.36	1.67	-.16

*Note.*  $R^2$  for Model 1 = .002  $F(1, 92) = 0.22$ ,  $p = .88$ ,  $\Delta R^2$  for Model 2 = .001  $F(2, 91) = .03$ ,  $p = .87$ ,  $\Delta R^2$  for Model 3 = .04  $F(6, 84) = .47$ ,  $p = .80$ ; \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

**Parenting quality and child dyadic behaviour.** A hierarchical regression model was estimated to test the hypothesis that parenting quality would predict child dyadic behaviour, controlling for maternal age and income. Maternal income was entered into step one of the model as a continuous predictor. Maternal age was entered into step two of the model as a continuous predictor. Parenting quality variables were entered into step three of the model. Results are summarized in Table 15.

Table 15

*Summary of Hierarchical Multiple Regression Analysis for Variables Predicting Child Dyadic Functioning (N=95)*

	<i>B</i>	<i>SE(B)</i>	$\beta$
<u>Model 1</u>			
Income	1.01	0.00	.21
<u>Model 2</u>			
Income	0.32	0.00	.07
Maternal Age	0.10	0.05	.26*
<u>Model 3</u>			
Income	0.34	0.00	.07
Maternal Age	0.04	0.04	.10
Sensitivity	0.23	0.23	.09
Responsiveness	-0.82	0.21	-.32***
Cognitive Growth Fostering	0.14	0.10	.14
Socioemotional Growth Fostering	1.03	0.21	.49***

*Note.*  $R^2$  for Model 1 = .04  $F(1, 92) = 3.46, p = .07, \Delta R^2$  for Model 2 = .05  $F(2, 89) = 3.78, p = .03, \Delta R^2$  for Model 3 = .45  $F(6, 84) = 14.31, p < .0001; *p < .05 **p < .01 ***p < .001$

Maternal income did not account for a significant proportion of the variance in child dyadic behaviour  $R^2 = .04, F(1, 92) = 3.46, p = .07$  (Model 1). In contrast, maternal age was found to account for a significant proportion of the variance in child dyadic behaviour,  $R^2 = .09, F(2, 89) = 3.78, p = .03$ . Thus, 9% of the variance in child dyadic behaviour was explained by maternal age (Model 2). When the additional predictors were



added, the final model including age, income, maternal sensitivity, responsiveness to child's distress, and growth fostering, explained a significant proportion of the variance in child dyadic behaviour,  $R^2 = .54$ ,  $F(6, 84) = 14.31$ ,  $p < .0001$ . Thus, 54% of the variance in child dyadic behaviour was explained by this set of predictor variables (Model 3). Furthermore, the change in  $R^2$  from Model 2 ( $R^2 = .05$ ) to Model 3 ( $R^2 = .45$ ) was statistically significant,  $\Delta R^2 = .45$ ,  $F(4, 86) = 17.91$ ,  $p < .0001$ . Therefore, in partial support of Hypothesis 4c, over and above maternal age and income, parenting quality variables 'maternal sensitivity', 'responsiveness to child's distress', 'cognitive growth fostering', and 'socioemotional growth fostering' accounted for a significant proportion of variance in this model.

#### **H5: Test of the Proposed Conceptual Model**

A structural equation model with observed variables was specified to test the hypothesized relationships among contextual factors, parent characteristics, parenting quality, and child characteristics (see Figure 2). The proposed conceptual model was developed as an expansion to Belsky's (1984) process model of the determinants of parenting. The current model was built to understand the underlying pathways and determinants of parenting quality and child functioning, and the role of ecological contextual factors, socioemotional functioning, age, and identity development in the parenting experiences of adolescent mothers. Although the relationships among variables of interest have been individually examined in Hypotheses 1 through 4, it was necessary to test all the relationships simultaneously to examine the fit of the proposed model with the sample data. SEM is considered a more parsimonious form of measurement because it

simultaneously accounts for the probability of measurement error across constructs (Cheng, 2001).

**Measurement model.** The measurement models described below specify the relationships among the latent variables (represented by ovals in Figure 2) and the observed variables used to measure them (represented by rectangles in Figure 2). Factor loadings were constrained to set the scale. The communality estimates for all factor loadings from confirmatory factor analyses are presented in Table 16.

Table 16

*Summary of Factor Loadings from Confirmatory Factor Analyses (N=95)*

	Factor Loadings
<u>Socioeconomic Status</u>	
Income	0.86
Level of Education	0.79
Employment Status	0.76
<u>Social Support</u>	
Family Support	0.78
Friends Support	0.70
Significant Other Support	0.59
<u>Maternal Socioemotional Functioning</u>	
Depression	0.82
Anxiety	0.82
<u>Parenting Quality</u>	
Maternal Sensitivity	0.51
Socioemotional Growth Fostering	0.71
Cognitive Growth Fostering	0.81
<u>Child Dyadic Functioning</u>	
Clarity of Cues	0.68
Responsiveness to Caregiver	0.68

A number of fit statistics were employed to assess model goodness of fit. Fit was deemed appropriate when the chi-square goodness of fit test was non-significant (Kline, 2005), the root mean square error of approximation (RMSEA; Brown & Cudeck, 1993) was less than .08, and the standardized root mean square residual (SRMR; Hu & Bentler,

1999) was less than .06. Furthermore, incremental fit indices [comparative fit index (CFI; Bentler, 1990); Tucker-Lewis Index (TLI; Tucker & Lewis, 1973)] with values greater than .9 were considered indicative of good model-data fit. A summary of fit statistics for all confirmatory factor analyses is presented in Table 17.

**Socioeconomic status.** The current study proposed a latent Socioeconomic Status construct that was derived from literature suggesting that annual income on its own is not a sufficient determinant of socioeconomic status (Kraus & Keltner, 2008). Thus, ‘annual income’, ‘employment status’, and ‘level of education’ were proposed as three observable variables related to a single underlying “SES” construct. In this sample, it was speculated that employment status might be confounded with maternity leave/early motherhood. A confirmatory factor analysis (CFA) model tested the proposed one-factor model. Model fit statistics suggested that the model fit the data adequately: Although the chi-square goodness of fit test was significant,  $\chi^2(95) = 111.57, p < .001$ , the comparative fit index (CFI = .96), Tucker Lewis Index (TLI=1.03), and standardized root mean square residual (SRMR=0.02), all suggested good model-data fit. The root mean square error of approximation reflected an acceptable model fit (RMSEA<.01), with 90% confidence intervals ranging from <0.01-0.14. The factor loadings for the SES indicators were: Income = 0.86, Employment Status = 0.76, and Level of Education = 0.79. The factors loadings for all indicators were greater than 0.7, which suggests that they are measuring a common structure and may be retained given the theoretically driven nature of the underlying latent construct. Thus, the one-factor latent SES construct was retained for the structural model.

**Social support.** The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988), used in this study to measure sources of support, has three underlying subscales (support from friends, support from family, and support from significant others) as well as a summative total support scale. To examine the strength of each source of support in the overall model, each subscale was included in the conceptual model (rather than the summative score). A confirmatory factor analysis tested the strength of individual contributions to an underlying Social Support latent construct. Model fit statistics indicated that model fit the data adequately: The chi-square goodness of fit test was non-significant,  $\chi^2(95) = 58.35, p = .63$ , the comparative fit index (CFI = .93), Tucker Lewis Index (TLI=1.00), and standardized root mean square residual (SRMR=0.06), all suggested good model-data fit. The root mean square error of approximation reflected a close model fit (RMSEA=0.05), with 90% confidence intervals ranging from 0.01-0.07. The factor loadings (Family Support = 0.78; Friends Support = 0.70; Significant Other Support = 0.59) suggested mediocre to moderate fit, indicating that these variables were measuring a common structure and could be retained given the theoretically driven nature of the underlying latent construct.

**Relationship Security.** Although relationship security variables were examined individually in Hypotheses 1 and 2, upon examination of bivariate correlations, it was determined that the Relationship Security latent structure would not be included in the conceptual model. This construct, measured using the Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994), yielded 'secure', 'preoccupied', 'dismissing', and 'fearful' subscales as related features of an attachment security construct. Examination of the bivariate associations among these variables indicated that the Preoccupied subscale

was only correlated with the Dismissing subscale [ $r(95) = -.27, p = .005$ ]. The Secure subscale was correlated with the Fearful subscale [ $r(95) = -.48, p < .0001$ ], and the Dismissing subscale [ $r(95) = .26, p = .007$ ]. The Dismissing subscale was also correlated with the Fearful subscale [ $r(95) = .31, p = .001$ ]. Overall, it was evident that these variables measured conceptually separate constructs, and thus it made sense theoretically to withdraw this parameter from the proposed conceptual model.

**Maternal Socioemotional Functioning.** A Maternal Socioemotional Functioning latent structure was also proposed for the current study, deriving from literature indicating that ‘depression’ and ‘anxiety’ are related indicators of an underlying mood/socioemotional functioning construct. A confirmatory factor analysis tested the proposed one-factor model. Model fit statistics indicated that model fit the data adequately: The chi-square goodness of fit test was non-significant,  $\chi^2(95) = 62.17, p = .67$ , the comparative fit index (CFI = .99), Tucker Lewis Index (TLI=1.02), and standardized root mean square residual (SRMR=0.01), suggested good model-data fit. The root mean square error of approximation reflected an acceptable model fit (RMSEA=0.04), with 90% confidence intervals ranging from 0.02-0.09. The factor loadings (Depression 0.82; Anxiety = 0.82) suggested that these variables were measuring a common structure. Thus, the one-factor latent Maternal Socioemotional Functioning construct was retained for the structural model given the theoretically driven nature of the underlying latent construct.

**Identity Development.** An Identity Development latent structure was proposed for the current study based on the hypothesis that maternal age, identity commitment, and identity development are inherently related to developmental task attainment. An

examination of the bivariate associations among variables hypothesized to be subsumed under an Identity Development latent structure indicated that Identity Commitment and Maternal Age were significantly correlated [ $r(95) = .36, p < .0001$ ]. However, Identity Exploration was neither correlated with Maternal Age [ $r(95) = -.02, p = .85$ ], nor with Identity Commitment [ $r(95) = -.19, p = .06$ ]. Thus, it was not appropriate to move forward with an Identity Development latent structure construct. Instead, Maternal Age, Identity Commitment, and Identity Exploration were retained as three separate observed variables in the final structural model so that pathways could still be examined.

**Parenting Quality.** A Parenting Quality latent structure was proposed for the current study, based on literature suggesting that maternal sensitivity, nurturance, and responsiveness are processes indicative of parenting ability (Brooks-Gunn & Duncan, 1997). These variables were derived from the NCAST-PCI (Barnard, 1994), which is an observational coding tool used to assess parenting quality, parent-child contingent behaviours, and infant dyadic behaviour. Described in the Measures section, the maternal-child dyad was videotaped during a teaching interaction that lasted less than five minutes. This interaction was coded, using the NCAST-PCI coding system, for maternal behaviours (sensitivity to cues, responsiveness to child's distress, social-emotional growth fostering, and cognitive growth fostering) and child behaviours (clarity of cues, responsiveness to caregiver). Summative "caregiver total" and "infant total" behaviours were obtained using the NCAST-PCI coding system. However, in order to account for the unique influence of each variable on parenting quality and child dyadic behaviour, the subscales were chosen for the current conceptual model rather than the summative parent and child total scores. The infant total subscales will be described in

the Child Dyadic Behaviours section below. A confirmatory factor analysis tested the proposed model that ‘maternal sensitivity’, ‘responsiveness to child’s distress’, ‘social-emotional growth fostering’, and ‘cognitive growth fostering’, would load onto one underlying “Parenting Quality” factor. Model fit statistics indicated that the model did not adequately fit the data. Although the chi-square goodness of fit test was non-significant,  $\chi^2(95) = 62.52, p = .68$ , the root mean square error of approximation reflected poor model fit (RMSEA=0.18), as did the Tucker Lewis Index (TLI=0.71), and the standardized root mean residual (SRMR=0.1). Results from the one-factor model revealed that the Parenting Quality latent structure was strongly to moderately defined by Sensitivity to Cues ( $\lambda = .50$ ), Social Emotional Growth Fostering ( $\lambda = .71$ ), and Cognitive Growth Fostering ( $\lambda = .80$ ). However, Responsiveness to Child’s distress ( $\lambda = .05$ ) had a weak factor loading, suggesting that the Parenting Quality factor structure does not meaningfully underlie this subscale. As a result, this indicator was removed from the model, and a three-variable index of Parenting Quality was evaluated. Results of the model fit statistics indicated that a three-indicator model appropriately fit the data. The revised factor loadings (Maternal Sensitivity = 0.51; Social Emotional Growth Fostering = 0.71; and Cognitive Growth Fostering = 0.81) suggested that these variables were linked to an underlying Parenting Quality latent structure, and were retained for the structural model.

**Child Dyadic Behaviour.** A Child Dyadic Behaviour latent structure was proposed for the current study, based on the ‘clarity of cues’ and ‘responsiveness to caregiver’ subscales of the NCAST-PCI (Barnard, 1994). A confirmatory factor analysis tested the proposed one-factor model. Model fit statistics indicated that the model fit the

data adequately: The chi-square goodness of fit test was non-significant,  $\chi^2 (88) = 21.95$ ,  $p = .24$ , the Tucker Lewis Index (TLI=1.05), and standardized root mean square residual (SRMR=0.06), all suggested adequate model-data fit. The root mean square error of approximation reflected a mediocre but acceptable model fit (RMSEA=0.08), with 90% confidence intervals ranging from 0.03-0.10. The factor loadings (Clarity of Cues 0.68; Responsiveness to Caregiver = 0.68) suggested that these variables were measuring a common structure and could be retained given the theoretically driven nature of the underlying latent construct.

Table 17

*Summary of Revised Fit Statistics for Confirmatory Factor Analyses*

	$\chi^2$	CFI	TLI	SRMR	RMSEA
Socioeconomic Status	111.57***	0.96	1.03	0.02	<0.01
Social Support	58.35	0.93	1.00	0.06	0.05
Maternal Socioemotional Functioning	62.17	0.99	1.02	0.01	0.04
Parenting Quality	64.88	0.86	0.99	0.09	0.09
Child Dyadic Functioning	21.95	0.88	1.05	0.06	0.08

Note. \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$

**Structural model.** A revised structural model based on modifications resulting from confirmatory factor analysis measurement models is presented in Figure 10. The structural model specified the regression relationships among the hypothesized constructs of interest. The mediation and moderation relationships were left out of the model to maximize parsimony given the sample size (and since these relationships were already confirmed in earlier analyses). Prior to analyses, the data were tested for multivariate normality. Mardia's multivariate kurtosis was significant (26.19,  $p = 0.00$ ), which suggested a non-normal multivariate distribution. Subsequently, Maximum likelihood estimation with Yuan Bentler scaled  $\chi^2$  with Huber-White robust standard errors (MLR)



was used to account for non-normality within the data. Robust standard errors will be presented below. In addition, Full-information maximum likelihood (FIML) was used to account for missing values in the data.

**Model fit.** The estimated variance of the Anxiety scale was negative, which indicates that the model was misspecified. The residual correlation matrix was examined to determine if there were outstanding relationships among variables that were not accounted for in the original model. The residual correlation matrix suggested that there was a relationship between [anxiety and friends support] and [anxiety and family support] that was not accounted for in the original model (Model 1), and thus provided support for model revision. In addition, the residual correlation matrix suggested that there was a relationship among [maternal age and child cognitive functioning], [maternal level of education and child cognitive functioning], and [friends support and cognitive growth fostering]. The residual correlation model is detailed in Table 18. A specification search of modification indices using Lagrange multiplier statistics was conducted to further examine potential sources of model misfit. Results provided further support for a bivariate relationship between residuals of [maternal age and child cognitive functioning] ( $MI=12.39$ ), and [anxiety and family support] ( $MI=5.96$ ). Thus, the correlations between anxiety and support; maternal age and child cognitive functioning; maternal level of education and child cognitive functioning; and friends support and cognitive growth fostering were subsequently included in a revised model (Model 2). Further support for the inclusion of these variables was the fact that these relationships were theoretically justified; with past research suggesting these constructs are inherently related.

Table 18

*Residual Correlation Matrix of Variables of Interest (N=95)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Current Age	-																		
2. Education	.00	-																	
3. Employment Status	.01	-.04	-																
4. Income	.00	-.00	-.03	-															
5. Trauma History	.00	.01	-.06	-.03	-														
6. Family Support	.00	.00	-.04	.06	-.05	-													
7. Friend Support	.03	-.11	.04	-.09	.07	-.00	-												
8. Sig Other Support	-.08	-.11	-.04	-.02	.06	.01	.01	-											
9. Anxiety	-.05	.05	-.03	-.02	.00	.24	-.23	.03	-										
10. Depression	.02	.12	-.07	.03	-.02	-.07	-.17	-.14	-.00	-									
11. ID Commit	.00	-.02	-.02	.02	.00	-.03	.06	-.06	-.15	-.01	-								
12. ID Explore	.00	.10	.13	-.04	.00	.04	-.03	-.03	.02	-.02	-.18	-							
13. Sensitivity	-.04	-.06	-.12	.07	-.10	-.07	-.07	-.03	-.06	-.05	.04	-.18	-						
14. Socioemotional Growth Foster	-.01	.01	-.09	-.03	-.18	-.09	-.11	-.03	-.03	.05	.02	-.03	-.04	-					
15. Cognitive Growth Foster	.08	.11	-.12	.06	-.01	-.11	-.25	-.15	-.10	-.03	-.05	-.03	.11	.01	-				
16. Child Cognitive	-.25	.24	.04	.04	-.09	.05	-.10	-.05	-.06	.08	-.05	-.04	-.09	.01		-			
17. Child Socioemotional	.01	-.16	.10	.05	.06	.05	.13	.12	.00	-.04	.00	-.02	-.11	.04	-.03	.00	-		
18. Child Cue Clarity	.10	.08	-.03	.08	.02	.12	.13	-.02	-.05	-.07	-.00	-.05	-.10	-.01	-.12	-.01	.01	-	
19. Child Responsiveness	-.06	-.03	-.03	-.15	-.07	-.15	-.06	-.14	.01	-.01	-.05	-.01	.05	-.00	.05	-.02	-.01	-.00	-

**Revised model.** Fit statistics suggested that the revised model (Model 2) had good model-data fit. The chi-square goodness of fit test was non-significant,  $\chi^2(111) = 129.77, p = 0.15$ . In addition, the comparative fit index (CFI = 0.965), Tucker Lewis Index (TLI = 0.946), and standardized root mean residual (SRMR = 0.058), all suggested adequate model-data fit. The root mean square error of approximation reflected a close model fit (RMSEA = 0.044), with confidence intervals ranging from 0.000-0.076. The residual correlation matrix was examined to determine whether there were any outstanding relationships among variables that were not accounted for, and no large correlations were observed, which further suggests model fit. The parameter estimates of the revised model were examined. Results are summarized in Table 19 and depicted in Figure 18.

**The relationship between contextual factors and parent characteristics.**

Trauma history [ $\gamma = 0.15$  (standardized estimate = 0.13),  $z = 0.95, p = .29$ ] and social support [ $\gamma = -0.45$  (standardized estimate = -0.35),  $z = 1.24, p = .07$ ] were not associated with maternal socioemotional functioning. Socioeconomic status significantly predicted maternal socioemotional functioning [ $\gamma = -0.41$  (standardized estimate = -0.34),  $z = 2.15, p = .03$ ], which suggests that lower SES increases the likelihood of socioemotional disturbance among mothers. Interestingly, family support (a component of the social support latent structure) was positively correlated with maternal anxiety, wherein higher levels of support were associated with higher levels of maternal anxiety [ $\gamma = 0.88$  (standardized estimate = .81),  $z = 1.91, p = .05$ ]. Support from friends was not significantly associated with maternal anxiety [ $\gamma = 0.28$  (standardized estimate = 0.22),  $z = 0.95, p = .34$ ].

With respect to maternal identity development, a significant association was found between trauma history [ $\gamma = -0.75$  (standardized estimate =  $-0.75$ ),  $z = 1.35$ ,  $p = .03$ ] and identity commitment. No significant associations were found between social support [ $\gamma = 0.31$  (standardized estimate =  $0.27$ ),  $z = 0.75$ ,  $p = .06$ ], SES [ $\gamma = 0.22$  (standardized estimate =  $0.20$ ),  $z = 0.55$ ,  $p = .57$ ], and identity commitment. There were also no significant associations between SES [ $\gamma = -0.46$  (standardized estimate =  $-0.43$ ),  $z = 1.33$ ,  $p = .18$ ], trauma history [ $\gamma = -0.06$  (standardized estimate =  $-0.06$ ),  $z = 0.45$ ,  $p = .65$ ], social support [ $\gamma = -0.30$  (standardized estimate =  $-0.29$ ),  $z = 0.63$ ,  $p = .07$ ], and identity exploration.

#### **The relationship between parent characteristics and parenting quality.**

Maternal socioemotional functioning was not related to parenting quality [ $\gamma = -0.12$  (standardized estimate =  $-0.14$ ),  $z = 1.01$ ,  $p = .31$ ]. Maternal age [ $\gamma = 0.07$  (standardized estimate =  $0.07$ ),  $z = 0.56$ ,  $p = .58$ ] and identity exploration [ $\gamma = -0.03$  (standardized estimate =  $-0.32$ ),  $z = 0.29$ ,  $p = .77$ ] were also not related to parenting quality. However, a positive relationship was found between identity commitment and parenting quality, with higher levels of commitment predicting greater parenting quality [ $\gamma = 0.30$  (standardized estimate =  $0.31$ ),  $z = 2.25$ ,  $p = .03$ ]. Interestingly, a correlation was also found between maternal employment status (a component of SES) and cognitive growth fostering (a component of parenting quality) [ $\gamma = -0.53$  (standardized estimate =  $-0.28$ ),  $z = 2.23$ ,  $p = .03$ ], wherein mothers who were employed were more likely to nurture their child's cognitive development.

#### **The relationship between parenting quality and child characteristics.**

Parenting quality did not predict child socioemotional functioning [ $\gamma = -0.06$

(standardized estimate = -0.07),  $z = 0.24$ ,  $p = .64$ ] or child cognitive functioning, [ $\gamma = 0.05$  (standardized estimate = 0.04),  $z = 0.40$ ,  $p = .68$ ], however, parenting quality did significantly predict child dyadic behavior [ $\gamma = 1.61$  (standardized estimate = 0.86),  $z = 2.24$ ,  $p = .04$ ]. Thus, greater parenting quality was associated with greater child responsiveness and cue clarity during dyadic interactions. In addition, identity commitment was found to predict child cognitive functioning [ $\gamma = 0.25$  (standardized estimate = 0.25),  $z = 2.02$ ,  $p = .04$ ], with higher commitment levels associated with higher child cognitive functioning.

**The role of maternal age in a process model of parenting.** Maternal age was not associated with identity commitment [ $\gamma = 0.27$  (standardized estimate = 0.25),  $z = 0.89$ ,  $p = .37$ ] or identity exploration [ $\gamma = 0.29$  (standardized estimate = 0.27),  $z = 0.94$ ,  $p = .35$ ]. However, maternal age was positively correlated with SES, with older mothers having significantly higher socioeconomic status [ $\gamma = 0.87$  (standardized estimate = 0.87),  $z = 21.68$ ,  $p < .0001$ ]. Maternal age was also positively correlated with trauma history, with older mothers having experienced significantly fewer traumatic events [ $\gamma = -0.33$  (standardized estimate = -0.33),  $z = 3.22$ ,  $p = .001$ ]. In addition, maternal age was positively correlated with social support, with older mothers having greater available social support [ $\gamma = 0.46$  (standardized estimate = 0.46),  $z = 4.52$ ,  $p < .0001$ ].

Overall, the results of the structural equation model suggest that there is a delineated pathway of parenting, wherein socioeconomic status is associated with maternal socioemotional functioning, which in turn is associated with child socioemotional functioning. In addition, the model indicates that contextual variables such as trauma are closely associated with maternal age and identity development, which

in turn is related to parenting quality and child functioning. These findings demonstrate support for a model of parenting that considers age and identity development as important variables in parenting experiences, particularly among adolescent mothers.

Table 19

*Unstandardized, Standardized, and Significance Levels for Revised Model (N=95)*

Parameter Estimates	Unstandardized	Standardized	<i>p</i>
SES → Socioemotional Functioning	-.41	-.34	.03*
Trauma → Socioemotional Functioning	.17	.13	.29
Social Support → Socioemotional Functioning	-.45	-.35	.07
SES → Identity Commitment	.22	.20	.57
Trauma → Identity Commitment	-.75	-.41	.03*
Social Support → Identity Commitment	.31	.27	.06
Maternal Age → Identity Commitment	.27	.25	.37
SES → Identity Exploration	.30	.29	.45
Trauma → Identity Exploration	-.06	-.06	.65
Social Support → Identity Exploration	-.30	-.29	.07
Maternal Age → Identity Exploration	.29	.27	.35
Socioemotional Functioning → Parenting Quality	-.12	-.14	.31
Identity Commitment → Parenting Quality	.30	.31	.03*
Identity Exploration → Parenting Quality	-.03	-.32	.77
Maternal Age → Parenting Quality	.11	.10	.49
Parenting Quality → Child Socioemotional Funct.	-.06	-.07	.64
Parenting Quality → Child Cognitive Functioning	.05	.04	.68
Parenting Quality → Child Dyadic Functioning	1.61	.86	.04*

*Note.*  $\chi^2(2) = 129.77, p = .15$ ; RMSEA = .04; CFI = .97; TLI = .95; SRMR = 0.06; \* $p < .05$

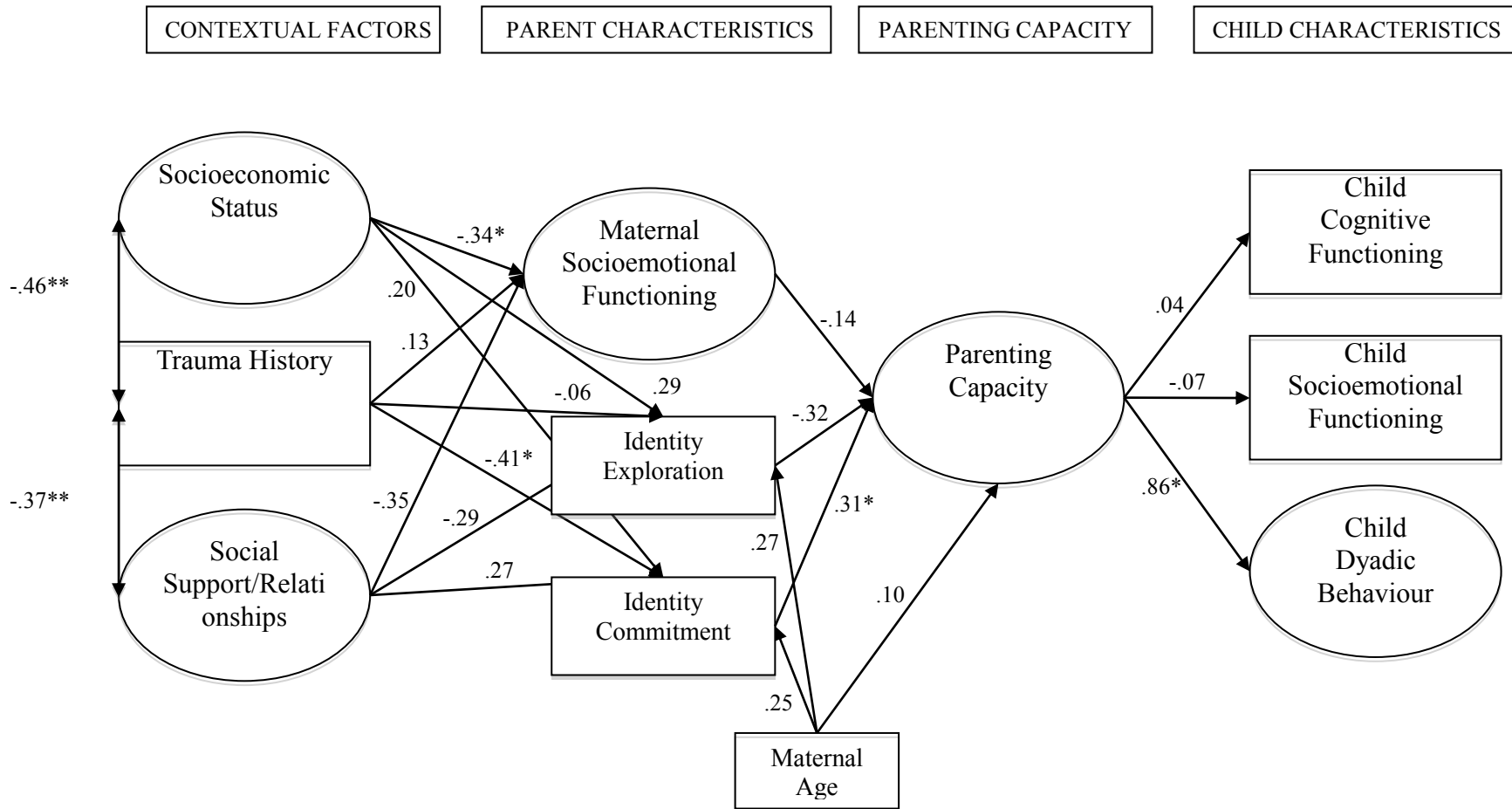


Figure 18. Structural Equation Model of the Relationship Between Contextual Factors, Parent Characteristics, Parenting Quality, and Child Characteristics ( $N=95$ )

## CHAPTER V

### DISCUSSION

The objectives of this study were two-fold: 1) To address several gaps in the literature concerning the role of identity development in the parenting experiences of young mothers. Identity development is considered to be the central stage-salient task of adolescence, wherein successful achievement influences critical decisions made both during adolescence and later in the developmental trajectory (Erikson, 1963; Marcia, 1998). Identity achievement has been associated with higher levels of psychological wellbeing, problem-solving, moral reasoning, and autonomy (Kroger, 2000; Meeus et al., 1999). In contrast, individuals who are delayed or impeded in their identity development have been found to be at greater risk for psychopathology (Meeus, Iedema, Helsen, & Vollebergh, 1999). Adolescent mothers are particularly vulnerable to asynchronies in development because they are prematurely thrust into adulthood by the demands of raising their growing child. These competing needs may hinder their ability to successfully reach identity achievement as a necessary developmental task of adolescence. Key questions arising from gaps in the literature that this study sought to address included: What does identity development look like in teenage mothers? What are the socio-contextual determinants of identity development in teen mothers? What role does identity development play in teen mothers' parenting quality? Is adolescent identity achievement related to child functioning in the offspring of teen mothers?

2) The second objective of this study was to understand how traditional models of parenting fit the experiences of caregiving described by adolescent mothers, and whether



we can adapt extant models to better reflect these experiences. Belsky's process model of parenting (1984) is a well-established theoretical framework for understanding the associations among ecological-contextual factors, parent characteristics, parenting behaviours, and child characteristics. However, the process model of parenting (Belsky, 1984) has not, to our knowledge, been systematically evaluated with an adolescent parent sample. The present study sought to expand Belsky's model to examine the unique role of maternal age and identity development in the differential parenting experiences of adolescent and adult mothers. Thus, the present study represents an important extension of Belsky's research to adolescent mothers and their children.

### **What are the Patterns of Identity Development Among Teenage Mothers?**

Taken as a whole, the findings from this study suggest that adolescent mothers follow a unique developmental trajectory that deviates from the characteristics patterns observed in non-parenting adolescents. The adolescent mothers in this study had lower levels of identity exploration and similar levels of identity commitment as their same-aged non-parenting peers, based on rates established elsewhere in the literature (e.g., Balistreri, 1995; Berman, Schwartz, Kurtines, & Berman, 2001). It was expected that adolescent mothers would have lower rates of identity exploration because past research has intimated that newfound parenting responsibilities compounded with sociocontextual challenges such as poverty, unemployment, and limited social resources (Furstenberg, Brooks-Gunn, & Morgan, 1987), constrain opportunities for exploration.

The finding that young mothers in this study did not endorse high levels of identity exploration suggests that adolescent roles and values cannot be meaningfully explored in the context of adolescent parenthood, and in situations where they are explored, perhaps

may come at the cost of compromising the parenting role and the parent-child relationship.

Unexpectedly, results demonstrated that adolescent mothers had *similar* rates of identity commitment as their same-aged non-parenting peers. This finding is perplexing in light of results indicating that, compared to adult mothers, adolescent mothers had similar levels of exploration and significantly *lower* levels of commitment. That adolescent mothers' identity commitment was found to be neither elevated to the level of adult mothers, nor elevated to any significant degree above same-aged peers, suggests that the newfound parenting role may not automatically stimulate a synthesis of past and future selves, or define the life course. As will be discussed later in this section, high levels of identity commitment in adolescent mothers was found to be a protective factor (regardless of level of exploration), with several implications for parenting quality and child functioning. Thus, parenting processes were more likely to match those of adult mothers among the young mothers who endorsed high identity commitment. This is consistent with other studies (e.g., Crocetti et al., 2009; Luyckx, Goossens, Soenens, & Beyers, 2005) that have indicated positive adjustment indicators associated with non-parenting adolescents' identification with commitment (e.g., academic achievement, psychological wellbeing, etc.).

Ideally, by late adolescence, teens should move towards more autonomous decision-making, greater intimacy in relationships, active exploration of educational and work competencies, and testing of commitments (Kroger, 2007). Almost half (45.2%) of the teen mothers in our sample met criteria for identity diffusion, characterized by low commitment and low exploration, compared to just 7.5% of adult mothers. In non-

parenting late teens, identity diffusion has been associated with low levels of self esteem (Cramer, 1997), a lack of family cohesion (Willemson & Waterman, 1991), poor academic achievement (Berzonsky, 1985), lack of purpose (Schwartz, 2004), and weak moral development (Marcia 1987). It has also been associated with an insecure attachment style stemming from negative early interactions with one's family of origin (Arseth, Kroger, Martinussen, & Marcia, 2009). Thus, adolescent mothers' risk for identity diffusion in adolescence may precede parenting, and be partially explained by a history of ruptured relationships with significant attachment figures. A diffuse identity state may derail the optimal functioning and adaptive outcomes of adolescent-parent families. If the adolescent mother is lacking intrinsic motivation or does not have the resources in place to explore or commit to roles that add meaningful value, direction, and purpose to the lives of both she and her child, both members of the dyad are placed at significant risk.

The 14 now-adult mothers (ATM) who indicated that they gave birth to their first children during adolescence, provided an interesting source of comparison for the present study. former teen mothers endorsed virtually the same levels of commitment and exploration as adult mothers. However, further examination revealed that these values loaded differently onto identity status dimensions than those of adult mothers. Only 7.1% of former teen mothers met criteria for identity achievement, compared to 22.6% of adult mothers. The majority of former teen mothers endorsed identity diffusion (28.6%) or identity foreclosure (57.1%). Similarly, the majority of adolescent mothers also endorsed diffusion (45.2%) or foreclosure (31.0%). This suggests that responsibilities associated with early caregiving may make identity consolidation

processes beyond the level of foreclosure a challenging endeavour. It also supports past research suggesting that the attained stage of identity commitment remains fairly stable following adolescence (Klimstra et al., 2010; Kroger, Martinussen, & Marcia, 2010). Given that identity development occurs through person-context interaction (Kroger, 2004), early parenthood may impose a sort of imposed commitment to new roles with little opportunity for exploration. Subsequently, moratorium (the third sequence of adolescent development characterized by high exploration and low commitment) may become an obsolete goal for young mothers, because once the commitment to parenthood has been established, it cannot be undone.

The high levels of foreclosure endorsed by teen mothers (31%), adult mothers (54.7%), and former teen mothers (57.1%) were a surprising finding. Past research has generally associated identity foreclosure, characterized by high commitment and low exploration, with external locus of control (Clancy & Dollinger, 1993), authoritarianism (Ryeng, Kroger, Martinussen, 2013), and low autonomy (Cramer, 2001). However, in the present study in the context of the maternal role, the endorsement of foreclosure was found to be a protective factor.

It should be noted that identity development is best measured during the adolescent and young adult phase of development, while individuals are in the processing of negotiating and constructing their emerging identity. Thus, high rates of foreclosure among teen mothers and former teen mothers may not accurately reflect periods of exploration that have already occurred and been resolved. It should also be noted that identity is not a static phenomenon and the exploration of new roles and values in adulthood may bring about shifts in identity achievement during crisis periods (Marcia, 1987)

Overall, this set of findings suggests that young mothers do not proceed through Marcia's (1998) identity status paradigm in the same manner as non-parenting adolescents. Their development also does not reflect the identity pattern observed in adult mothers. Typically, identity commitment occurs *after* extensive exploration of roles and values (Kroger, 2007). However, many adolescent mothers in our study had restricted opportunities for exploration. The findings indicate that this may lead to a conferred identity, characterized by high commitment in the absence of exploration, in order to adjust to the demands of parenting. Once parenthood is prioritized, these mothers may never regain the opportunity for exploration, and thus may never reach identity achievement, as demonstrated by the low level of identity achieved former teen mothers in this study. However, foreclosure among young mothers may not necessarily be associated with the negative outcomes that are typically associated with foreclosure among non-parenting adolescents. Moreover, high commitment may actually be a protective mechanism for adolescent mothers and their children. Conversely, risk in this population may be associated with high identity exploration and low identity commitment.

### **What are the Sociocontextual Determinants of Identity Development in Teen Mothers?**

Significant demographic discrepancies emerged between adolescent and adult mothers in our sample. The annual household income of adolescent mothers was on average \$70,000 dollars less than the annual household income of adult mothers. Adolescent mothers were significantly less likely to be married, common-law, or in a stable relationship. Furthermore, adolescent mothers obtained less education, and were

more likely to be unemployed or rely on social assistance than adult mothers. These differences are consistent with the extant literature on the demographic characteristics of young mothers (Borkowski, Whitman, & Farris, 2007). The added role of caregiving makes completion of secondary and post-secondary education a challenging task for adolescent mothers. This subsequently places burden on vocational prospects and financial stability for many young mothers who are also typically parenting as single caregivers, with limited monetary and emotional support from significant others (Kroger et al., 2007). It is important to acknowledge the demographic realities of adolescent mothers because, entering into a life of parenting, adolescent mothers are already disadvantaged by their sociocontextual milieu.

An examination of the relationship between contextual factors and identity development revealed that trauma history, income, social support, and relationship security predicted a significant proportion of the variance in identity commitment, but not exploration. This finding indicates that contextual variables play a significant role in determining whether a caregiver is able to make role commitments. In particular, social support emerged as a key contextual variable that predicted a unique effect, while controlling for other contextual variables. Social support has been widely studied as a mechanism that can offer respite, esteem enhancement, encouragement, and a sense of connectedness for mothers of young children (Armstrong, Birnie-Lefcovitch, & Ungar, 2005; Woody & Woody, 2007). In particular, informational (knowledge sharing) and emotional (providing encouragement and feedback) forms of social support have been associated with enhanced maternal self-efficacy (Haslam, Pakenham, & Smith, 2006). Thus, the provision of support through family, friends and romantic partners (in addition

to community agencies, helpful educators, and therapists) may alleviate parenting stress and offer greater opportunity for knowledge gathering and exchange that in turn allows commitments to be tested more confidently and safely than if a caregiver were to make role decisions in the absence of a supportive social network.

Due to normative adolescent psychological and biological changes, during early parenthood, adolescent mothers are in a developmentally vulnerable and ego-driven period (Borkowski, Whitman, & Farris, 2007). In addition to that, contextual factors place further burden on overall development (Dalla et al., 2013). For these reasons, it was important to investigate how maternal age (internal factor) interacted with contextual variables (external factors) to predict differences in identity development. Among contextual variables, trauma history and relationship insecurity, in particular fearfulness, were negatively associated with identity commitment in teen mothers; however, no relationship was found between these variables in adult mothers. Thus, lower levels of identity commitment were reported by those adolescent mothers who endorsed fearful relationship styles, and also by those adolescent mothers who endorsed significant trauma histories. No relationship between fearful relationship styles, significant trauma histories, and identity commitment was found among adult mothers. Among young mothers, these variables may be much more interrelated than initially assumed. Exposure to severe, sustained trauma (in particular, abuse, genocide, or early relational trauma), has been characterized as a complex form of post-traumatic stress (complex PTSD; Herman, 1992) and associated with its own diagnostic nosology (Kessler, 2000). Unresolved task attainment of certain developmental stages from infancy to adolescence, specifically; disorganized attachment, impaired self-regulation, and diffuse identity, have been

regarded as primary features in the constellation of symptoms that characterize complex PTSD. Because these traumas occur during development and in an interpersonal context (often at the hands of a caregiver), one's self-concept, the crux of identity, is not able to emerge in a safe and secure environment (Spinazzola et al., 2005). Furthermore, it can be destabilizing to attempt to integrate severe trauma into a coherent sense of self (Courtois, 2004). As a result, many individuals with complex PTSD endorse dissociative or avoidant coping strategies that further fragment their understanding of self in relation to other (Briere 2002; Fonagy et al., 2000). For example, a relationship between trauma processing and ego identity development has been found in combat veterans (Silverstein, 1996). In addition, childhood abuse history has been linked to adult unresolved attachment, dissociative experiences, and identity confusion (Neufield Bailey, Moran, & Pederson, 2007). This latter finding was similar to our results indicating a link between relationship fearfulness, trauma history, and identity commitment in adolescent mothers, and has been replicated elsewhere in the literature. For example, Dorahy and colleagues (2013) found a relationship between both preoccupied and fearful relationship styles and dissociation in a complex PTSD sample. Carving out one's identity, or place in the world, as well as new relationships in the aftermath of abuse can be a frightening and disorganizing experience when the world feels neither safe nor secure. Thus, a fearful relationship style may emerge from unresolved complex trauma. Overall, results verify that it is not singularly age, SES, trauma, or social support that predict whether mothers make role commitments, but a multifarious interaction between these variables that may originate in the context of early relational trauma. Child abuse at the hands of an adult, or worse; caregiver, can bring about overwhelming fear due to a lack of safety in the very



place where one is meant to feel the most safe. Returning to the “ghosts in the nursery” metaphor, coined by Fraiberg and colleagues (1975), challenges arising in the early caregiving relationship may continue to play out in subsequent relationships. Trauma exposure, in particular, childhood abuse histories, may have a profound effect on adolescent mothers’ meaningful development of self, as well as self in relation to other.

Further examination of trauma history revealed that adolescent mothers were more likely than adult mothers to endorse *all* types of trauma experiences, including physical abuse, sexual abuse, neglect, exposure to community violence, parental mental health and substance use difficulties, and bullying. Several researchers have found similar evidence of exposure to multiple types of trauma among young mothers (Ammerman et al., 2009; Burt, Guner, & Lanzi, 2009). For example, Kennedy and Bennett found that 75% of adolescent mothers in their sample endorsed at least three forms of trauma (2006). Among the types of trauma examined in the present study, exposure to community violence was negatively associated with identity commitment among adolescent mothers. Thus, adolescent mothers who endorsed bearing witness to severe violence in their neighbourhood, such as shootings or violent assault, were less likely to achieve identity commitment. Community violence tends to occur in systems of entrenched poverty, where criminality, structural dilapidation, and marginalization also pervade (Hill & Herman-Stahl, 2002). This suggests that safety and security concerns regarding one’s community, and perhaps feeling unsure about how to move away from such entrenched forms of poverty and neighbourhood violence, may leave young mothers feeling disenfranchised and unable to make role commitments.

Sexual abuse history was positively correlated with identity exploration among teen

mothers, but not adult mothers or former teen mothers. While initially surprising, this finding can be thought to reflect the robust literature linking childhood sexual abuse history with later adolescent risky behaviour, including substance use, delinquency/conduct difficulties, and risky sexual behaviour (e.g., Brown et al., 2010; Sean & Carey, 2010). Identity exploration among teen mothers may be considered a type of risky behaviour: If young caregivers are out and about, exploring social, political, academic, romantic, and leisure activities; such role experimentation may compromise their ability to be physically present and focused on the needs of their child. Challenges in inhibitory control, planning, decision making, and impulsivity, stemming from early sexual victimization, have been found to mediate the pathway between sexual abuse history and adolescent risk behaviour (Jones et al., 2013; McLeod & Knight, 2010). Interestingly, childhood sexual abuse is associated with early menarche, early sexualized behaviour and activity, and greater chance of unplanned teenage pregnancy (Zabin, Emerson, & Rowland, 2005). This suggests that identity exploration may predate adolescent parenthood among those young mothers who have a history of sexual victimization.

Overall, this set of findings underscores the notion that identity development is not an intrapsychic phenomenon, but rather, emerges through one's interaction with his or her environment. Poverty, trauma, and limited social support pose tremendous developmental barriers that are intensified by the experience of adolescent parenting.

### **What Role does Identity Development Play in Teen Mothers' Parenting Quality?**

Early motherhood has been found to compromise parenting quality in a number of ways, as evidenced through greater rates of disorganized and insecure attachment among

infants of adolescent mothers (Broussard, 1995; Spieker & Bensley, 1994). In particular, the cognitive and emotional unpreparedness brought about by early, often unplanned, pregnancy, has been found to challenge adolescent parents' ability to be responsive and attuned to infants' needs, as well as stimulating and encouraging during dyadic interaction (Lounds, Borkowski, Whitman, Maxwell, & Weed, 2005). In this study, we found that adolescent mothers had lower rates of both cognitive and socioemotional growth fostering than adult mothers. However, these differences receded upon controlling for maternal income. This suggests that differences in parenting quality may be better attributed to socioeconomic status than maternal age. However, these variables are inextricably linked and to tease them apart may be artificial and may not reflect the reality of the consequences of teen parenthood for offspring. Financial constraints can impede educational enrichment opportunities, thereby limiting cognitive growth fostering. SES challenges can also create significant stress and chaos in the home environments of young families, thereby inhibiting socioemotional development.

Adolescent mothers in our study had similar levels of maternal sensitivity and responsiveness to child distress as adult mothers. This is inconsistent with the widespread literature indicating that young mothers have greater difficulty alleviating their infants' distress, responding in a sensitive manner, and providing verbal stimulation than adult caregivers (Barnard, 1997; Coley & Chase-Lansdale, 1998; Culp, Osofsky, & Brien, 1996). However, our differences may be due to the short observational sampling. Differences may also be due to recruitment bias. All adolescent participants were recruited from agencies serving high-needs families, and were engaged in individualized and group support to enhance the parent-infant attachment relationship. Furthermore, a

proportion of the adolescent mothers in our sample were recruited from a residential facility for young mothers, and thus were engaged in day treatment as well as individualized therapeutic support to nurture the dyadic relationship. These supports may have provided the young mothers in this study with opportunities to observe clinicians and staff model appropriate sensitivity and responsiveness to infant cues, and enhance their overall attunement to their children's needs.

Results of this study indicate that identity commitment mediated the relationship between maternal age and socioemotional growth fostering. Thus, it wasn't necessarily that *older* mothers had greater parenting quality, but rather, that *role committed* mothers had greater parenting quality. These findings challenge widely held assumptions about the one-to-one relationship between childbearing age and parenting quality, and encourage reflection about the ways in which early parenthood is inherently confounded with unresolved identity and socioeconomic status. In a recent study exploring identity development in a sample of now-adult Navajo adolescent mothers, Dalla and colleagues (2013) found that early motherhood motivated many of the participants in their sample to make role commitments without exploration, particularly in the life domains of maternity and occupation. This supports research demonstrating that children's developmental outcomes (the product of parenting quality) are more consistently determined by the sociocontextual environment and access to (financial and emotional) resources, than simply maternal age at childbirth (Geronimus, 2004).

Teenage mothers and their children are often characterized as being at risk for poor outcomes, due to the significant stressors these families may be faced with, including a lack of social support, difficult childhood histories, limited educational

opportunities, and greater financial burden (Aiello & Lancaster, 2007; Borkowski et al., 2007; Easterbrooks, Chaudhuri, Bartlett, & Copeman, 2011). We sought to explore the relationship between stress and parenting quality among adolescent and adult mothers, and to assess whether this association is moderated by identity development. Results indicate that identity commitment may play an important role in teen mothers' experience of stress and parenting quality. Specifically, perceived stress was associated with reduced parenting quality only among those teen mothers with low levels of identity commitment. Thus, teen mothers with unresolved identity commitment and high levels of stress were less likely to be sensitive to their infant's needs, responsive to their distress, and nurturing of their development. Among teen mothers with high identity commitment, high levels of stress did not negatively impact parenting quality.

Traditional cumulative stress models suggest that a direct predictive relationship exists between the amount of stress exposure and the likelihood of negative outcomes. The adaptive calibration model (Ellis & Del Guidice, 2014) proposes that there is a complex non-linear relationship between developmental factors, environmental stress, and behavioural strategies that result in individual differences in stress response. According to the model, individuals are continuously calibrating their stress response system to acclimatize to what may be a challenging environment. Such developmental plasticity allows for conditional adaptation to harsh or demanding environments. These results provide support for the utility of an adaptive calibration framework (Del Guidice, Ellis, & Shirtcliff, 2011) for understanding how young mothers may adapt to stressful environments. Identity commitment may help young mothers calibrate stress and adjust to the demands of parenting.

### **Are Maternal Age and Identity Development Related to Child Functioning in the Children of Teen Mothers?**

Results initially revealed significant differences in child cognitive functioning as a function of maternal age. This finding is profusely replicated in the literature, with many studies citing poorer cognitive, academic, and psychosocial functioning among children of adolescent mothers (Dubow & Luster, 1990; East & Felice, 1996; Furstenberg, Brooks-Gunn, & Morgan, 1987; Spieker et al., 1997). For example, almost three-quarters (69%) of children of teen mothers in the Notre Dame Adolescent Parenting Project did not meet age-appropriate expectations for intelligence by age 5 (Whitman et al., 2001). However, after controlling for socioeconomic status, the results of the present study indicate that there is no longer a relationship between maternal age and child cognitive development. Furthermore, differences in child dyadic behaviour as a function of maternal identity status also went away after controlling for socioeconomic status. This suggests that the effects of maternal age and identity status are highly confounded by socioeconomic status.

These findings again reinforce the notion that it is *not* the age of the caregiver per se, but rather, a confluence of variables rooted in the climates in which they tend to reside. The experience of poverty and educational limitations can severely constrain child outcomes. This was evidenced by our finding that composite IQ scores of babies of adult mothers were, on average, 10 points higher than composite IQ scores of babies of adolescent mothers. It can be easy to infer that adolescent mothers are not adept at promoting the needs of their developing child and that this is what promulgates the intergenerational pattern of early childrearing that is sometimes seen in the literature

(e.g., Borkowski et al., 2007). However, it is important to make the distinction that adolescent mothers and their children are disadvantaged by socioeconomic inequities that may be in place before entry into early parenthood, and then further exacerbated following entry. Limited opportunities for academic and vocational growth and entrenched forms of poverty can constrain child outcomes and be difficult to escape without broader societal acknowledgement and response to the unique stressors encountered by young families. Indeed, resilience among children of adolescent mothers has been negatively correlated with the amount of adversity in the maternal environment (Weed, Keogh, & Borkowski, 2006).

### **Does Belsky's Parenting Framework Fit the Experiences of Adolescent Mothers?**

A second major objective of the present study was to specify a model of adolescent parenting that was grounded in extant theory and research, and adapted from the widely-used process model of the determinants of parenting (Belsky, 1984). In Hypotheses 1 through 4, I examined relationships among individual coefficients subsumed within and/or adapted from this model. However, it was also necessary to test the network of purported relationships simultaneously via an overall model. Doing so allowed both observed (measured) and unobserved (latent constructs) relationships to be explored while at the same time minimizing measurement error. Thus, we could understand how Belsky's parenting framework may be adapted to fit the experiences of adolescent mothers and their children. Belsky (1984) argued that parental functioning is multiply determined by various ecological sources of influence including: 1) characteristics of the parent; 2) characteristics of the child; and 3) contextual factors in the environment within

which the parent-child relationship is nested. With slight modification, the proposed conceptual model fit the sample data, thereby offering an expansion to Belsky's (1984) process model of the determinants of parenting. Consistent with Belsky's model, our findings demonstrate that parenting is multiply determined. Socioeconomic status, social support, maternal age, identity development, and maternal socioemotional functioning were all found to be meaningful predictors of parenting quality. According to Belsky, parent characteristics represent the most critical determinants of parenting quality. However, the current data suggest that, for adolescent mothers, vulnerabilities in the maternal context, including socioeconomic status indicators, social support, and trauma history, pose greater risk for parenting quality than parent characteristics such as age, identity development, and socioemotional functioning. These latter variables are confounded by contextual variables. Thus, resilience in parent characteristic variables, in particular, delayed childbearing age and identity achievement, are heavily shaped by the contextual environment in which they emerge. The most striking finding that emerged is that identity commitment can play a pivotal role in buffering stress and supporting parenting quality in young mothers. However, directionality cannot be presumed because of the cross-sectional nature of the data (which suggests that it may be stress that affects identity commitment and not the other way around). Furthermore, the data elucidate a pathway through which contextual factors exert their influence on child functioning. Our results suggest that contextual variables such as SES and social support significantly predicted parent characteristics such as maternal socioemotional functioning and identity commitment, which in turn predicted parenting quality, which was associated with child functioning in the dyadic context.



Results demonstrated that, while contextual variables did not predict maternal anxiety, they were a significant predictor of maternal depression, specifically among adolescent mothers, who had higher overall rates of depression and anxiety than adult mothers and former teen mothers. In particular, mothers with significant trauma histories and fearful relationship styles had higher rates of depressive symptoms. In addition, mothers with lower levels of income, social support, and secure and preoccupied relationship styles had higher rates of depressive symptoms. To investigate the causal pathway between maternal depression and poverty, Dearing and colleagues (2004) tracked a cohort of families in the United States across the first three years of their children's lives, and determined that the stress associated with poverty *caused* depression in caregivers (rather than the other way around). This in turn was associated with harsher parenting practices and poorer child functioning (Dearing, McCartney, & Taylor, 2004). Similarly, etiological models of depression have cited a combined effect of *provoking agents* in the form of severe life stress (resulting from trauma, loss, and material disadvantage) and social/personal *vulnerability factors* (including temperament and lack of social support) (Brown & Harris, 1978). This model of depression was reflected in our findings, which highlighted the combined influence of social support, traumatic stress, and socioeconomic status in predicting maternal depressive functioning.

Researchers have estimated that teen mothers are approximately twice as likely to experience symptoms of depression as adult mothers (Deal & Holt, 1998). Birkeland and colleagues (2005) found that 29% of adolescent mothers met criteria for clinical depression. In our study, 21.4% of adolescent mothers met criteria for moderate to severe depression (9.5% severe) and 38.1% met criteria for moderate to severe anxiety (16.7%

severe). In contrast, only 5.6% of adult mothers in our study met criteria for moderate to severe depression or anxiety. Maternal anxiety was associated with lower rates of socioemotional and cognitive growth fostering among caregivers, and subsequently, lower rates of social-emotional development among children. Maternal depression was also associated with lower rates of social-emotional development among children. Thus, findings from the present study provide further support for the well-documented association between maternal psychological functioning and child socioemotional development (e.g., Borkowski et al., 2007; Cummings, Davies, & Campbell, 2000; Sommer et al., 2000).

We found that family support positively correlated with maternal anxiety, such that higher levels of perceived support from family members was associated with greater rates of maternal anxiety. This suggests that the family context may not always promote adaptation to parenting. In an examination of risks and resilience in parenting among young mothers, Easterbrooks and colleagues (2011) found a similar finding. In their study, resilient adolescent mothers (resilience characterized as lack of child maltreatment perpetration) were less likely to live with their families of origin, and also less likely to rely on their own caregivers for emotional or caregiving support. These authors surmised that independence from families of origin may enhance autonomy and self-sufficiency during young caregivers' transition to adulthood (Easterbrooks, Chaudhuri, Bartlett, & Copeman, 2011). In instances when there is a history of trauma and limited emotional support, separation from families of origin may help some young mothers distance themselves from sociocontextual stressors that they encountered growing up. In our study, adult mothers reported receiving greater support from family members than young

mothers. Among adult mothers, greater support from friends and significant others was associated with lower rates of depressive symptoms.

A number of variables were directly or indirectly related to child functioning in the present study. Socioeconomic status demonstrated a profound effect on the functioning of infants as young as a few months old. This is consistent with literature indicating a relationship between social risk (including maternal age, poverty, geographic isolation, single parenthood, and unemployment) and cognitive development in infants as young as 15 months of age (Burchinal et al., 2008). In the present study, maternal age, identity status, and income significantly predicted child cognitive development. Maternal age, income, and parenting quality significantly predicted child dyadic functioning. The overall model also showed that social support and maternal socioemotional functioning were indirectly related to child functioning through their effect of parenting quality. It is worthwhile to note that child development is a complex phenomenon with many mediating, transactional, and moderating pathways. There were many potential contributing factors that were not investigated in the present study, but may have played a role in children's functioning. Studies are emerging that focus on the unique protective role of fathers (e.g., Lamb, 2004; Paquette, 2004). Father involvement has been associated with child psychological functioning (Menestrel, 1999) and academic success (Jones, 2004). Among adolescent mother-led families, grandmother involvement has been found to enhance financial stability and increase cognitive readiness to parent (Hess et al., 2002; Whitman et al., 2001). Additional social support in the form of community programming, religious involvement, and social groups, has also been found to buffer environmental risk in the lives of children of adolescent caregivers (Howard, Carothers,

Smith, & Akai, 2007). Although none of these variables were explicitly examined in this study, they may have played a critical role in helping these young families cope with stress.

Our findings largely support a bulk of literature demonstrating that limited education, lack of resources, financial burden, and a dearth of parenting support can make parenting a difficult process for young mothers, which in turn has several implications for child cognitive and socioemotional development (Horowitz et al., 2001). Our findings advance the literature by demonstrating the unique role that developmental task attainment, in particular, identity commitment, can play in fostering both parenting quality and child cognitive development. Studies spanning the past two decades have implicated identity processes in the relationship between adolescent parenting and child functioning and examined closely related variables, such as role confusion (Aiello & Lancaster, 2007); cognitive readiness to parent (Borkowski et al. 2007; Sommer et al. 1993); self-esteem (Hurlbut, Culp, Jambunathan, & Butler, 1997); self-conceptualization (Raeff, 1994); and maternal role identity (Dalla et al., 2013), as proxies for identity development. In an earlier study, we found that developmental task attainment mitigated child abuse potential by buffering the impact of environmental stress in a sample of high-risk adolescent mothers (Dhayanandhan, Bohr, & Connolly, 2015). However, very few other studies have explicitly measured developmental tasks/identity development in this population or mapped this variable onto adolescent parenting practices and child functioning. The findings from the present study, in particular the relationship between identity commitment, parenting quality and child cognitive development, suggest that identity development is a verifiable feature in adolescent mothers' parenting experiences.

Furthermore, our findings advocate that identity commitment is a key construct in a process model of adolescent parenting.

### **Limitations**

This study had many strengths: We employed a mixed methodology that included self-report questionnaires, videotaped observation of dyadic functioning, and ‘gold-star’ standardized measures of child development. Our study had ecological validity insofar that adolescent participants were tested in the environment they felt most comfortable and relaxed, either in their homes or playroom of their community agency or residential facility. We included two comparative samples - adult mothers who gave birth to their child as adolescents, and adult mothers who gave birth to their children post-adolescence – in order to understand how identity development and Belsky’s parenting paradigm apply across different domains of motherhood. Demographically, participants reflected an ethnically and socioeconomically diverse sample of adolescent and adult mothers, recruited from agencies serving families across the Greater Toronto Area, Ontario. And finally, we approached the study design from an ecological-contextual framework that incorporates the various contexts and systems within which (adolescent-caregiver and child) development and parenting are embedded. In spite of these strengths, the study had several limitations which cannot be overlooked.

Perhaps the most profound limitation of the current study was the use of a cross-sectional design. Identity development is a gradual, unfolding phenomenon. Thus, a longitudinal study design is imperative to truly understand how identity shifts across adolescence and into adulthood, and gauge intraindividual pathways for identity development. Longitudinal studies would also allow causality to be investigated and

perhaps established. Although path analyses within the preceding multivariate analyses may have suggested a directionality of effect, these were based on theoretical considerations and past research. We did not mean to imply causality, as this cannot be established with cross-sectional data. For example, we could not assess whether identity diffusion leads to early parenting or early parenting leads to limited attainment of developmental tasks. While the present study was able to ascertain that an identity diffused status is negatively associated with parenting quality and child functioning, longitudinal methods can substantially clarify *how* these relationships manifest and play out over time. Furthermore, a cross-sectional design limits our ability to make causal inferences regarding the stability of adolescent identity achievement over time. Although some studies suggest that identity commitments remain stable following adolescence (e.g., Klimstra et al., 2010), future longitudinal study designs are warranted to investigate the stability of identity achievement as teen mothers traverse young adulthood. In general, there is a dearth of Canadian research investigating adolescent parents and their children longitudinally. Future research should examine temporal changes related to the emergence, negotiation, and resolution of stage salient developmental tasks, as well as mother–child interactions in this population over time.

Findings about identity processes and parenting should be interpreted with caution given that the framework used to investigate identity development was based on a largely Westernized conceptualization of the developmental trajectory (Akhtar 1994; Mann 2004). It is important to recognize that prevailing sociological and historical forces that are culturally specific heavily influence and contextualize the developmental tasks deemed relevant to adolescence. Thus, our findings cannot necessarily generalize to non-

Canadian cultures or parts of the world where different beliefs, values, and instrumental tasks guide developmental expectations (Nelson et al. 2004).

Although we were able to establish relatively narrow 95% confidence intervals, the present study would have greatly benefitted from a larger sample size. A larger sample size would have reduced risk for Type II error and enhanced the overall statistical power. For example, there were numerous hypotheses for which we were not able to establish an effect. However, due to the size of the sample, a lack of statistical significance does not necessarily imply that there was no effect, and thus results must be interpreted with caution. In order to examine relationships among multivariate data, we employed structural equation modelling. However, this statistical approach is not typically conducted with sample sizes less than 100 participants. To account for the small sample, we applied Maximum Likelihood Estimation (ML) with a Yuan-Bentler modification (Bentler & Yuan, 1998). A well-fitting model in spite of small sample size suggests that results were robust. To maximize parsimony, we were not able to include additional relevant mediation and moderation analyses in the final model. A larger sample would have allowed all potential pathways between contextual factors, parent characteristics, parenting quality, and child characteristics to be explored simultaneously.

The present study was also restricted by the recruitment and selection process. The vast majority of participants were recruited from family-centered community agencies. Furthermore, adolescent participants were recruited from community agencies serving *high-needs* families and were involved in parenting programs targeting maternal sensitivity and the caregiver-child attachment relationship. Many of the adolescent participants were residing in a group-home/residential facility for high-risk teen mothers

(e.g., Humewood House, Rosalie Hall), and thus were receiving intensive day treatment and therapeutic support. These mothers were more disadvantaged as indicated by their eligibility for these services. At the same, they had greater opportunities to participate in intensive parenting intervention programs and observe appropriate parent-child interaction, maternal warmth and sensitivity as modelled by clinicians or workers involved in their care. Thus our results may not generalize to adolescent families who are not receiving services (e.g., adolescents in two-parent homes and homeless adolescent caregivers).

Another study limitation, mentioned earlier, is that there exist many untested variables that may have influenced study results. We did not intend to put forth a *fully comprehensive* model of parenting, but rather, adapt an existing model grounded in past research. Thus many relevant variables were beyond the scope of the present study. For example, child characteristics such as age and gender; parent characteristics such as personality; family characteristics such as relationship status; and broader contextual characteristics such as place of residence (e.g., group home, with family of origin, living alone) may have influenced study findings. In addition, because only adolescent mothers were surveyed, we were not able to gain clarity about the developmental stage progression of adolescent fathers. These variables, while relevant, could not be examined either because of the small sample size, or because they did not necessarily map onto Belsky's process model of parenting.

A final limitation that we will comment on is how identity development was measured in the present study, and the inherent limitations in this form of measurement.



After thorough review of the literature, I selected the Ego Identity Process Questionnaire (EIPQ; Balistreri, Busch-Rossnagel, & Geisinger, 1995), which is a measure of developmental task attainment that aligns with Marcia's (1966) model of identity status during adolescence. However, this may not be the best way to capture how adolescent mothers, as a unique subset of teenagers, navigate identity development and parenting. Thus, a more inclusive definition of identity development may be warranted. There are many worthwhile indicators of adolescent developmental task attainment available in the literature. For example, the Identity Status Interview (Marcia et al., 1993) examines themes of vocation, religious and political ideology, and sex-role values; the Extended Objective Measure of Ego Identity Status-II (from which the EIPQ was derived; Adams, 1999) is a 64-item self-report measure that assesses identity status across eight identity defining areas; the Separation-Individuation Test of Adolescence (SITAS; Christenson & Wilson, 1985) is a self-report measure that aligns with Mahler's (1975) separation-individuation phase of child development. Each of these measures may have provided unique fruitful information regarding developmental task attainment among young mothers. In an earlier study, we selected to use the Developmental Tasks Questionnaire (DTQ; Seiffge-Krenke, 1998) based on Havighurst's (1948) developmental tasks, to examine the relationship between developmental task attainment and child abuse potential among high-risk teenage mothers. This measure offered a frequency count of tasks identified as important and tasks identified as "achieved" (e.g., identity, independence from family, occupational consideration, intimate relationships). However, for the present study, we wanted a more complex measure of identity that mapped onto Erikson's (1968) stage model of development, and captured shifts that occurred through

adolescence. Relatively early into analysis, it was determined that the traditional way of analysing this measure, via examination of identity status indices (diffusion, moratorium, foreclosure, achievement), did not map onto adolescent mothers' developmental experiences, and that it was more meaningful to separately investigate the components of these indices, commitment and exploration. Through this deeper investigation, we were able to derive the influence of identity commitment on resilience processes for young mothers and their children.

### **Future Directions**

The findings and limitations of the current study unearth many questions: What does identity development look like in pregnant adolescents and does it remain stable across the transition to parenthood and adulthood? How does the presence of instrumental/emotional support (via grandparents, adolescent fathers, intimate partners) change the landscape of identity development and adolescent parenting? Can we establish causality about the role of identity development in the lives of adolescent mothers and their children in the context of psychosocial stress? What sociocontextual factors account for intraindividual variability in the identity trajectory of adolescent parents? What impact does trauma history have on identity development processes and can resilience be cultivated (e.g., through enhancing social support or relationship security)? What do identity processes look like for adolescent males in a caregiving role? How can we use findings about identity development to inform intervention efforts for young families in need? What are the implications for identity development among adolescent mothers of different cultures? How do identity commitment and maternal role identity converge and diverge across adolescence and early adulthood? These questions offer fertile ground for

future research to explore. A starting point that would provide a foundation for many of these questions to be addressed is an investigation of existing maternal/child national databases, or the creation of a longitudinal dataset that utilizes an ecological contextual framework for understanding adolescent parenting and identity development with a large Canadian sample. The inclusion of qualitative methods may help generate a richer narrative about the processes and challenges underlying identity achievement, which is lacking in much of the current literature.

In our study, we were not able to make meaningful conclusions about the role of identity exploration in young mothers' parenting experiences. However, new research has emerged that extends Marcia's (1968) identity status paradigm to make the distinction between 'exploration in breadth' (occurring before commitments are made) and 'exploration in depth' (occurring after commitments are made) (Meeus et al., 2002). Luyckx and colleagues (2006) further expanded this model of identity formation to encompass four dimensions including Exploration in Breadth, Commitment Making, Exploration in Depth, and Identification with Commitment. This four-factor model is a valuable area for future investigation as it may be more well-suited to a process-oriented framework of adolescent parenting. Identity exploration as it is currently defined may be too narrow to encompass the experiences of young mothers who are forced to commit to only one or two roles, but may engage in a deeper exploration of those selected roles (e.g., motherhood) while making commitments.

### **Implications and Conclusion**

The findings from this study bring to light important theoretical, policy, and clinical implications. Foremost, the way that adolescent mothers are conceptualized in the

literature needs to shift in order to recognize the role of identity development in risk and resilience processes. Adolescent mothers represent a unique developmental cluster whose identity trajectory deviates from that of same-aged peers and also that of adult mothers. Role commitments may be identity transformative for adolescent mothers. Among those young mothers who forego age-appropriate exploration in order to understand and integrate both their adolescent and caregiver identities, there may be opportunities to successfully carry out both roles.

Consistent with much of the earlier literature, our findings indicate that adolescent mothers face many stressors in their contextual environments, that may or may not have preceded early parenthood. Young mothers are significantly more likely to experience severe and complex trauma, socioeconomic disadvantage, relationship insecurity, and socioemotional distress. Among these risk factors, relationship fearfulness and trauma history are associated with decreased identity commitment, which in turn has implications for the wellbeing of their children. Protective factors that can enhance identity commitment in the face of these stressors may enhance resilience processes. In particular, carving out instrumental, emotional, and psychological forms of social support can enhance role commitment and subsequently, parenting quality.

It is important to consider how these research findings can inform clinical practice with young families in need, for example, in centres that support young mothers. Interventions for adolescent mothers and their children and other high-risk dyads can be tailored to nurture positive mother–child interactions by supporting maternal role commitment. For example, parent education and support programs targeting low-income pregnant and parenting teens could include a component on identity commitment to help

buffer stress and the experience of risk. Group and school-based interventions can provide an opportunity for pregnant teen mothers to engage with same-aged peers towards the development of a set of internalized set of values, beliefs, and future goals, while at the same time learning parenting skills. Practitioners working with socioeconomically disadvantaged pregnant and parenting teens can use these findings to help foster emotional independence, nurture the development of support networks, as well as strengthen relationship security through attachment-based interventions targeting the parent-infant bond. Psycho-education about identity development and role commitment can be integrated into high school curricula and existing early intervention programs for pregnant teens, and can also be disseminated to young mothers in more cost-effective ways, such as through the development of brochures or tips sheets, or through health care practitioners. Even in situations when modifying treatments to target identity development is not structurally or financially feasible for practitioners working with young families, our research suggests that looking for and treating the complex trauma often associated with early parenthood, may suffice in mitigating risk and enhancing the development of role commitments.

Our findings have important policy implications, most notably related to the impact of contextual variables on the caregiving ability and functioning of adolescent mothers and their children. Poverty and trauma were abundant among adolescent mothers in our sample, and were shown to overwhelm opportunities for adaptation. The development and enactment of social policy that strives to eliminate poverty among young families (through opportunities for continued education, transitional programs, apprenticeship, and employment) may help circumvent cycles of socioeconomic disadvantage and

associated risk.

In the *Life Cycle Completed*, Erik Erikson (1984) posited that “to truly meet others with whom to share a ‘We,’ one must have a sense of ‘I.’” For many adolescent mothers, there is not necessarily an opportunity to successfully negotiate one’s identity or sense of self prior to the onset of parenthood. Our findings suggest that it may be possible for adolescent mothers to integrate both processes simultaneously. Via an examination of pathways to positive parenting and child functioning, we uncovered that identity commitment, a component of identity achievement, can play a protective role in the outcomes of these young women and their families.

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