THE LONGITUDINAL EFFECTS OF PARENTING DETERMINANTS ON PRESCHOOL-
AGE PARENTING BEHAVIORS

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ABSTRACT

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Positive (i.e., warm, sensitive, responsive) and negative (i.e., hostile, controlling) parenting behaviors are related to developmental outcomes in children, including outcomes in cognitive, behavioral, and socio-emotional functioning. According to Belsky's process model (1984), parenting behaviors are multiply determined by factors stemming from the parent's psychological resources, contextual stressors or supports, and characteristics of the child. While it is understood that parenting determinants such as intimate partner violence (IPV), maternal depressive symptoms, income status and social support have influence on positive and negative parenting behaviors, the developmental trajectories of these determinants and their relation to parenting behaviors has not yet been examined. The current study used a multi-method approach in a longitudinal dataset to examine how developmental trajectories of four parenting determinants (i.e., IPV, maternal depressive symptoms, income status, social support) from age 1 to age 4 influence positive and negative parenting behaviors during preschool. Latent growth curve models were fitted for each of these trajectories' effects on both positive and negative parenting behaviors as the outcome variable at age 4. The age 1 levels of the examined parenting stressors (IPV, maternal depressive symptoms, income) were found to influence preschool parenting behavior in the expected directions. There were no effects for the slope trajectories on parenting behavior. These findings indicate the importance examining parenting stressors early in the parenting relationship, as they may have enduring influences on later parenting behavior.

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Introduction

Positive and negative parenting behaviors in early childhood are important to examine because they have associations with social, cognitive, and behavioral outcomes for children (O'Connor & Scott, 2007). Maternal interactions with children can be characterized by positive behaviors (i.e. sensitivity, responsiveness) and negative behaviors (i.e. intrusiveness, control, hostility). The focus of the current study is to examine the factors that may influence parenting behaviors during preschool. According to Belsky's process model (1984), parenting is influenced by multiple sources of stress or support (See Figure 8). We propose that developmental trajectories of several different parenting determinants (i.e., intimate partner violence, maternal depression, income status, social support) influence positive and negative parenting behaviors during preschool.

Each of the parenting determinants mentioned above are related to Belsky's process model (1984), which proposes that parenting behaviors are determined by three sources: resources of the parent (i.e., psychological well-being, personality), characteristics of the child (i.e., temperament), and contextual sources of stress or support (i.e., partner relationships, maternal employment, social support). Belsky (1984) proposes that, because parenting is multiply determined, the parenting system is protected against a deficit in any one factor. For example, a study testing Belsky's model with maternal characteristics (i.e., maternal self-esteem), child characteristics (i.e., difficult temperament), and contextual stressors (i.e., partner relationship) found that maternal characteristics buffer the effects of the other two determinants (Kopala-Sibley, Zuroff, & Koestner, 2011). According to this model, parenting is a function of multiple contexts, but this model does not fully account for how these contexts can change over time.

From a developmental perspective, parenting behaviors are conceptualized as being continuously influenced by determinants that are likely also changing over time (Belsky, 1984). Despite this understanding, few studies have examined parenting behaviors in response to changes in these determinants. Kim and colleagues (2010) note that a better understanding of the trajectories of parenting determinants and their influence on parenting behavior could have implications for prevention and promotion strategies depending on the timing of these influences. While there is some evidence that maternal parenting behaviors are influenced by factors such as the presence of relationship problems and violence (Levendosky et al., 2006), maternal depression symptoms, (Lovejoy et al., 2000), and income status (Levendosky et al., 2011), it is unclear how the trajectories of these determinants relate to the parenting behaviors of preschool-aged children. The current study proposes a multi-method approach that includes both observational and self-report data to understand these parenting determinants and their to parenting behaviors. Consistent with Belsky's model, parenting behaviors during preschool are hypothesized to be predicted by trajectories of IPV, maternal depressive symptoms, income, and social support from infancy through preschool.

Parenting Behaviors of Preschool-Aged Children

Relationships with primary caregivers during early childhood have been shown to influence the development of social and cognitive skills in children (Bornstein & Tamis-LeMonda, 1989). Specifically, parenting behaviors during preschool can be considered indicators of the parent-child relationship as it has developed over time (Repetti, Taylor, & Seeman, 2002). Multiple studies have found that parenting behaviors during preschool years have long term implications for mental and physical health later in life (Robins & Rutter, 1990, Stewart-Brown, Fletcher, &Wadsworth, 2005). Further, the quality of interactions with children

during this time period provides a foundation for children's later representations of relationships with others, as well as socially normative ways of responding to their own needs and the needs of others. Parenting that is responsive during the preschool period is more likely to influence the healthy development of emotional and social skills than is parenting that is harsh or unresponsive (Landry, Smith, & Swank, 2003). Based on the literature, parenting during preschool can be considered an indicator both of the current parenting relationship and possible child outcomes.

Positive parenting behaviors can be defined as warm, sensitive, and responsive interactive behaviors that promote the attachment relationship and support self-regulation early in life and guide and support children as they age (Ainsworth et al., 1978, Baumrind et al., 1975). Maternal sensitivity, which has been defined as the ability to accurately interpret a child's signals and respond accordingly has been found to have low stability from 3 to 12 months of age (Lohaus, 2004). Maternal responsiveness, measured as the latency of maternal reaction to a child's signals, is meant to scaffold a child's ability to self-monitor appropriate and inappropriate behavior. The change in maternal responsiveness is related to child age, such that mothers are more responsive to child behaviors in infancy but begin to be less so in toddlerhood (Bornstein et al., 2008). Few studies have assessed the impact of environmental factors on maternal responsiveness, but a study by Denam & Moser (1994) finds that difficult infant temperament can illicit less contingent responding from the mother. Positive parenting behaviors are adapted to developmental needs, but it is unclear how other factors influence this process.

Negative parenting behaviors can be defined as hostile, controlling, or neglectful behaviors that are destructive as opposed to constructive (positive) influences on the development of regulatory and social skills in childhood (Dalliare et al., 2006). These behaviors are relatively infrequent in healthy mother-child dyads, but when they are frequently present can

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influence the development of both internalizing and externalizing problems in childhood and adolescence (Morris et al., 2002, Compton et al., 2003). Further, negative parenting behaviors during the earliest years of a child's life have been found to influence conduct problems during preschool (Waller et al., 2012). Maternal intrusive behaviors are ill-timed and inappropriately controlling responses to child behavior. There is some evidence that intrusiveness is related to stressful caregiving environments and more difficult child behaviors (Egeland, Pianta, & O'Brien, 1993). Feldman and colleagues find that, although maternal intrusiveness decreases over the course of infancy in a low-risk sample, factors such as maternal anxiety, child difficulty, and paternal involvement can impact whether these behaviors persist into early childhood (1997). Intrusive and over-controlling parenting in preschool-aged children has also been found to be related to higher levels of aggression in school-aged children above and beyond other risk factors (Joussemet et al., 2008), suggesting that over-controlling parenting interferes with the development of self-regulation skills in children.

Hostile parenting behavior is response of anger, negative affect, criticism, and threatening language toward the child. While typically rare in infancy, hostile parenting behaviors may increase in toddlerhood and into early childhood as children become more mobile and autonomous, and less responsive to parental requests (Campos, Kermoian, & Zumbahlen, 1992). However, only one study has examined an overall increase in hostile parenting behaviors in mothers as a response to child factors; more autonomy and difficult behaviors were related to increases in hostile-reactive behaviors (Forget-Dubois et al., 2007). Like intrusive parenting behaviors, hostile parenting behaviors are related to later externalizing behavior in children (Dallaire & Weinraub, 2005). The presence of negative parenting behaviors may indicate sub-optimal mother-child relationships. Examining predictors of these parenting behaviors may lend insight into how mother-child relationships and child outcomes can be improved.

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Determinants of Parenting

Parenting determinants can be considered sources of stress or support that influence parenting ability directly or indirectly. Belsky's process model suggests that parenting behavior is in part determined by primary sources of parental support, such as the partner relationship (Belsky, 1984). Thus, lower support from the partner may be associated with negative parenting. The spillover hypothesis suggests that difficulties in the partner relationship, such as conflict and hostility, are associated with poorer parenting (Erel & Burman, 1995). Since IPV has characteristics of discord and aggression, it can be seen as a source of stress in the partner relationship that also influences parenting. Consistent with Belsky's model, research shows that there is a negative relationship between inter-partner conflict and parenting behavior (Krishnakumar & Buehler, 2000).

Belsky's model incorporates parental psychological characteristics as a determinant of parenting behavior. Maternal depression is a well-documented form of diminished psychological well-being that influences parenting in a number of ways. Mothers who are depressed have less enjoyment in their parenting role, show less responsiveness to child needs, and more negative perceptions of their children (Murray et al., 2006, Letourneau et al., 2006). Withdrawn and neglectful parenting is common in mothers with depression, and factors such as stress and coping may also influence parenting ability (Wang & Dix, 2013). Using maternal depressive symptomology as a parenting determinant would satisfy Belsky's process model component of parental psychological functioning because it has associations with diminished parenting ability.

Contextual sources of stress or support outside of parent and child characteristics are also included in Belsky's model. Income status is an environmental factor that influences parenting behaviors in a number of ways. Low-income mothers experience an accumulation of stressors, including residential instability, neighborhood dangers, diminished access to healthcare and other

services, and other co-occurring risk factors (Lengua et al., 2014). The accumulation of income-related risk factors can disrupt parenting by overloading the parent's ability to cope with stressors, which in turn influences harsh and inconsistent parenting practices (La Placa & Corlyon, 2015). Since income status is related to a number of contextual stressors, it is worthwhile to examine as a parenting determinant.

Social support is another environmental determinant that influences parenting. According to Belsky, support from a social network of people outside the partner relationship aids the parent's emotional needs, provides tangible forms of support like childcare, and informs socially acceptable parenting behaviors. Parents that have social support tend to be less susceptible to parenting stress (Rogers, 1998) and are better protected against environmental risk factors such as low income (Kotchick, Dorsey, & Heller, 2005). Consistent with the model, social support also indirectly influences parenting through parent psychological factors. For instance, one study found that attachment style explains the relationship between social support and parenting behaviors (Green, Furrer, & McAllister, 2007). Given the amount of literature on social support and its influence on parenting, it would be important to also examine changes in social support over time and the relationship of this trajectory to parenting behaviors.

Intimate Partner Violence. Intimate partner violence remains a significant problem in the United States. Prevalence rates from the National Survey of Intimate Partner and Sexual Violence estimates that as many as 35% of women and 28% of men have experienced some form of physical, sexual, or psychological violence from a partner in their lifetime (Black et al., 2011). IPV is related to increased risk for multiple mental health problems, including depressive symptoms, suicidality, and PTSD (Golding, 1999). IPV is associated with increased depressive symptoms and lower self-esteem in mothers of young children (Cascardi & O'Leary, 1992,

Clements, Sabourin, & Spiby, 2004), which may account for changes in healthy parenting behavior.

IPV is known to have adverse effects on the mother-child relationship in a number of ways, but the extent of its long-term influence on maternal parenting behavior is not well documented. Levendosky and colleagues (2011) found that positive changes in attachment stability (i.e. continuously secure, insecure to secure) from 12 to 48 months were associated with lower levels of IPV. IPV is associated with more negative parenting behavior and less maternal warmth (Levendosky & Graham-Bermann, 2000). A longitudinal report using data from the Fragile Families and Wellbeing Study found that the presence of partner violence at age 1 was related to both harsh parenting behaviors (i.e. spanking) and externalizing child behaviors at age 3 and age 5 (Huang, Wang, & Warrener, 2010). A study by Martinez-Torteya and colleagues (2009) identified difficult temperament and depressive symptoms in mothers as risk factors for the development of internalizing and externalizing problems in children exposed to IPV. It may be that the relationship between IPV and child outcomes may be explained by parenting behavior.

Violence in the intimate partner relationship has been shown to influence parenting behaviors and child outcomes. Discord within marital relationships in the context of violence is related to higher parenting stress and more conflict in mother child interactions (Holden & Ritchie, 1991). Warmth in the romantic partner relationship is associated with less harsh parenting (Conger et al., 2013), and less externalizing behaviors in children (Skopp et al., 2007). The spillover hypothesis suggests that difficulties in the partner relationship, such as conflict and hostility, are associated with poorer parenting (Erel & Burman, 1995). These difficulties may influence the parent-child relationship more severely when maternal psychological functioning is

reduced (Levendosky et al., 2006, Huang et al., 2010). Partner relationships that have a history of IPV may influence more negative maternal parenting behavior, such that distorted partner representations are reflected in the relationship between mother and child.

Maternal Depressive Symptoms. Maternal depressive symptoms are known to affect multiple aspects of maternal well-being and have significant risks for children. Depressive symptoms are prevalent in mothers of young children, ranging from 13% to 19% during the first 12 months postpartum (O'Hara & McCabe, 2013), and children of depressed mothers are at higher risk for a number of psychological disorders, health problems, and adjustment issues later in life (Barker et al., 2012, Apter-Levy et al., 2013, Cox et al., 1987). Despite a large body of research that suggests that maternal depression has significant direct and indirect consequences for mothers and their children, it is unclear how depressive symptoms can influence the stability of positive and negative parenting behaviors over the course of infancy to childhood.

While maternal depression can be brought on by a number of risk factors, the context of a violent relationship is heavily related to the development of depression in mothers, as well as a number of physical health problems (Campbell, 2002, Campbell & Lewandowski, 1997). IPV has been found to increase risk for major depressive disorder and postpartum depressive symptoms, and a large portion of these cases occur with any lifetime exposure to partner violence (Baydoun et al., 2012). Physical and psychological violence within the romantic relationship are related to increased severity of depression symptoms in women (Coker et al., 2002, Pico-Alphonso et al., 2006). Depressive symptoms are related to higher reports of parenting stress in battered and non-battered women (Webster-Stratton & Hammond, 1988), and reports of lower maternal self-efficacy (Gross et al., 2007).

Depressive symptoms are correlated with lower sensitivity and engagement within interactions between mothers and toddlers (Albright & Tamis-LeMonda, 2002). Internalizing emotional responses in depression, such as irritability and loss of self-worth, of depression carry over into parenting. Webster-Stratton and Hammond (1988) find that depressive symptoms can manifest as critical or controlling behavior with young children. Maternal depression is also associated with more insecure attachment in infants and preschoolers (Teti et al., 1995, Martins & Gaffan, 2000) and more negative representations of mothers (Toth et al., 2009). Children of depressed mothers have higher rates of both internalizing and externalizing symptoms and including greater chances of developing psychopathology (Cummings & Davies, 1994). The National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD), which collected longitudinal data from 1364 children and their families across the United States, found that trajectories of parental depression predicted trajectories of child depression from 11-15 years old (Papp, 2012). These children also have higher rates of conduct problems and more adjustment difficulties than children of non-depressed mothers (Downey & Coyne, 1990, Beck, 1999). While depressive symptoms can be isolated to the span of pregnancy or to the immediate postpartum period, depression that persists into the child's preschool years has the greatest impact on childhood emotional and conduct problems (van der Waerden et al., 2015). It is possible that the severity of maternal depressive symptoms may predict more negative parenting behaviors, with persistent depressive symptoms from infancy to childhood predicting more negative behaviors than symptoms that decrease in severity or symptoms that only occur for a limited duration. The trajectory of maternal depressive symptoms and its influence on parenting may have implications for the mother-child relationship and child developmental outcomes, but research in this area needs to be expanded in order to understand these relationships.

Income. Income may also predict negative parenting behaviors in mothers of preschool-aged children. According to data from the National Center for Children in Poverty, 25% of infants and toddlers in the United States live below the federal poverty threshold, and 23% are above this but still in the low-income range (Jiang, Ekono, & Skinner, 2015). Compared to higher-income mothers, low-income mothers have higher rates of chronic health problems and risk factors (Bombard et al., 2012). A review of socioeconomic status and parenting finds that low-income status is related to a number of influences on parenting, including physical environment, childcare goals, and parental psychological well-being (Hoff, Laursen, & Tardif, 2002). Income status can be broken up into a number of factors, including parental education, occupation, and neighborhood environment, or it can be defined as a sum of these factors as a single continuous variable.

Low income can impact the home environment and maternal resources for parenting. Jackson and colleagues (2000) finds that welfare status and low-wage employment are associated with poorer psychological functioning in mothers of young children, while higher levels of education and more instrumental support are negatively associated with financial strain. Economic hardship is indirectly related to maternal depressive symptoms and less sensitive and supporting parenting behaviors (Newland et al., 2013). When combined with maternal depression, economic hardship is related to slower development in preschool aged children (Petterson & Albers, 2001). These environments may be related to lower social support and more isolation for mothers already living in stressful contexts, and these difficulties can influence the mother-child relationship. Low income status and instability of income status have also been found to indirectly affect parenting behavior by influencing maternal psychological well-being (Levendosky et al., 2011). An NICHD SECCYD study found that children living in low income

settings that also experience low-quality parenting and low maternal sensitivity are at increased

risk for internalizing and externalizing disorders (Watamura et al., 2011).

Family poverty and poor home environments are associated with less maternal warmth

(Klebanov, Brooks-Gunn, and Duncan, 1994). Studies have demonstrated that poverty is related

to unsupportive and punitive behavior from parent-to-child (Hashima & Amato, 1994), but other

studies posit that this relationship only holds for current poverty, and not for persistent poverty

(McLeod & Shanahan, 1993). Petterson and Albers (2001) also find that changes in poverty

status from higher to lower income statuses affects child development differentially by gender,

possibly through its mediation on maternal hardship. Thus, it is unclear how poverty or changes

in income status over time can affect maternal parenting behavior.

Social Support. Cohen and Wills (1985) posit that social support influences general life

stress in two ways: a main effect model and a stress-buffering model. As a main effect, social

support provides rewarding relationships with others and recognition of self-worth. As a stress-

buffer, social support protects against environmental stressors by either intervening when there is

a stressor or attenuating the response to the stressor. In regard to parenting, Armstrong and

colleagues have proposed a similar main-and-buffering effects model that states that social

support influences child outcome through both parental well-being and parenting practices

(2005). In the context of parenting, social support offers emotional support, tangible support, and

information about socially acceptable parenting practices (Belsky, 1984). Emotional support

refers to actions of empathy, love, and warmth for others in the support network, and these kinds

of actions are related to greater maternal self-efficacy (Leahy, 2005). Tangible support, also

known as material or instrumental support, includes financial resources, child care, and other

behaviors that directly assist the parent are also found to be related to maternal use of

punishment (Ceballo & McLoyd, 2002). Informational support includes support related to advice about parenting behavior. A meta-analysis by Andresen and Telleen (1992) found that both emotional and tangible supports are the two most widely researched forms of support that influence parenting. The meta-analysis also found that emotional and tangible support, but not informational support, were related to both positive maternal attitudes and positive behaviors toward children.

Many studies on social support and parenting are done with families in low-income environments, since they are most likely to experience multiple risk factors, including neighborhood dangers, less access to childcare and healthcare, and IPV. Mothers in these situations may be more socially isolated. It is possible that low-income mothers are affected differently by social support than mothers that are not low-income. One study found that the positive effect of emotional support and tangible support is diminished in low-income families, suggesting that multiple stressors are mediating the effect of social support (Ceballo & McLoyd, 2002). However, other studies have found the opposite effect (Kotchick, Dorsey, & Heller, 2005, Izzo et al., 2000). Trajectories of social support on parenting have rarely been studied. One study on social support effects on mastery and self-efficacy (unrelated to parenting) found that tangible and informational support were related to increases in mastery and self-efficacy a year later (Green & Rogers, 2001). These two forms of social support were also found to be related to subsequent support a year later. Because so little work has been done on understanding how trajectories of social support from infancy to parenting influence specific parenting behaviors, it will be important to examine this relationship in the current study.

The Current Study

The current study aims to address the limitations of prior research by examining the developmental trajectories of each of the above factors across early childhood and their effect on positive and negative parenting behaviors of preschool aged children. Three of the parenting determinants discussed above (IPV, maternal depression, and low income status) are parenting stressors, whereas one of them (social support) is a parenting support. It is expected that increases in a parenting stressor will be associated with less positive parenting behaviors and more negative parenting behaviors during early childhood. Increases in a parenting support may be associated with more positive parenting behavior and less negative parenting behavior. However, there is also the possibility of nonlinear change in the parenting determinants. While prior studies have examined the influence of parenting determinants on parenting behavior and child developmental outcomes, few studies have examined how changes in the level of these determinants over time affect parenting behavior. The current study seeks to examine how trajectories of contextual factors such as IPV, low-income status, depressive symptoms, and social support assessed from infancy to early childhood influence parenting behaviors at age 4.

<center>**Methods**</center>

Participants

Participants were 206 women recruited as part of the Mother-Infant Study, a longitudinal study examining the effects of domestic violence and other risk and protective factors on the mother-infant relationship. Data used in the current study was collected around the time of the children's birthdays: Time 1, 13.25 months (SD = 1.35), Time 2, 24.06 months (SD = 6.62), Time 3, 36.13 months (SD = .94), Time 4, 48.45 months (SD = 1.42). At Time 1, 189 of the original participants completed data collection and at Time 4, 177 of the original participants completed data collection. Family size was an average of 2.4 children (SD= 1.1). Of the 189 women in the study at Time 1, more than half identified as Caucasian (65%), one-fifth as African American (24%), 5% Latina, 4% Biracial, 1% Asian American, and 1% Native American. The children were identified as 49% Caucasian, 24% African American, 2% Latino, 1% Native American, 1% Asian American, and 23% multiracial. The average age of mothers was 30 (SD= 5). Highest education level for the sample was 38.4% high school education or less, 33.7% some college, 14.2% AA/BA/BS degree or some graduate school, 5.8% graduate degree, and 7.9% other (e.g., trade school). The median family monthly income was $1,500 (ranging from $267 to $10,000).

Measures

Demographic Questionnaire. A demographic questionnaire was administered at each wave of data collection. Included in this questionnaire were questions about ethnicity, age, number of household members, level of education, and household income. Income status was measured by monthly household family income.

Intimate Partner Violence. The Severity Violence Against Women Scales (SVAWS) of (Marshall, 1992) is a 46-item questionnaire assessing violent behaviors that a woman has experienced from her partner. The questionnaire contains nine categories of abuse and threats, including verbal, physical, and sexual violence, and these experiences are rated on a 4-point scale from 0= never to 3= many times. Examples of items include "demanded sex from you whether you wanted to or not," "punched you," or "pushed or shoved you". The SVAWS was administered at all time points. Alphas for the mother's report of current partner at Time 1-4 range from .93 to .95.

Maternal Depressive Symptoms. The Beck Depression Inventory (BDI) (Beck et al., 1961) is a 21-item inventory that assesses symptoms and attitudes related to behavioral manifestations of depressions (e.g. indecisiveness, guilt, self-dislike). Items are arranged in increasing severity for each category of depressive symptoms, and are rated on a 4-point scale from 0 to 3. The BDI ranges from 0 to 64, and higher scores indicate more depressive symptomology. The BDI was administered at all time points Cronbach's alphas for Time 1-4 range from .85 to .90.

Social Support. A revised form of the Norbeck Social Support Scale (NSSS) (Norbeck, Lindsay, & Carrieri, 1981) was used to measure perceived emotional, practical (tangible), and support related to caregiving. Mothers listed people in their social network and rated them on how supportive they were in these areas on a 5-point scale ranging from 1 =not at all to 5= a great deal. A total support score was summed for each individual at each time point (Norbeck, 1995).

Parenting Behavior. A revised version of the Eyberg Coding Manual (Eyberg & Robinson, 1981, Belsky et al., 1991) was used to code maternal behaviors in a 14-minute, video-

taped play session between mothers and their 4 year old children. The 6 maternal codes used include positive affect, negative affect, positive/neutral feedback, facilitating self-regulation, intrusive/over-controlling behavior, and unresponsive behavior. The maternal codes were rated on 5-point scales (1= no behavior to 5 = intense behavior), scored at 1-minute intervals. Scores for each individual are then averaged across all of the intervals for each behavioral code. Inter-rater reliabilities for the codes range from .84 to .94. The latent positive parenting variable was indicated by positive affect, positive/neutral feedback, and facilitating self-regulation. The latent negative parenting variable was indicated by negative affect, intrusive/over-controlling behavior, and unresponsive behavior.

Procedure

Recruitment. For the larger study, women were recruited with flyers at various sites in Lansing and around Southeast Michigan. Flyers were placed in public areas, businesses, and clinics. Women needed to be between 18 and 40 years of age, pregnant at the time of the first interview, involved in a romantic relationship for at least 6 weeks during the pregnancy, and fluent in English. Approximately half of the sample was recruited using flyers targeting women that experienced some form of domestic violence, and additional phone screenings confirmed experiences of violence. The first wave of data collection began during the women's third trimester of pregnancy and continued to be collected around the children's birthdays thereafter. Consent was obtained at each wave of data collection, and assent to participate was collected from each child at age 4.

Tracking Procedures. Post-interview tracking procedures to help limit subject attrition were put into place between each interview. Following the interview, participants were contacted by mail every 90 days to verify their current contact information (address, phone number, and

phone numbers of identified contact people). Subjects were paid for returning this information by mail. If subjects did not respond to the mailings, research assistants contacted them by phone directly. In cases where phone contact was not possible or there was no response, the research assistants would first attempt to find the subjects via their identified contact persons. If this was not successful, the research assistants attempted to reach subjects in person by going to their home address.

Time 1. At Time 1, mothers were scheduled by phone for interviews around their child's 1st birthday. They were informed that they would be answering questionnaires and a packet of questionnaires was sent ahead of time for the participants to complete and bring with them to the study session. Mothers and infants were consented and interviewed together in 3-hour sessions at the project's offices on Michigan State University's campus. Of the 189 interviews conducted at Time 1, one interview was conducted over the phone, and four were conducted by mail. Mothers were given the demographic questionnaire, BDI, SVAWS, and the NSSS in the in-person interview. Mothers were paid for participation and their infants were given baby books.

Time 2. Research assistant interviewers contacted mothers two weeks before the child's birthday to schedule interviews. Interviews were arranged to take place in the participant's home or in the project offices, but accommodations were made for women that could not come to the project offices or conduct interviews at home. Of the 189 participants at Time 1, 187 were able to be interviewed at Time 2. Eighty-two interviews were conducted in the lab, 86 at homes, 13 by telephone because the woman lived too far away to meet in person, and 6 in a café or mall because the home was not private and the woman was unable to travel to the project office. The demographics questionnaire was read aloud, and the following questionnaires were administered in written form: BDI, SVAWS, and NSSS. Packets of questionnaires were sent to the women participating in phone interviews so they could follow along with the questions and mail the

packets and signed consent forms in for compensation.

Time 3. Interview procedures at Time 3 were in the same manner as Time 2 procedures. Of the original 189 participants, 178 completed interviews at Time 3. Seventy-three interviews were conducted in the lab, 86 were conducted at homes, 13 interviews were conducted by telephone because the woman lived too far away to meet in person, and 6 interviews were conducted in a café or mall. The demographics questionnaire was read aloud, and the following questionnaires were administered in written form: BDI, SVAWS, and NSSS. Packets of questionnaires were sent to the women participating in phone interviews so they could follow along with the questions and mail the packets and signed consent forms in for compensation.

Time 4. At Time 4, mothers were again contacted for interviews and participation in lab tasks around their child's 4th birthday. Mothers were mailed a packet of questionnaires, were consented and interviewed in the project's offices, and were asked to engage in a free-play session with their child for 14 minutes. Although 177 interviews were conducted in the lab, 160 mother-child pairs took part in the videotaped interactions.. Additionally, mothers and children were interviewed separately after the videotaped interaction. The demographic questionnaire, BDI, SVAWS, and NSSS were administered in an interview. Mothers were again compensated for their time and the children were allowed to pick a book to take home.

Data Analytic Strategy

Latent growth curve models were used to address questions of intraindividual differences in parenting behavior during preschool age as associated with trajectories of parenting determinants (Bates & Nesselroade, 1979). All data were modeled in Mplus (Mplus version 7.5, Muthen & Muthen, 2015) using full information maximum likelihood estimation. Model fit was assessed with multiple indices, including x^2 (Bollen, 1989), comparative fit (CFI; Bentler, 1990),

and root mean square error of approximation (RMSEA; Hu & Bentler, 1999). For CFI, values above .90, and for RMSEA, values below .08 were acceptable for model fit. Trajectory plots of each of the parenting determinants revealed different curves for each. As suggested by Wu, West, and Taylor (2009), a variety of unconditional models were tested for each and compared for fit. Unconditional intercept-only, linear, and latent basis models were compared for each of the parenting determinants. To test the hypotheses of the study, each growth curve model was then examined for the intercept and slope influence on positive and negative parenting behaviors.

Results

Sample Descriptive Data

Descriptive statistics, sample size, and correlations among study variables are presented in Table 1. Repeated measures for maternal depression, IPV, and income were positively correlated over time. Correlations for social support over time were somewhat less stable. IPV and maternal depression were also positively correlated with each other across time points. Income was negatively correlated with depression across time. Means for maternal depression appeared to increase between ages 1 and 2 and remain stable, while means for IPV appeared to decrease over time. Average monthly income and social support appeared to remain stable over time.

As mentioned above, participant retention remained high for the duration of the longitudinal study due to participant tracking procedures. However, participant drop-out and variability across interview sessions contributed to an increase in missing data across the four time points used in the current study. Of the original 206 participants recruited during pregnancy, 17 dropped out by age 1 (N = 189), 3 dropped out between ages 1 and 2 (N = 186), 8 dropped between ages 2 and 3 (N = 178), and 1 dropped out between ages 3 and 4 (N = 177).

Unconditional Models

A series of unconditional models were fitted for the change in each parenting determinant over time, excluding the parenting outcome variables. Intercept-only models for each parenting determinant were first fitted with three parameters (intercept mean, intercept variance, and residual variance). Unconditional linear models were then fitted with six parameters (intercept and slope means, intercept and slope variances and their covariance, and residual variance).

Finally, unconditional latent-basis models were fitted (Grimm & Ram, 2012; McArdle & Epstein, 1987; Ram & Grimm, 2007). For the linear change models, the basis coefficients for ages 1 through 4 were set at 0, 1, 2, and 3 unless otherwise specified. For the latent-basis models, the basis coefficients were set at 0, freely estimated, freely estimated, and 1. The latent intercept variables for each parenting determinant are defined as the mean at the level of each (IPV, depressive symptoms, income, and social support) at age 1, and the latent change variables are defined as the latent change, from ages 1 to 4, for each.

The intercept-only model for the maternal depression data fit poorly ($x^2(8) = 35.09$, RMSEA = 0.13, CFI = 0.92). The linear model provided improved fit over the intercept-only model ($x^2(5) = 13.68$, RMSEA = 0.09, CFI = 0.98), and the latent basis model did not converge. The latent intercept for the linear change model of maternal depression is interpreted as the average BDI score at age 1, and the latent slope is interpreted as the average change in maternal depressive symptoms from ages 1 to 4. For this sample, the latent intercept was 5.98 ($SE = 0.39$, $p < .001$). The latent slope value ($b = 0.18$, $SE = .14$, $p > .05$) was not significant; the increase in depressive symptoms over time was not detected. The estimated variation in the latent intercept was 21.58 ($SE = 3.18$, $p < .001$) and the estimated variation in the latent slope was 1.73 ($SE = 0.54$, $p < .01$). The estimated covariance between the intercept and slope was not significant. The linear change model was selected as the final unconditional model, given that it fit the data better than the intercept-only model.

The intercept-only model for social support provided poor fit ($x^2(8) = 58.93$, RMSEA = 0.18, CFI = 0.72), as did the linear change model ($x^2(5) = 30.49$, RMSEA = 0.16, CFI = 0.86). An examination of the trajectories of social support found that it decreased from age 1 to age 4, so the basis coefficients for the latent basis model were set at 1, freely estimated, freely

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estimated, and 0 for ages 1 through 4. The latent basis model provided good fit ($x^2(3) = 1.44$, RMSEA = 0.00, CFI = 1.00). The latent intercept of the latent basis model was 118.80 ($SE = 4.97$, $p < .001$), and the latent slope was 20.53 ($SE = 5.79$, $p < .001$), suggesting that individuals in the sample experienced an increase in social support between ages 1 to 4. The factor loading for the period of growth between ages 1 and 2 was 2.00 ($SE = 0.50$, $p > .001$), which suggests that social support increased from ages 1 to 2. Between ages 2 and 3 the factor loading was .14 ($SE = 0.19$, $p > .05$); the change from age 2 to age 3 could not be interpreted. The estimated variance in the intercept was 2482.93 ($SE = 393.69$ $p < .001$), and the estimated variance in the slope was 480.81 ($SE = 297.11$, $p < .001$). The estimated covariance between the intercept and slope was not significant. The latent basis change model was selected as the final unconditional model for social support, given it provided the best fit.

Due to problems estimating models with the exact dollar amounts for monthly income, the income variable values were scaled from thousands to tens. One datum value for income at age 3 was considered an outlier and appeared to be an error in data entry ($100,000.00 per month), so it was removed from the data set. The intercept-only model for income provided poor fit ($x^2(8) = 32.56$, RMSEA = 0.13, CFI = 0.91). The linear change model provided better fit ($x^2(5) = 14.13$, RMSEA = 0.10, CFI = 0.98), and the latent basis mode provided the best fit ($x^2(3) = 5.20$, RMSEA = 0.06, CFI = 0.99). The average for the latent intercept was 21.71 ($2171.00, $SE = 1.20$, $p < .001$), and the average slope for the latent intercept was 3.38 ($338.00, $SE = 1.08$, $p < .015$), suggesting that individuals in the sample experienced an increase in income from ages 1 to 4. The factor loading for the period between ages 1 and 2 was not significant, and the factor loading for the period between ages 3 and 4 was .48 ($SE = 0.17$, $p < .05$), which indicates that 48% of the increase in income occurred between ages 3 and 4. The estimated

variance in the latent intercept was 212.84 ($SE = 29.11$, $p < .001$), and the estimated variance in the latent slope was not significantly different from 0 ($b = 91.62$, $SE = 52.25$, $p = .08$). The estimated covariance between the latent intercept and latent slope was not significant. The latent basis model for change in income was selected as the final unconditional model, given that it provided the best fit for the data.

As mentioned above, participants in the current study were oversampled for experiences of IPV. However, half of the sample was also recruited as a control group; these participants reported no experiences of IPV. As expected, an examination of SVAWS scores used in the IPV parenting determinant model found that half of the sample reported no experiences of IPV, and the proportion of zero data increased by age 4 (56% at age 1, 49% at age 2, 68% at age 3, 66%, at age 4). Participants in the sample also experienced changes in IPV or no-IPV status, such that a participant reporting some IPV in a previous year may report no experiences of IPV in the next year. Thus, zero-inflated Poisson (ZIP) models were fitted separately for the IPV data to account for the high proportion of no-IPV reports in the data (Lambert, 1992, Liu, 2007). The ZIP model is used to assess data that has an excess of zero counts; the distribution of zero data is modeled independently from the distribution of non-zero or count data. For the IPV trajectory model, the scores on the SVAWS are treated as count data and the unconditional intercept-only, linear, and latent basis models were fitted for the count data with the ZIP method. The logit model, which contains the no-IPV group for each year, was not examined. First, the intercept-only ZIP count model was fitted with three parameters (intercept mean, intercept variance, and residual variance. Next, linear change and latent basis ZIP models were fitted with six parameters (intercept and slope means, intercept and slope variances and their covariance, and residual variance), and the basis coefficients were set at 3, 2, 1, and 0 for ages 1 through 4. Similarly to the above models,

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factor loadings for the unconditional latent basis models were set at 1, freely estimated, freely estimated, and 0 for ages 1 through 4. The best-fitting model was assessed with likelihood based indices, including Aikake's information criteria (AIC), and Schwarz's Bayesian information criterion (BIC) across models, as suggested by Lambert (1992). The model fit values for the intercept only model (AIC = 3354.11, BIC = 3360.65) and the latent basis model (AIC = 3048.41, BIC = 3071.33) were both larger than the fit values provided by the linear change model (AIC = 2996.01, BIC = 30122.38). The latent intercept of IPV, or the average SVAWS score at age 1, was not significantly different from 0 and the latent slope, or the increase in the average between each time point, was 0.24 ($SE = 0.09$, $p < .05$). The latent intercept and latent slope had a covariance of -1.13 ($SE = 0.35$, $p < .05$), which suggests that higher IPV at age 1 is related to a steeper decrease in IPV over the four measured time points.

Conditional Models

After selecting latent basis or linear models for each of the parenting determinants, separate conditional models were fitted for the outcome variables: positive and negative parenting behaviors. Positive and negative parenting behaviors were defined as latent factors derived from each of the observed parenting behaviors. A factor-analysis with principal components rotation found that two factors best fitted the data, presented in Table 2. Three indicators for each of the latent parenting behavior factors (positive and negative parenting behaviors) were deemed sufficient for model identification (Kenny, 1979). Thus, positive parenting behavior was indicated by positive affect, positive feedback, and maternal cues to self-regulation, while negative parenting behavior was indicated by negative affect, intrusiveness, and unresponsiveness. That diagrams for each of the conditional models are presented in Appendix B, and the standardized regression coefficients for the paths of interest are presented in Table 4.

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The conditional models for the influence of the intercept and slope of maternal depressive symptoms on positive and negative parenting behaviors at age 4 were fitted using the selected unconditional linear change model. This model predicting positive parenting behaviors provided good fit ($x^2(15) = 26.17$, RMSEA = 0.06, CFI = 0.98). The effect of the intercept of maternal depression on positive parenting behaviors at age 4 was not significant. The effect of the slope trajectory of maternal depression on positive parenting behaviors was also not found to be significant. The conditional model predicting negative parenting behavior from the intercept and slope of maternal depression provided acceptable fit ($x^2(16) = 42.60$, RMSEA = 0.09, CFI = 0.94). The variance for negative affect, an indicator of negative parenting, could not be estimated. The effect of the intercept of maternal depressive symptoms (age 1) on negative parenting behavior was 0.04 ($SE = 0.02$, $p < .05$), suggesting that higher depressive symptoms during the first year of parenting are related to increases in negative parenting behaviors at age 4. The effect of the slope of maternal depressive symptoms on negative parenting behaviors was not significant.

The conditional models for the influence of the intercept and slope of social support on positive and negative parenting behaviors at age 4 were fitted using the selected unconditional latent basis model. The model predicting positive parenting behavior provided poor fit ($x^2(14) = 40.06$, RMSEA = 0.10, CFI = 0.90). The effects of the intercept and slope of social support on positive parenting behaviors were not significant. The model predicting negative parenting behavior from the intercept and slope of social support did not converge.

Models assessing the influence of the intercept and slope of monthly income on positive and negative parenting behaviors were fitted using the unconditional latent basis model. The conditional model predicting positive parenting behaviors provided good fit ($x^2(13) = 19.94$,

RMSEA = 0.05, CFI = 0.99). The latent intercept was found to have a positive influence on positive parenting behaviors ($b = 0.05$, $SE = 0.01$, $p < .001$). This finding suggests that higher income during the first year of parenting is related to more positive parenting behaviors during preschool. The effect of the latent slope of income on parenting behavior was not significant.

The conditional model predicting negative parenting behavior from the latent intercept and slope of income provided poor fit ($x^2(14) = 41.56$, RMSEA = 0.10, CFI = 0.96). Variance could not be estimated for the negative affect indicator variable. The latent intercept of income was found to have a significant negative effect on negative parenting behaviors ($b = -0.03$, $SE = 0.01$, $p < .05$), such that lower income at age 1 was related to more negative parenting behaviors at age 4. However, due to poor model fit, this result should be interpreted with caution.

The conditional models for the influence of the latent intercept and slope of IPV were fitted with the unconditional linear change ZIP model. As mentioned above, the unconditional linear change model was selected through comparison of log-likelihood, AIC, and BIC values. The linear change model predicting positive parenting behaviors from the intercept and slope did not yield a significant effect for the slope on positive parenting behaviors. The effect of the intercept was -0.26 ($SE = 0.07$, $p < .001$), which suggests that higher IPV during the first year of parenting is associated with fewer positive parenting behaviors in preschool.

For the model of negative parenting behavior, variance could not be estimated for the negative affect indicator variable. This model also did not yield a significant result for the effect of the slope of IPV on parenting behaviors. The effect of the intercept was 0.15 ($SE = 0.06$, $p < .05$), which suggests that higher IPV during the first year of parenting is related to more negative parenting behaviors during preschool.

<center>**Discussion**</center>

Although each of the parenting determinants examined Belsky's model (1984) have been established in the literature for their influences on parenting behavior (Albright & Tamis-LeMonda, 2002, Green, Furrer, & McAllister, 2007, Newland et al., 2013, Holden & Ritchie, 1991), the dimension of time and the trajectories of each have rarely been examined. The current study utilized a longitudinal design to examine questions of the influence of change in parenting determinants in infancy on parenting behaviors during preschool. The hypotheses of the study, which proposed that the trajectories of parenting determinants would influence the amount of observed positive and negative parenting behaviors at age 4, were largely unsupported. Across the models, it appeared that the levels of the proposed parenting determinants during the first year of their child's life influence parenting behavior several years later. The findings of the current study lend support the importance of experiences during the early parenting period and their unique and enduring effects on later parenting behaviors.

Parenting Stressors at Age 1

Depressive symptoms in mothers have been associated with both intrusive/hostile and withdrawn/unresponsive parenting styles (Lovejoy et al., 2000). Negative parenting behaviors have been found to mediate the relationships between maternal depressive symptoms and several childhood outcomes, including internalizing and externalizing behaviors, emotional recognition skills, and self-regulation (Brennan et al., 2000, Apter-Levy et al., 2013, Doh et al., 2014, Kujawa et al., 2014). Higher depression at age 1 was found to influence more negative parenting behaviors at age 4. The findings of the current study suggest that the timing of maternal depression also matters in influencing negative parenting behaviors. The first 12 months postpartum may be a critical period in which suboptimal conditions for the mother and child set

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the stage for their relationship going forward. Infants are particularly dependent on their mothers as their primary caregivers during this period, and depressive symptom during this time are particularly disruptive to mother-infant interactions (Murray, Halligan, & Cooper, 2010). The effect of depression at age 1 on parenting behaviors during preschool may indicate that depression not only influences concurrent interactions between mother and child, it also influences long term patterns of interaction.

The models predicting positive and negative parenting behaviors from income found that higher income at age 1 predicted more positive and less negative parenting at age 4. The economic stress model (Elder, 1999) posits that poorer economic well-being and reduced access to family resources influence child outcomes through their adverse effects on parenting behaviors and parenting stress. This follows closely with Belsky's discussion of the importance of contextual sources of stress and support in determining parenting behavior (Belsky, 1984). To date, few studies have proposed relationships between early levels of income and later parenting behaviors. Belsky's model of the cumulative effects of parenting determinants (Belsky, Schlomer, & Ellis, 2012) find that parenting determinants such as income and environmental unpredictability during the first few months of parenting influence maternal sensitivity during the school-entry years, and this relationship is mediated by maternal depressive symptoms during the first few months of parenting. The results of the income models in the current study may suggest that early economic difficulty influence more negative emotionality within the mother-child relationship and this leads to an expectation of more negative interactions that endures over the course of early childhood.

The disruptive effects of IPV on maternal parenting behavior have been widely documented in the literature (Huth-Bocks & Hughes, 2008, Levendosky et al., 2002). Although

Belsky does not mention IPV explicitly in his model of parenting determinants, he does posit that the marital or partner relationship acts as a predictor of parenting behavior during preschool years. The latent intercept of IPV, or the level of IPV at age 1, was found to influence both positive and negative parenting behaviors at age 4. Higher levels of IPV during the first year of parenting were related to less positive and more negative parenting behaviors during preschool. The findings of the current study also support literature on the effects of IPV early in the parenting relationship on both later parenting behaviors and later child outcomes (Huang, Wang, & Warrener, 2010). It is possible that IPV exposure during the initial development of the mother-child relationship is a significant enough disruption to have enduring effects on parenting behavior.

The findings across these models suggest that the presence of parenting stressors during the first year of parenting have enduring influences on parenting behavior at preschool-age. These findings support Belsky's theory that psychological well-being, factors of the parent-partner relationship, and other sources of stress are contributing factors to parental function (1984). It may be that the disruptive influence of these parenting stressors on the parenting relationship is more enduring than previously thought. Mothers learn how to parent their children during the first 12 months post-partum, and are adapting their parenting styles throughout the course of the mother-child relationship. Going through this process in the context of a parenting stressor may influence an enduring expectation of negative interactions between mother and child.

Non-Significant Findings

The models predicting parenting behavior from maternal depressive symptoms found significant results for the effect of the intercept on negative parenting behavior, but did not find

significant results for the influence on positive parenting behavior. Literature on the relationship between maternal depression and parenting behavior would suggest that higher levels of depression would predict fewer positive parenting behaviors (Lovejoy et al., 2000). However, the lack of findings for positive parenting may suggest that, even in the context of depression, mothers are attempting to maintain their positive parenting behaviors. Thus, the lack of support for this model may indicate that mothers are resilient to the influences of parenting stressors on their positive parenting behaviors.

The model predicting positive parenting behavior from social support did not find significant paths for the influences of the intercept and slope on positive parenting behaviors. However, the effect for the intercept in the model predicting positive parenting was trending toward significance ($b = 0.18$, $SE = 0.10$, p = .07). Limitations of the current study, detailed below may have contributed to the lack of findings for this model. The model predicting negative parenting behaviors did not converge; similarly, limitations of the current study may be related to problems estimating the model. It is also possible that the theoretical model used in the current study does not accurately describe the data. Further exploration is needed in order to better describe the theoretical relationship of social support and its trajectory to negative parenting behaviors.

The change trajectories of the parenting determinants examined in the current study were not found to influence parenting behavior during preschool. The lack of support for these relationships may suggest that parenting outcomes are more heavily influenced by determinants early in the parenting relationship, and their change over the course of early childhood is not as significant. One theory of child development argues that environmental influences early in development have long-term effects on child outcomes (Fraley, Roisman, & Haltigan, 2013).

Early childhood experiences are thought to provide a framework for understanding new experiences. Expectations are formed based on these experiences, but these expectations can be reshaped by new experiences. Researchers have debated on whether development over time diminishes the long-term effects of early experiences, or whether remnants of these experiences continuously shape the way new experiences are understood. This argument may be applied to parents as well as children; early experiences of parenting may influence enduring expectations of the relationship between parent and child. Parenting stressors and supports that occur early in parenting have long-term effects on outcomes such as parenting behavior. It is possible that the presence of a determinant during the first year of pregnancy sets expectations for what the parenting environment and the parenting relationship will be like in the future. The trajectories of these determinants may not be as influential as the expectations that were set at critical points in the development of the parent-child relationship.

Limitations

The current study had several limitations. First, a small sample size made it difficult to run models containing both the latent positive and negative parenting variables. Wolf and colleagues (2013) note that the "one size fits all recommendation" for SEM models is problematic and have found variability when using different sample size guidelines. As a rule, they found that more paths in the model require larger sample sizes to converge. Exploratory analyses in the current study found that combined models of positive and negative parenting behaviors often did not converge. Because of this problem, I chose to focus on the results of the separate models for positive and negative parenting.

Second, although most of the models used in the current study were found to have good or adequate fit, it is possible that heterogeneity in the trajectories of change for each parenting

determinant contributed to the lack of support for the latent slope variable as a predictor of parenting. In other words, mothers in the study experienced different trajectories of change in depression, IPV, income, and social support, and this variability weakened the association between their slopes and parenting behavior at age 4. Further, curvilinear slope patterns were found to best fit the data in the income and social support models. Thus, the change over time in these models is best described as the proportion of change, from age 1 to age 4, accounted for each wave of data collection. Little change between these time points may suggest that there is not enough for a significant latent slope factor. Similarly, for the IPV and depression models, low amounts of linear change from time 1 to time 4 also may be contributing to non-significant effects of those slope factors.

Third, the effect sizes, or the amounts of change in parenting behaviors associated with the level of the parenting determinants at age 1, were weak. However, it is important to note that one of the unique strengths of the study is the use of video-taped and coded observations as the indicators for observed parenting. Direct observation as opposed to self-report measures of parenting behaviors provides a more reliable view of how mothers behave with their children (Aspland & Gardner, 2003). Thus, while the effect sizes are small, they can still be considered valuable indicators of real-world parenting behaviors as influenced by the enduring effects of parenting stressors and supports. Future work should focus on examining mediators that may explain some of the variance between the intercepts and slopes of the above parenting determinants and the outcome of parenting behaviors.

Implications and Future Directions

The findings of the current study lend support to the importance of identifying women experiencing parenting stressors during the first year of parenting. Across the models in the

study, the presence of parenting stressors at age 1 were found to influence parenting behaviors at age 4. While it is likely not feasible to remove mothers from their stressful contexts, the implementation of interventions that repair the mother-infant relationship in at-risk families have proven to be effective at improving parenting behavior and child outcomes. An intervention study found that intensive at-home coaching beginning in infancy and ending in toddlerhood predicted improvements in parenting behavior a year later (Guttentag et al., 2014). Another study found that a parenting intervention implemented during early childhood was related to more positive parent engagement and less problem behavior at preschool-age (Sitnick et al, 2014). Taken together, the findings of the current study and the effects of early parenting interventions suggest that the repairing the parenting relationship early in the parenting relationship may have enduring protective influences for mother and their children.

Future extensions of the current study should focus on utilizing a person-centered approach to examine different patterns of change trajectories. The current approach, which used latent intercepts and slopes for the entire sample, was not able to capture individual differences in trajectories of these parenting determinants. A different approach would be to examine sub-groups of individuals that differ by trajectory, which might reveal effects for the slopes of these parenting determinants on parenting behavior for some sub-groups. An examination of different sub-group trajectories may also reveal different relationships between the latent intercept and slope predictors and the outcome of parenting behaviors.

Another extension to the findings of this study would be to predict parenting behavior from parenting determinants that occur at an earlier time point in the parenting relationship: the prenatal period. Huth-Bocks and colleagues (2004) found that, in the third trimester of pregnancy, mothers formed negative representations of their children that were associated with

their experiences of IPV, and these representations were related to insecure attachment with their infants. Although IPV during the prenatal period was not used in the current study, it is possible that the long-term influence on parenting indicates the stability of these previously formed representations. Based on these findings, it is also possible that IPV or other stressors during pregnancy have enduring effects on parenting behavior later in the parent-child relationship. Future work in research concerning parenting determinants should focus on examining their influences on parenting beginning in the prenatal period.

APPENDICES

APPENDIX A

TABLES

Table 1. *Descriptive Statistics of Study Variables*

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.	BDI (Age 1)																
2.	BDI (Age 2)	.64**															
3.	BDI (Age 3)	.60**	.65**														
4.	BDI (Age 4)	.56**	.60**	.71**													
5.	SVAWS (Age 1)	.10	.32**	.23**	.15*												
6.	SVAWS (Age 2)	.08	.31**	.09	.15	.33**											
7.	SVAWS (Age 3)	.27**	.32**	.29**	.32**	.22**	.27**										
8.	SVAWS (Age 4)	.09	.17*	.18*	.21**	.25**	.32**	.41**									
9.	Income (Age 1)	-.12	-.07	-.09	-.10	-.17	-.11	-.11	-.11								
10.	Income (Age 2)	.02	.01	.02	.03	.00	-.12	-.13	-.13	.62**							
11.	Income (Age 3)	-.23**	-.27**	-.22**	-.23**	-.22**	-.17*	.19*	-.12	.77**	.67**						
12.	Income (Age 4)	-.15*	-.21**	-.18*	-.21**	-.09	-.10	-.06	-.03	.70**	.67**	.82**					
13.	NSSS (Age 1)	-.11	-.14	-.18*	-.12	-.05	.00	-.13	-.01	.20**	-.21**	.16*	.15				
14.																	
15.	NSSS (Age 2)	-.05	-.16*	-.01*	-.06*	.05	-.08	-.08	.07	-.04	.15*	.09	.08	.50**			
16.	NSSS(Age 3)	-.03	.07	.09	.10	-.15	-.13	.01	.04	.06	.23**	.19*	.12	.11	.42**		
17.	NSSS (Age 4)	-.23**	-.22**	-.28**	-.25**	-.11	-.11	-.13	-.12	.20*	.18*	.24**	.15	.45**	.42**	.54**	
Valid N		189	186	178	177	189	173	161	176	186	184	174	177	189	185	177	175
Mean		5.74	6.81	6.22	6.28	6.32	5.19	3.40	3.61	2170	2402	2357	2556	140	160	121	120
SD		5.40	6.24	6.79	6.54	15.41	13.25	9.36	10.50	1704	1881	1819	1981	79	88	63	69
Minimum		.00	.00	.00	.00	.00	.00	.00	.00	267	0	0	184	0	36	15	21
Maximum		29	28	46	33	120	77	66	94	10000	15000	12000	13000	459	553	375	515

Note: *** $p < .001$, ** $p < .01$,* $p < .05$

Table 2. *Sample Descriptive Statistics for the Parenting Behavior Codes*

Maternal Behaviors		
	Mean	*SD*
Positive Affect	2.62	.48
Positive/ Neutral Feedback	2.28	.29
Facilitate Self-Regulation	3.94	.65
Unresponsive/ Disengagement	2.17	.79
Intrusive/ Over-controlling	2.14	.69
Negative Affect	1.92	.58
N	160	

Table 3. *Exploratory Factor Analysis of Parenting Behavior Codes at Age 4*

	Factors		
Maternal Behaviors	Positive Parenting	Negative Parenting	Communalities
Positive Affect	**.71**	-.04	.50
Positive/ Neutral Feedback	**.74**	-.14	.57
Facilitate Self-Regulation	**.82**	-.29	.76
Unresponsive/ Disengagement	**-.89**	-.07	.79
Intrusive/ Over-controlling	.09	**.93**	.88
Negative Affect	-.34	**.85**	.84
Eigenvalues	2.87	1.48	
% Variance Explained	47.83	24.68	

Table 4. *Path Coefficient Estimates from the Models Used to Test the Study Hypotheses.*

Parameters	Estimate	Standard Error	p-value
Maternal Depressive Symptoms			
Intercept BDI →Positive Parenting Behaviors	-0.08	0.15	0.25
Slope BDI → Positive Parenting Behaviors	0.22	0.10	0.08
Intercept BDI →Negative Parenting Behaviors	**0.17**	**0.09**	**< .01**
Slope BDI → Negative Parenting Behaviors	0.12	0.08	0.30
Average Monthly Income			
Intercept Income →Positive Parenting Behaviors	**0.57**	**0.10**	**< .001**
Slope Income → Positive Parenting Behaviors	-0.18	0.14	0.21
Intercept Income →Negative Parenting Behaviors	**-0.38**	**0.10**	**< .001**
Slope Income → Negative Parenting Behaviors	0.15	0.13	0.26
Social Support			
Intercept NSSS →Positive Parenting Behaviors	0.004	0.01	0.09
Slope NSSS → Positive Parenting Behaviors	-0.01	0.00	0.38
Intercept NSSS →Negative Parenting Behaviors	**	**	**
Slope NSSS → Negative Parenting Behaviors	**	**	**
Intimate Partner Violence			
Intercept SVAWS →Positive Parenting Behaviors	**-0.55**	**0.14**	**< .001**
Slope SVAWS → Positive Parenting Behaviors	-0.04	0.18	0.81
Intercept SVAWS →Negative Parenting Behaviors	**0.35**	**0.15**	**< .05**
Slope SVAWS → Negative Parenting Behaviors	0.17	0.19	.38

Note: **This model did not converge.
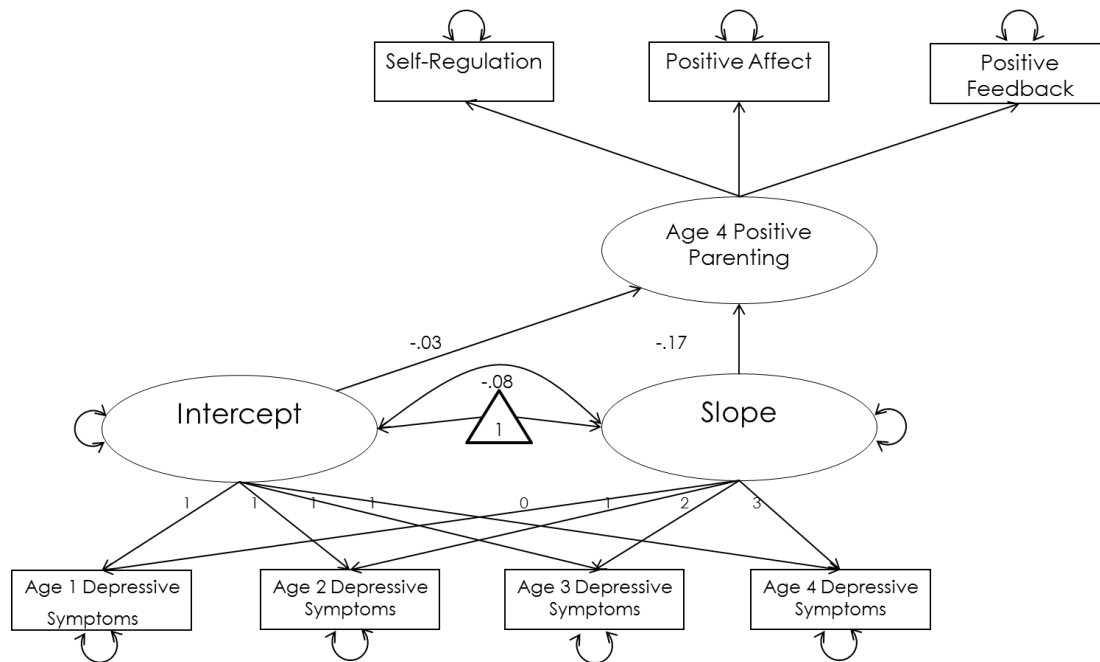
APPENDIX B

FIGURES

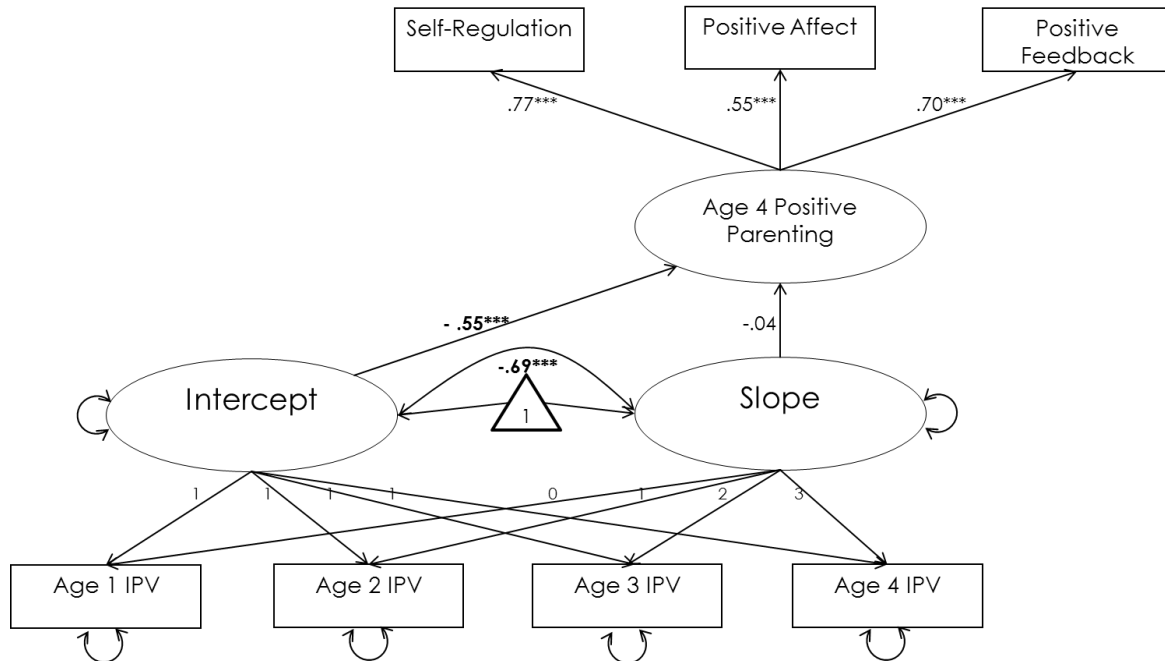Figure 1. *The influence of the intercept and slope of maternal depressive symptoms on negative parenting behavior.*
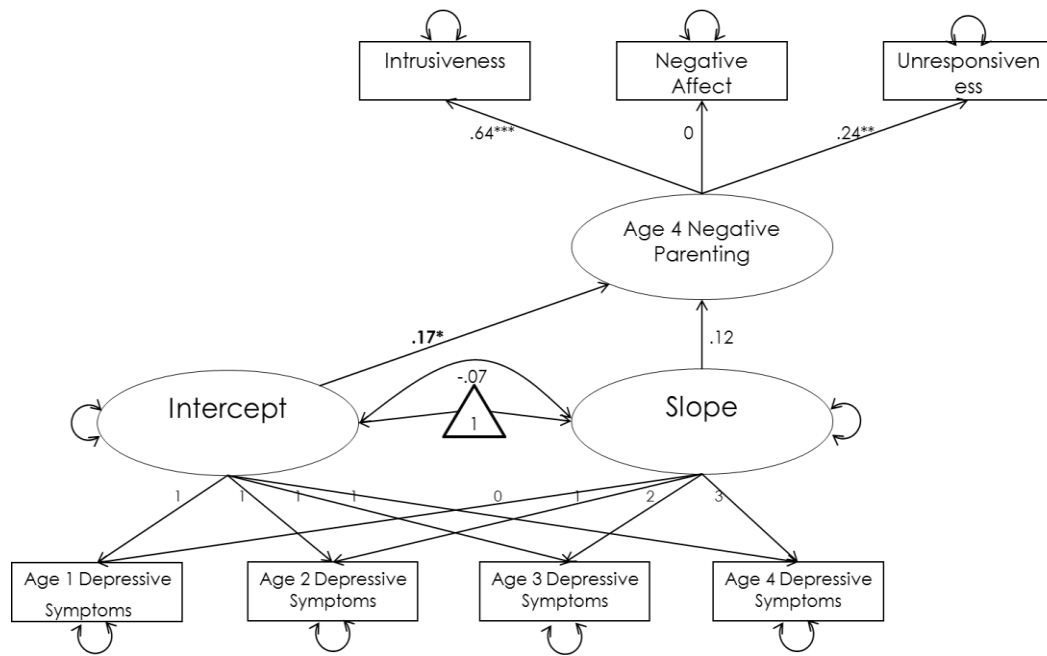
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Model fit: ($x^2(16) = 42.60$, RMSEA = 0.09, CFI = 0.94).

Figure 2. *The influence of the intercept and slope of maternal depressive symptoms on positive parenting behavior.*
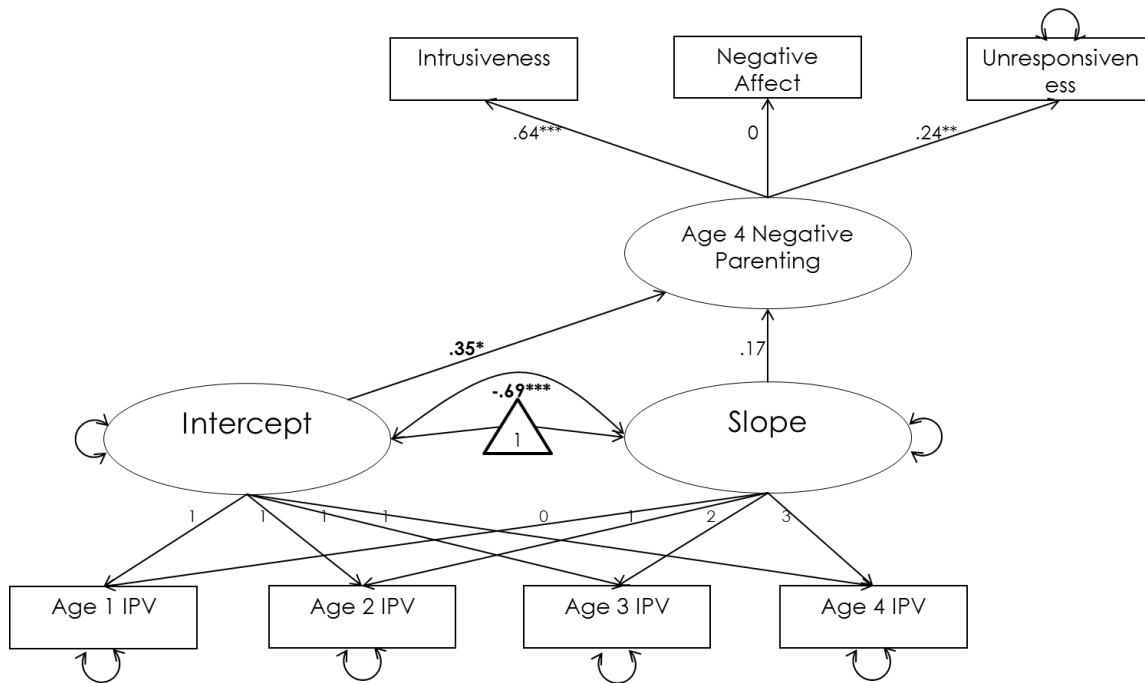

*Note: * p < .05, ** p < .01, *** p < .001. Model fit: $x^2(15) = 26.17$, RMSEA = 0.06, CFI = 0.98.*

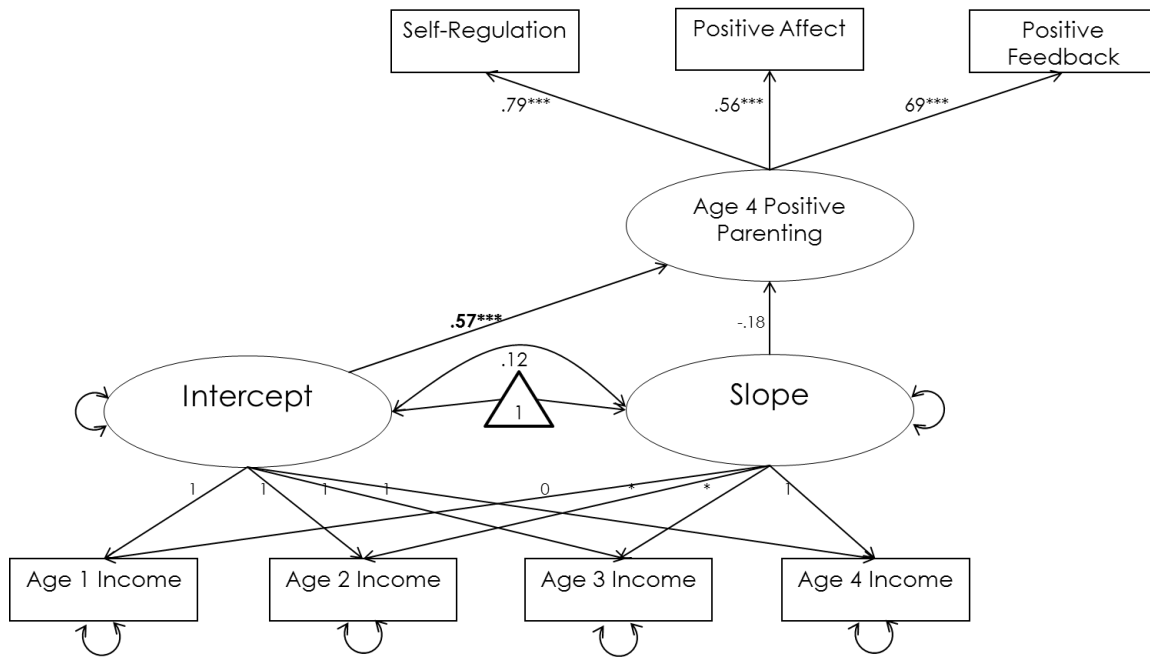Figure 3. *The influence of the intercept and slope of IPV on positive parenting behavior.*

| Self-Regulation | Positive Affect | Positive Feedback |

.77***   .55***   .70***

Age 4 Positive Parenting

- .55***   -.04

-.69***

Intercept   1   Slope

1   1   1   1   0   1   2   3

| Age 1 IPV | Age 2 IPV | Age 3 IPV | Age 4 IPV |

*Note: * p < .05, ** p < .01, *** p < .001.*

Figure 4. *The influence of the intercept and slope of IPV on negative parenting behavior.*
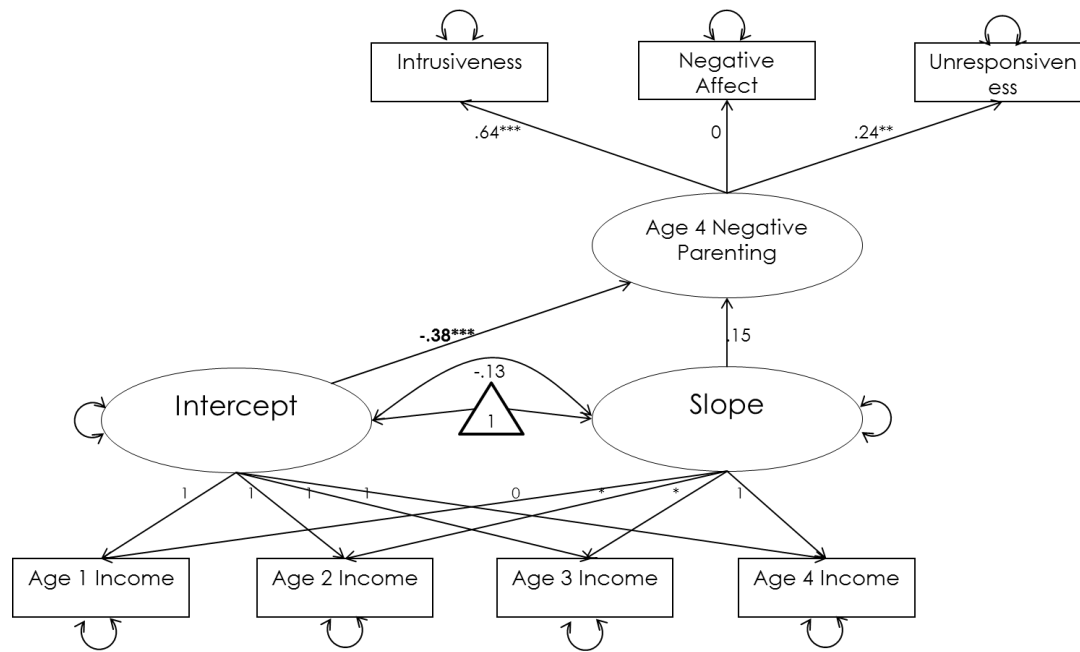

Note: * *p* < .05, ** *p* < .01, *** *p* < .001.

Figure 5. *The influence of the intercept and slope of income on positive parenting behavior.*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Model fit: $x^2(13) = 19.94$, RMSEA = 0.05, CFI = 0.99.

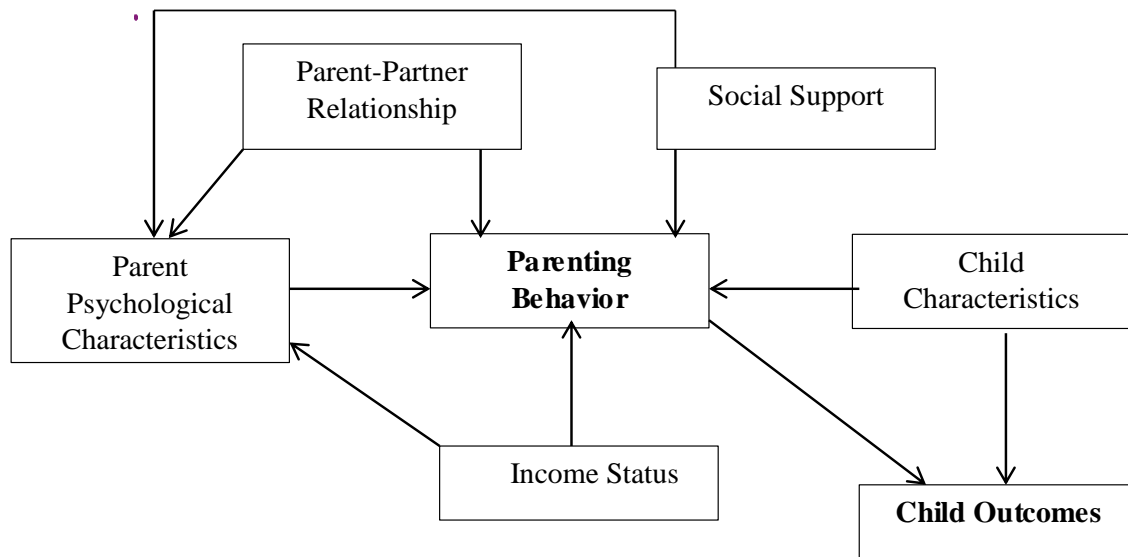Figure 6. *The influence of the intercept and slope of income on negative parenting behavior.*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Model fit: $x^2(14) = 41.56$, RMSEA = 0.10, CFI = 0.96.

Figure 7. *The influence of the intercept and slope of social support on positive parenting behavior.*
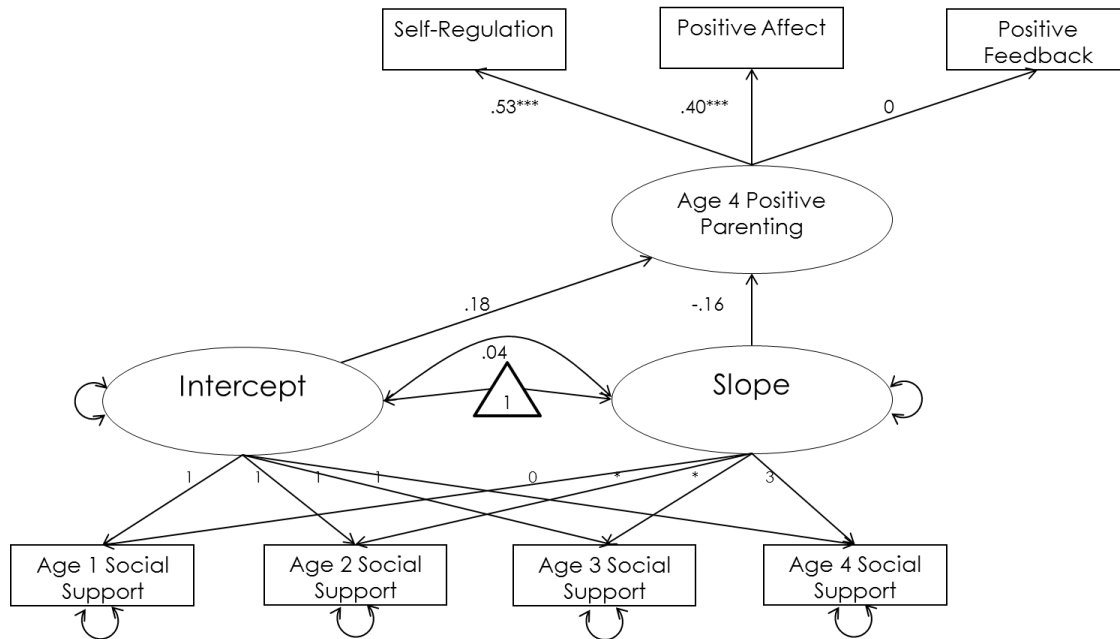
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Model fit: $x^2(14) = 40.06$, RMSEA = 0.10, CFI = 0.90.

Figure 8. *Process Model of Parenting, based on Belsky, 1984*

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