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## Early-Onset Conduct Problems: Intersection of Conduct Problems and Poverty

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### Abstract

The current paper reviewed extant literature on the intersection between poverty and the development of conduct problems (CP) in early childhood. Associations between exposure to poverty and disruptive behavior were reviewed through the framework of models emphasizing how the stressors associated with poverty indirectly influence child CP by compromising parent psychological resources, investments in children's welfare, and/or caregiving quality. We expanded upon the most well studied of these models, the family stress model, by emphasizing the mediating contribution of parent psychological resources on children's risk for early CP, in addition to the mediating effects of parenting. Specifically, in we focused on the contribution of maternal depression, both in terms of compromising parenting quality and exposing children to even higher levels of stressful events and contexts. Implications of the adapted family stress model were then discussed in terms of its implications for the prevention and treatment of young children's emerging CP.

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The current paper addresses the intersection between the development and maintenance of conduct problems in early childhood (i.e., 0 to 5 years) and poverty. The reasons for focusing on early-starting conduct problems (CP) are described in more detail below, but the focus on early childhood also has clear implications for how poverty has been conceptualized to influence emerging CP. Researchers have typically theorized and found poverty to have more independent effects on children's CP following early childhood when they spend more time outside of the home and direct parental care (Ingoldsby & Shaw, 2002; Leventhal & Brooks-Gunn, 2000); however, recent research suggests that chronic exposure to poverty during early childhood may be more detrimental to later childhood outcomes than exposure to poverty during the school-age period (Votruba-Drzal, 2006). The focus on early childhood in the current review allows us to review the independent effects of poverty on emerging child CP during developmental periods when many of children's daily interactions are presumably physically and psychologically mediated by parental care. In the current paper the term "conduct problems" refers to disruptive behaviors such as physical aggression and oppositional behavior (rather than symptoms of ADHD in isolation) that often involve challenging adult authority and/or using physical force in interacting with parents, siblings, peers, pets, or objects. However, it is acknowledged that many children

showing high rates of CP also demonstrate high levels of ADHD, particularly impulsive/hyperactive behavior.

## Public Health Importance of Early-Starting Conduct Problems

There has been growing interest in identifying very young children at risk for early and persistent trajectories of conduct problems (CP, Shaw, 2013). This interest was initially motivated by findings from several studies on early- versus late-starting antisocial youth (Moffitt, 1993; Patterson, Capaldi, & Bank, 1991). Several researchers have documented that compared to late starters, who begin delinquent activity in mid- to late-adolescence, early starters show a more persistent and chronic trajectory of antisocial behavior extending from *middle* childhood to adulthood (Moffitt, 1993; Moffitt & Caspi, 2001). Early starting CP that begin in childhood and persist throughout adolescence and adulthood, in the form of antisocial behavior, result in a substantial amount of harm to individual victims and to society. In addition to the serious consequences such behavior has on others, people who commit antisocial acts are often significantly impaired in psychological, social, and occupational domains (Bongers, Koot, van der Ende, & Verhulst, 2004). In fact, although it is estimated that approximately 1% of females and 3% of males in the population meet criteria for the clinical diagnosis of Antisocial Personality Disorder, the prevalence of this disorder in clinical settings has been shown to be as high as 30%, with estimates even higher in substance-abusing and forensic populations (American Psychiatric Association, 2000). Early starters represent approximately 6-7% of the population, yet are responsible for almost half of adolescent crime and three-fourths of violent crimes (Offord, Boyle, & Racine, 1991). Although so-called 'early-starters' were previously not viewed as beginning to engage in serious forms of antisocial behavior prior to age 10, because of researchers' efforts to initiate studies of CP beginning during early childhood (Hill, Degnan, Calkins, & Keane, 2006; Moffitt & Caspi, 2001; Shaw et al., 2003), it has now been repeatedly documented that a subset of early-starting youth can be identified during early childhood beginning around age 3 (Campbell et al. 1994; 1996; Moffitt, 1993; Richman et al. 1982; Shaw, Hyde, & Brennan, 2012).

The impetus for identifying young children and pregnant women (whose children are) at risk for early-starting CP (Olds, 2002) has been further reinforced based on findings from two interrelated areas: onset patterns for early disruptive behavior and preventive intervention research (Shaw, 2013). First, children who have been found to *not* demonstrate high levels of physical aggression and oppositional behavior during the toddler period are unlikely to begin showing clinically-elevated levels of disruptive behavior in later childhood or adolescence, with few children initially demonstrating high rates of physically aggressive behavior after age 5 (Shaw, Gilliom, & Giovannelli, 2000). An example comes from the Pitt Mother & Child Project (PMCP), a study of 310 ethnically-diverse, low-income boys followed from infancy to adolescence. Among boys in the PMCP identified at or above the 90<sup>th</sup> percentile on broad factors of externalizing symptoms at age 2, 63% remained above the 90<sup>th</sup> percentile at age 5, and 97% remained above the median (Shaw et al., 2000). At age 6, 62% remained at or above the 90<sup>th</sup> percentile and 100% (all 18) remained above the median. In terms of the percentages of children who began showing high rates of externalizing symptoms at school entry, rates were low. Only 13% and 16% of boys below

the 50<sup>th</sup> percentile on the CBCL Externalizing factor at age two moved into the clinical range at ages five and six, respectively. Interestingly, these data are comparable to those reported by Patterson (1982) for older children and adolescents. Of those identified in the top 5% of externalizing symptoms during school-age, 38.5% stayed at or above the 95<sup>th</sup> percentile and 100% stayed above the sample mean ten years later. Similar to the data on school-age children, the stability of CP from early to middle childhood suggests that there are relatively few “late-starting children” who begin to show clinically-elevated rates of disruptive behavior after age two to three.

Second, child CP and parenting practices associated with their persistence appear to be more malleable during early versus later childhood (Reid, Webster-Stratton, & Baydar, 2004). Specifically, prevention and intervention studies initiated prior to school entry have shown greater efficacy for treating children with clinically-elevated rates of CP than for older children (Reid et al., 2004; Dishion et al., 2008; Olds, 2002). The more positive outlook for intervening earlier is likely attributable to several factors, including the shorter duration of the child’s problem behavior (i.e., increased malleability), the decreased likelihood of incurring serious damage to parents’ optimism for change, and the greater probability of children ‘growing’ out of problem behavior in early versus later childhood.

## Poverty and its Relation to Maladaptive Child Outcomes

The America Heritage Dictionary defines poverty as “lack of the means of providing material needs or comforts,” and in the US is based on gross income for individual households. For example, in 2009 this rate was \$22,000 for a family of four (Yoshikawa, Aber, & Beardslee, 2012). Other criteria for poverty are used to establish eligibility for specific programs, including the free lunch program (below 130% of the poverty line), the reduced-price lunch program (below 185% of the poverty line), or participating in the Women, Infants, and Children Nutritional Supplement Program (below 185% of the poverty line). For purposes of the current study, we will focus primarily on studies that define poverty on the basis of income. However, it should be acknowledged that poverty is closely intertwined with a number of co-factors (e.g., parental educational and/or occupational attainment, dangerous neighborhood, poor child care and preschools, exposure to toxins), some of which have been considered mechanisms by which poverty is conceived to influence child problem behavior, including CP.

Poverty has been consistently linked to a plethora of maladaptive child outcomes because of how pervasive it is in children’s lives. Young children living in poverty are exposed to a continuous stream of adverse life conditions, including poor housing quality, neighborhood danger, and toxic air, lead, and/or pesticides that cumulatively compromise many health outcomes (Evans, 2004; McLoyd, 2011). Those children living in impoverished families are subjected to higher frequencies of stress-invoking experiences relative to middle-class children, which can take the form of witnessing or experiencing violence at home or in the neighborhood, or school; being exposed to family members with mental and physical health concerns; and relatedly, experiencing higher levels of more harsh and less supportive parenting (Makosky, 1982; McLoyd, 2011).

Whereas overall rates of poverty are on the rise in the United States, they also continue to be higher for young children than adolescents (21% vs. 15%, Douglas-Hall, Chau, & Koball, 2006). Young children are more often in poverty because parents of younger children do not earn as much, have less work experience, and often have higher costs for child care than parents of older children and adolescents (Magnuson & Votruba-Drzal, 2009). Poverty rates are also higher for racial and ethnic minority children: 33% for African Americans, 28% for Hispanics, 15% for Asians, versus 12% for Whites (Fass & Cauthen, 2007). African American children are also more likely to experience chronic poverty than white children: 5.5 years vs. less than a year, respectively (Magnuson & Votruba-Drzal, 2009), with early chronic poverty linked to greater risk of multiple negative child outcomes than more acute instances (Goosby, 2007).

One of the most notable adverse outcomes associated with poverty is poorer academic achievement, which is evident at formal school entry and continues to decline during the school-age period (Magnuson & Votruba-Drzal, 2009). Similar associations have been found between poverty and educational attainment (Campbell et al., 2004; Duncan, Kalil, & Ziol-Guest, 2008), with findings indicating that low parental income during early childhood and adolescence are particular points of vulnerability linked to lower educational attainment. Another set of outcomes associated with poverty is health outcomes, ranging from worse overall health during childhood (Currie & Lin, 2007), higher rates and earlier onsets of chronic conditions (asthma, diabetes, hearing, vision, and speech problems; Magnuson & Votruba-Drzal), and higher rates of mortality during adulthood (van den Berg, Lindeboom, & Portrait, 2005). A recently-developed theoretical model (Miller & Chen, 2013) has suggested that poverty gets ‘under children’s skin’ at the cellular and tissue level by long-term exposure to the stressors described above, which by placing the body on chronic conditions of alert (e.g., inflammatory response), compromises immune functioning and leads to life-threatening diseases in adulthood, including heart disease, stroke, autoimmune disorders, and some cancers.

## Poverty and Early-Starting Conduct Problems

Among mental health outcomes, child CP is consistently found to be associated with poverty (Magnuson & Votruba-Drzal, 2009; Yoshikawa et al., 2012). Whereas data from passive longitudinal studies on associations between indices of poverty and children’s CP are consistent in the literature, from the perspective of public policy and prevention science it is also critical to know whether these links are causal (Shelleby et al., under review). A growing literature using experimental and quasi-experimental designs suggest that relations between income and child behavior problems may be causal. For example, using longitudinal data from the National Longitudinal Survey of Youth (NLSY) and econometric modeling techniques, several studies have uncovered small, but significant links between family income and child CP (D’Onofrio, Goodnight, Van Hulle, Rodgers, Rathouz, Waldman & Lahey, 2009; Votruba-Drzal, 2006). Dearing, McCartey, and Taylor (2006) have replicated these findings using longitudinal data from the NICHD Study of Early Child Care and Youth Development. Results of one of the few studies that has relied on data from a “natural experiment” provided by the opening of a casino on an American Indian reservation, further supports this assertion (Costello, Compton, Keeler, & Angold, 2003).

In addition, some of the strongest support for a causal relation between family economic circumstances and children's CP comes from studies using experimental data from an evaluation of the Minnesota Family Investment Program (MFIP). The MFIP program evaluation involved random assignment of welfare recipients with young children into a treatment group, receiving employment training and financial supplements that would insure that increases in maternal employment would be accompanied by greater family income, or a control group, receiving Aid for Families with Dependent Children. Children of families in the treatment group showed moderate reductions in CP relative to those in the control condition (Gennetian & Miller, 2002; Morris & Gennetian, 2003). A limitation of this study, however, was that it was not able to tease apart the effects of income improvements from benefits of maternal employment. Taken together, findings from this body of work suggest that the association between poverty and CP is not simply a spurious link between risk factors associated with low income that may also influence CP, but that low income itself serves as a risk factor for increased CP.

### **Genetic, Socialization, and Community Factors Associated with Early-Starting Conduct Problems**

Perhaps the one consensus in the field is that genetic, socialization, and community factors all make independent and important contributions to the emerging development of early-starting CP (Campbell, Shaw, & Gilliom, 2000; Shaw, 2013). Consistent with the literature on risk factors associated with antisocial behavior during middle childhood and adolescence, several risk factors across child (presumably primarily genetic in early childhood), family, and community domains have been linked to early childhood CP. In addition to direct measurements of child aggressive and oppositional behavior (Tremblay et al., 2004), other child factors reliably associated with CP include negative emotionality (Bates, Maslin, & Frankel, 1985), fearlessness (Shaw et al., 2003), and verbal, spatial, and language skills (Moffitt, 1990). As with more direct measures of disruptive behavior, continuity appears to increase when initial assessments of child attributes are carried out when children are at least 2 to 3 years old (Shaw, Bell, & Gilliom, 2000) and when children show CP in early childhood across contexts and informants (Campbell, et al., 2000). Although relatively few genetically-informed studies have been conducted in early childhood that would permit researchers to unpack the genetic/biological versus environmental etiology of these early variations in child attributes linked to early emerging CP (Leve et al., 2009), based on twin and adoption studies it is reasonable to assume that individual differences in such attributes as negative emotionality, fearlessness, and verbal skills are at least moderately linked to genetic influence (Goldsmith, Buss, & Lemery, 1997) and moderated by perinatal risk and post-natal environmental risk and support.

It should not be surprising based on young children's physical and psychological dependence on parents coupled with the rapid rate of physical and social maturation infants and toddlers undergo, that both parent attributes and dimensions of caregiving have been more reliably linked with the development of CP than actual child behavior prior to age 2 (Shaw, 2013). From social learning theory, parenting management practices that model and reinforce disruptive behavior are hypothesized to be associated with increasingly frequent

and severe CP that begin during the ‘terrible twos’ and escalate in intensity (or at least fail to decrease as they would for most children) during the preschool and school-age years (Shaw et al., 2003). With respect to attachment theory, parenting characterized by insensitivity and low responsiveness would lead to distrustful internal working models and, based on a history of unresponsive care, children who develop little motivation to comply with parental requests for prosocial behavior (Erickson et al., 1985; Lyons-Ruth et al., 1993; Shaw & Bell, 1993). Thus, studies of harsh, rejecting, and overcontrolling parenting (Campbell et al., 1996; 2000; Shaw et al., 1998) and assessments of insecure and disorganized infant attachments have documented longitudinal associations with CP and more serious forms of AB in adolescence (Shaw et al., 2012). In addition, family factors that might compromise parenting quality (e.g., parenting hassles, quality of social support, marital quality) and in some cases model and/or condone antisocial behavior (e.g., parent antisociality, parent depression, parental conflict), have also been linked to early-starting CP (Jouriles et al., 1991; Shaw et al., 2000, 2012).

## **How the effects of poverty have been theorized to influence child problem behavior**

Various theoretical models have been proposed to explain how poverty influences child problem behavior. Most of these models emphasize indirect links between poverty and child functioning that are mediated by parenting or other common risk factors of low-income ecologies (e.g., exposure to toxins, quality of institutions) based on the notion that young children have few opportunities or requirements to spend money themselves (Gershoff, Aber, Raver, & Lennon, 2007, Yoshikawa et al., 2012). Other models focus on genetic factors that might predispose parents or children to demonstrate patterns of maladaptive behavior that lead to child CP, including selection factors that might lead some parents to become or remain poor. When such parental selection factors have been accounted for, associations between poverty and child maladaptive outcomes continue to be evident, albeit reduced in magnitude (Mayer, 1997); thus, our review will focus predominantly on factors that are developmentally salient for young children and hence would be mediated by parents and the quality of the child’s home environment. The two most prominent of these frameworks are the family stress perspective (e.g., Elder, 1974) and the investment perspective (e.g., Becker, 1991; Mayer, 1997). An additional perspective, which focuses on cultural norms (e.g., Lareau, 2011; Lewis, 1969), will also be reviewed briefly based on interest from poverty researchers on this framework as an additional pathway through which poverty may influence child behavior (see Magnuson & Votruba-Drzal, 2006). Figure 1, adapted from Magnuson & Votruba-Drzal (2006), provides an overview of each model, which suggests that the effects of poverty on different domains of child functioning should be mediated by parenting, parenting attitudes, parental investments, or other environmental stresses associated with being poor.

The family stress model of economic hardship has been described as one of the most widely examined explanations for the association between economic disadvantage and child mental health outcomes (McLoyd, 2011). This framework was originated by Glen Elder (1974) in studying the influence of income loss and unemployment on families during the time of the

Great Depression. Elder found that rather than having direct effects on child outcomes, economic strain indirectly influenced children's mental health through the effects that such hardship placed on the family context. This theoretical perspective was expanded by Conger and colleagues in studying the patterning of effects of the Iowa farm crisis on family functioning and child mental health and behavior (e.g., Conger & Elder, 1994; Conger et al., 1994), and has since been applied to low-income minority families and urban populations (e.g., McLoyd et al., 1994; Mistry et al., 2002). As shown in Figure 2 in applying the family stress model to CP, children are affected by socioeconomic disadvantage through the increased level of stress such hardship places on families as they struggle to make ends meet. Chronic stressors associated with poverty such as single-parenthood, life stress, financial worries, and ever-present challenges to make ends meet are hypothesized to cumulatively compromise parental psychological functioning (Mistry, Vandewater, Huston, & McLoyd, 2002), leading to higher levels of distress such as anxiety, anger, depressive symptoms, and substance use in disadvantaged parents (Conger & Donnellan, 2007). Compromised psychological functioning in turn negatively affects parenting behavior, leading to increased parental conflict, greater harsh, physical, and inconsistent discipline, less responsiveness to children's needs, and less supportive and involved parenting (e.g., Brody, Murry, Kim, & Brown, 2002; McLeod & Shanahan, 1993). In turn, these family stressors and negative aspects of parenting compromise child behavioral and mental health outcomes, as well as academic functioning.

The investment perspective is another theoretical framework to explain the process through which economic disadvantage affects child outcomes. Originally postulated by economists writing about household production, this theory suggests that higher income allows families to invest more resources in the human capital of their children; such investments in turn are proposed to afford children with greater chances for positive outcomes across development, including higher achievement outcomes and well-being in childhood and higher wages and better life circumstances in the long term (e.g., Haveman & Wolfe, 1994; Mayer, 1997). Accordingly, families with lower incomes are less able to invest in assets that would enrich children's learning, such as educational tools, cognitively stimulating toys and services, enrollment at high-quality schools, and time spent on teaching children, and poorer families are also less able to invest in other types of materials and services that foster overall child well-being, such as high quality child care, adequate health care, and safe home and neighborhood environments (Conger & Donnellan, 2007; Magnuson & Votruba-Drzal, 2006; Yeung, Linver, & Brooks-Gunn, 2002). Empirical research has supported this theoretical framework on the link between income and investments. For example, the work of Mayer (1997) has shown that compared to higher income counterparts, lower income families are more likely to live in houses with more defects, live in neighborhoods with more crime, spend less on food, and spend less on stimulating toys/outings, all of which may compromise child developmental outcomes.

Finally, although less often applied in psychological research examining the effects of income on child behavior, cultural theories rooted in the field of sociology have been proposed to explain how income influences parenting and child behavior. Oscar Lewis (1969) proposed that economically disadvantaged individuals are influenced through a "culture of poverty," such that living in persistent poverty engenders specific cultural norms,

values, beliefs, and practices that become long-standing in poor families and communities. As researchers have noted, many scholars moved away from this framework as it had been seen as a form of blaming those who experience poverty for perpetuating disadvantage and negative outcomes (Small, Harding, & Lamont, 2010). For example, Lewis hypothesized that while structural factors outside of one's control may initially give rise to differing values, beliefs, and behaviors associated with poverty, over time these values, beliefs, and behaviors are posited to be perpetuated in families and communities and can serve as a cause for continued poverty across generations (Magnuson & Votruba-Drzal, 2006). However, more recent applications have attempted to consider how cultural influences are associated with disadvantage without necessarily suggesting that the perpetuation of these cultural norms gives rise to continued poverty or that poverty can be attributed to the values and the beliefs of those who are poor (e.g., Magnuson & Votruba-Drzal, 2006; Small, Harding, & Lamont, 2010). Applied to the study of early child development, this perspective suggests that socioeconomic disadvantage influences cultural norms and expectations about parenting and child behavior which, in turn, influence the ways in which parents from disadvantaged backgrounds raise their children and consequently how children behave (e.g., Lareau, 2011). For example, Lareau (2011) has suggested that compared to more advantaged parents who view their parenting role as actively promoting the well-being and development of their children, economically disadvantaged parents view their children's development as "unfolding naturally" and therefore requiring little promotion outside the provision of resources to meet basic needs (Lareau, 2011; Magnuson & Votruba-Drzal, 2006). Lareau (2011) describes this distinction as the "concerted cultivation" viewpoint of middle-class parents versus the "natural growth" perspective of lower income parents. In ethnographic work, Lareau provides specific examples of differences in beliefs and norms that may be related to socioeconomic differences, such as how parents from a working-class family may encourage their child to fight back if other children become aggressive at school, and how this may put them at odds with school personnel. Differences in parental beliefs and the messages that children are given regarding acceptable behavior that may vary systematically by socioeconomic status therefore may also have an important influence on the behaviors children demonstrate.

## **Applying extant models of poverty to early-onset CP**

### **The Family Stress Model and Children's Early Conduct Problems**

Based on young children's physical and psychological dependence on parents, the influential contribution parenting and factors that compromise parenting quality have been shown to have on the development of CP during early childhood (Shaw, Bell, & Gilliom, 2000), and consistent with all three models' focus on how poverty influences aspects of the caregiving ecology, it follows that all three of the aforementioned models would be relevant to young children's emerging CP. First and foremost is the application of the family stress model to early-starting CP. Consistent with Belsky's (1984) seminal work on the determinants of parenting and more specifically, Patterson's (1982) model of family stress and parent-child coercive processes in early-starting CP, there is an abundance of literature suggesting that factors that compromise parenting quality, including low-income and the stressors associated with poverty (e.g., neighborhood risk, parental social support, parental



well-being) foster the development of CP. Low levels of parental sensitivity and responsiveness to infant cues (Martin, 1981; Shaw et al., 1994, 1998) affecting parent-child relationship and attachment quality in the first year (Erickson et al., 1985; Lyons-Ruth et al., 1993), and use of harsh and overcontrolling parenting during the ‘terrible twos’ (Campbell et al., 1996; Martin, 1981; Shaw et al., 1998; Smith et al., in press), have consistently been linked to CP in early childhood, and in some cases associated with more serious forms of antisocial behavior through adolescence (Shaw et al., 2012). In terms of assessing the validity of the family stress model more formally by testing whether the effects of poverty on CP are mediated by parenting quality, several studies, but not all, have found that links between sociodemographic risks and CP are mediated through compromised parenting (e.g., Dodge, Pettit, & Bates, 1994; Linver et al., 2002). Although many of the early studies applying the family stress framework focused on majority racial/ethnic groups, rural populations, two-parent families, and older children and adolescents, more recent studies have begun to focus on racially/ethnically diverse samples, families living in both rural and urban settings, single-parent households, and children of younger ages (e.g., Barnett, 2008).

For example, in a cross-sectional study extending the family stress model to ethnically-diverse children ages 5-12 from an urban area who were part of the New Hope Project, Mistry et al. (2002) found that economic hardship and pressure were linked to higher child CP and poorer social competence indirectly through the impact on parental psychological distress and compromised parenting. Additional studies focusing on children in middle childhood have found similar results supporting the family stress model in explaining the association between economic disadvantage and CP within this age group (e.g., Brody & Flor, 1998; McLeod & Shanahan, 1993).

Although research focusing on early childhood is more limited, existing studies have supported the validity of the family stress framework for early starting CP. Focusing on a sample of urban single mothers and their preschool children ages 3-5 in a cross-sectional study, Jackson and colleagues (2000) found that financial strain was associated with higher maternal depressive symptoms, which were associated with compromised parenting and linked to higher child behavior problems (combined CP and emotional problems). Further, there was a direct association between depressive symptoms and child problem behavior. Similarly, a recent longitudinal study by Rijlaarsdam and colleagues (2013) assessing 2,139 children from the prenatal period to age 3 found that maternal depressive symptoms, parenting stress, and harsh discipline mediated the effects of economic disadvantage on early CP. Findings from a longitudinal study by Linver et al. (2002) applying the family stress model to a preschool sample of children across ages 3-5 demonstrated that the influence of economic disadvantage on child behavior problems (including both emotional problems and CP) operated through maternal emotional distress and parenting. Furthermore, the authors found that the magnitude of associations in their models for young children was higher than associations reported in adolescent samples (e.g., Linver et al., 2002; Barnett, 2008). Even among studies that have not formally tested the family stress model, it is worth noting that associations between insecure or disorganized infant attachments and emerging CP have been more consistently found in low-income versus higher SES samples (Erickson et al., 1985; Lyons-Ruth et al., 1993 versus Fagot & Kavanagh, 1990), suggesting that the

effects of insecure or disorganized attachments on child CP are exacerbated in low-income contexts.

### **The Investment and Resources Model and Children's Early Conduct Problems**

The investment framework has most frequently been applied to explain the association between poverty and cognitive/achievement outcomes because of the more direct theoretical path linking the provision of more cognitively stimulating toys and services, the enrollment of children in higher-quality schools and day care settings, and the ability to spend more time teaching children to cognitive achievement versus problematic social behavior. In fact, some researchers suggest that the important mediating mechanisms explaining the influence of poverty on child outcomes depend on the specific outcome being assessed (e.g., achievement versus CP). For example, one study directly comparing mediating mechanisms to explain income's association with child achievement and child behavior problems (including both CP and emotional problems) in 3-5 year old children found that investment in stimulating materials and activities mediated the association between income and achievement, and that parental emotional distress and parenting practices mediated the association between income and child CP (Yeung, Linver, & Brooks-Gunn, 2002). However, to the degree that more stimulating cognitive resources and environments also foster prosocial socioemotional development (Hart & Risley, 1995), it also is reasonable to postulate that the investment perspective would apply to the development of early-starting CP. Other research has demonstrated that investment in resources is also significantly associated with behavioral outcomes such as CP. For example, Linver and colleagues (2002) examined investment in stimulating experiences, maternal emotional distress, and parenting as mediators of the link between income and both child cognitive ability and child CP in a sample of children followed from infancy to age 5. They found that although only investment in stimulating experiences mediated the relation between income and children's cognitive outcomes, maternal emotional distress, parenting, and investment in stimulating experiences in the home served as mediators of the link between income and child behavior problems. Similarly, in a longitudinal study of children 9 to 36 months old, Kiernan and Huerta (2008), exploring both investment and family stress mechanisms, found that the association between economic deprivation and child CP was mediated through maternal depression and parenting and to a lesser extent, through investments (e.g., reading time with children). This study also found the investment perspective to be a more fitting explanatory mechanism for differences in children's academic outcomes.

In both basic and experimental research, scholars have found significant links between functioning across domains, such that there can be positive associations between maladjustment (or positive change) in one domain and maladjustment (or positive change) in another domain. Research suggests that approximately 10 % to 50 % of school-age children who exhibit CP also demonstrate poor academic achievement (Brennan, Shaw, Dishion, & Wilson, 2012; Hinshaw, 1992). This association between CP and poorer achievement is especially important based on the host of negative outcomes that can stem from greater levels of CP in combination with low achievement, such as affiliation with defiant peers, engaging in delinquent behavior, and school dropout (e.g., Brennan et al., 2012, Moilanen & Shaw, 2010). With regard to intervention studies, consistent with the

research of Hart and Risley (1995), it appears rather common to see positive collateral effects of interventions intended to impact one domain (e.g., cognitive outcomes) on others (problem behavior). Examples of such collateral effects from parenting-based interventions designed to reduce child CP are evident, such as the Family Check-Up, which in addition to showing intervention effects on parenting and CP 2 to 5 years after the intervention was initiated with low-income 2 year olds (Dishion et al., 2008, in press; Shaw et al., 2006), also has found collateral effects on emotional problems (Shaw et al., 2009), language and inhibitory control (Lukenheimer et al., 2008), and academic achievement (Brennan et al., in press). Thus, while from a theoretical perspective the investment model may seem more directly applicable to children's cognitive outcomes, it appears that parental investment in stimulating experiences and environments for children is another meaningful pathway through which income may influence the development of early-starting CP.

### **Culture of Poverty Perspective and Children's Early Conduct Problems**

While the culture of poverty perspective only has been recently resuscitated, the contribution of parental values to parenting and subsequent child problem behavior has a long tradition in child development dating back to Baumrind's (1971) typologies of parenting styles, which were heavily influenced by sociological models of socialization (i.e., Parsons & Bales, 1955). Accordingly, each of Baumrind's original three parental typologies were heavily informed by philosophical and attitudinal values regarding the appropriate balance of parental authority (authoritarian vs. authoritative parenting) and children's autonomy to govern socialization (i.e., permissive parenting). Although relatively few studies have applied the cultural perspective to the development of CP in early childhood, some relevant research has been conducted. For example, Dodge, Pettit, and Bates (1994) examined eight variables tapping aspects of socialization as mediational mechanisms to explain the link between low SES and higher child CP. One mediating mechanism they explored was mothers' values towards aggression. Using the "Culture Questionnaire" scale, mothers reported on their values toward using aggression to solve problems, answering questions such as whether they would encourage children to defend themselves by hitting another child after being teased. The authors found a significant association between SES and mothers' aggressive values, such that lower SES mothers endorsed greater aggressive values for child behavior. Higher endorsement of aggressive values, in turn, was linked to higher CP in children. Unfortunately, the authors did not isolate each of the eight socialization predictors in the mediational models, but overall, their work supported that the eight socialization predictors accounted for some of the effect of low SES on higher child CP.

### **Revisiting the Family Stress Model: Direct Influences of Parental Psychological Distress on Child Conduct Problems and Parenting on Parent Psychological Distress**

As noted above, based on children's psychological and physical dependence on parents, the family stress model posits that the effects of poverty on children's CP should be mediated, initially by its effects on parental psychological distress, then parenting quality, before affecting children's behavior. In fact, this model should be especially valid during early

childhood more so than later developmental periods because of children's increasing physical and psychological autonomy. As examples of how parenting would be expected to have a relatively greater magnitude of association with child CP and more serious forms of antisocial behavior during early childhood as compared to adolescence, consider results from the following two studies. Using data from the urban, predominantly low-income Pitt Mother & Child Project, parent supervision and limit setting in adolescence was associated with lower levels of later adolescent antisocial behavior. However, the benefits of these parenting practices were moderated by neighborhood quality, such that for those youth living in project neighborhoods the association between parenting and youth antisocial behavior were nonsignificant (Shaw, Criss, Schonberg, & Beck, 2004). Conducted in the same urban, low-income neighborhoods, but this time examining the moderating role of parental involvement in relation to associations between neighborhood risk and child CP during early childhood using an independent sample of children recruited on the basis of child, family, and socioeconomic risk (Pitt Early Steps Project), high levels of involved parenting were found to serve as a protective factor in relation to early-starting CP across levels of neighborhood risk (Supplee, Unikel, & Shaw, 2007). Whereas there is an abundance of research consistent with such a 'double mediation' perspective conducted during early childhood (Dodge, Pettit, & Bates, 1994; Linver et al., 2002; Rijlaarsdam et al., 2013), there are also clear examples of direct associations between parental psychological distress and child CP that are not mediated by parenting.

In addition to the studies by Linver and colleagues (2002) and Rijlaarsdam and colleagues (2013) described above, in which parental emotional distress or maternal depression mediated associations between poverty and child CP, there are other nonexperimental and experimental studies to suggest that pathways from poverty to parental psychological distress and later child problem behavior, including CP, are not entirely mediated by compromises in parenting. For example, past studies have linked economic hardship to depressed parental mood and marital conflict, which in turn have been associated with higher rates of disorganized attachment in early childhood, a reliable indicator of CP (Repetti, Taylor, & Seemen, 2002). Unstable work among low-income parents also has been linked to CP via compromises in caregiving quality, but also by high levels of parenting stress and parent psychological distress (Yoshikawa, Weisner, & Lowe, 2006).

In a longitudinal study of 310 boys from low-income families, maternal depression ( $d = .73$ ) and low satisfaction with social support ( $d = .80$ ) assessed when children were 18 to 24 months old discriminated teacher reports of child aggression at age 8, with higher effect sizes than parenting ( $d = .5$ ) also assessed at age 2 (Shaw et al., 2000). Second and consistent with previous intervention research (Patterson, DeGarmo, & Forgatch, 2004), in an experimental study in which 731 low-income families (i.e., recruited from Women, Infants, and Children Nutritional Supplement Programs) were randomly assigned to the Family Check-Up, an intervention designed to address parent management issues during the 'terrible twos,' effects of the intervention on the slope of children's CP from ages 2 to 4 were accounted for by improvements in positive behavior support *and* maternal depressive symptoms (Dishion et al., 2008; Shaw et al., 2009), with independent mediational effects accounted for by both parenting and maternal depression. A recent follow-up study of the

same sample seeking to unpack the processes by which parenting and maternal depression influence the course of emerging child CP suggests that high levels of maternal depressive symptoms at age 2 lead to lower rates of parent-child positive engagement and higher levels of parent-child coercion at age 5 (Reuben, Shelleby, Shaw, Dishion, & Wilson, 2013). When path models were computed from age-2 maternal depression to age-5 observed parenting to teacher reports of different types of adaptive child behavior at school, associations between early maternal depression and later child behavior were sometimes (i.e., for child inhibitory control) but not always (not for child social skills and peer acceptance) mediated by the two parenting factors.

To increase the complexity of the interrelationship between parenting and maternal depression even more, in the same sample Shaw and colleagues (2009) found that the Family Check-Up, with its focus on improving parenting skills, was associated with improvements in maternal depressive symptoms at child ages 3 and also at age 5 (Reuben & Shaw, in preparation). Why should interventions directed at improving parenting also affect maternal well-being? During early childhood when parents spend disproportionately more time with children relative to school-age children and adolescence, it is likely that parental well-being is heavily influenced by the stresses associated with parenting and overarching level of parent-child relationship quality. In addition, parental well-being would be expected to be disproportionately affected by parenting issues during the toddler period, when parenting satisfaction has been shown to decrease relative to the first year because of the challenges of dealing with a physically mobile but cognitively limited toddler (Fagot & Kavanagh, 1993; Shaw & Bell, 1993). Low-income parents might be particularly vulnerable to frustrations associated with parenting toddlers because of their greater probability to be single-parents and not have the resources to afford high quality out-of-home child care. Hence, by addressing parenting skills at a point of developmental transition that routinely challenges parents with good caregiving skills and adequate financial resources (i.e., the 'terrible twos'), parental well-being was also improved for this sample of low-income mothers.

## **Revisiting the Family Stress Model for Conduct Problems for Young Children's Living in Poverty**

Based on the pattern of findings reviewed above, we suggest that with respect to early-starting CP for children living in poverty, it would behoove researchers to formally revise the family stress model so that it more accurately reflects the direct effects of compromised parental psychological resources on children's emerging disruptive behavior. From an empirical basis, most of this research on parent psychological resources has come from work on the effects of maternal depressive symptoms among samples of low-income families (Shaw et al., 2009, 2012). Although other models have also recently conceptualized dimensions of parent psychological resources to exert independent effects on a variety of child mental, emotional, and health outcomes after accounting for parenting for both young and school-age children and adolescents (Yoshikawa et al., 2012), we are specifically proposing to elevate the direct contribution of maternal psychological distress, most consistently measured as maternal depressive symptoms, in relation to young children's

emerging CP. As shown in Figure 3, we also posit *bidirectional* associations to be evident between parenting and maternal depression and other forms of parental distress, particularly during the ‘terrible twos’ when frustrations associated with rearing a physical mobile but not cognitively sophisticated toddler have been linked to decreases in parental satisfaction relative to the infancy period (Fagot & Kavanagh, 1993; Shaw & Bell, 1993). Consistent with this notion that the toddler period is more stressful for parents relative to other periods of early childhood, even within the context of poverty, symptom levels of maternal depression have been found to decrease in early childhood in low-income samples after peaking at age 2 (Reuben & Shaw, in preparation; Shaw et al., 2000). Findings from both developmental and experimental intervention studies also suggest such a bidirectional association between parenting and maternal depression (Conger et al., 1994; Shaw et al., 2009). Although it is relatively commonplace for models of parenting and maternal depression to posit bidirectional influences between parenting and parental well-being (Belsky, 1984; Goodman & Gotlib, 1999; Goodman et al., 2011), perhaps for sake of simplicity proponents of the family stress model often have suggested a one-way path from maternal depression and other forms of psychological distress (e.g., parenting stress, low social support, marital dissatisfaction) to suboptimal parenting. However, there is ample evidence from both passive longitudinal studies and experimental intervention trials to suggest both parenting effects on maternal well-being and maternal depression effects on parenting (Shaw et al., 2000, 2003, 2009).

### **Mechanisms Underlying How Associations between Maternal Depression and Early Child Conduct Problems Would Not Be Mediated by Parenting**

We now focus on revisiting and revising the Family Stress Model specifically in relation to young children’s emerging CP for families living in poverty. It should be viewed as a model awaiting further empirical validation and theoretical development. We chose to focus our attention on revising the Family Stress Model rather than the Parental Resource/Investment or Culture of Poverty perspectives because of the greater amount of research on the Family Stress Model in comparison to the other two models in relation to young children’s CP, particularly in relation to the amount of data on the Culture of Poverty perspective. In addition, from a theoretical perspective, the logic linking parenting and parental psychological resources to child CP stands on firmer ground than the Resource/Investment perspective, which focuses more directly on how poverty compromises opportunities parents have providing enriching resources for learning in and outside the home and associations with children’s cognitive outcomes, including academic achievement at school.

Given that the current work addresses links between poverty and CP in very young children ages 0-5, some might beg the question – how could the effects of parental psychological distress not be mediated through parenting? Indeed, there are substantive reasons for why theorists of the Family Stress Model have been hesitant to posit direct associations between maternal depression and other types of psychological resources and child CP (and other child outcomes) that are not mediated by parenting. Consistent with the child’s greater levels of psychological and physical dependence on parents during early childhood relative to later developmental periods, it follows that parenting behavior shown by the caregiver should be the primary vehicle through which the pervasive stressors of poverty are communicated to

young children. In fact, some of the direct effects found between parental psychological resources and child CP should be accounted for parenting depending on the content of parenting factors assessed and their quality of measurement (e.g., based only on self-reports, covering narrow dimensions of parenting that have been not consistently related to CP). Nonetheless, based on the consistency of findings across variations in the quality of measurement, the scope of parenting factors assessed, and research designs (e.g., cross-sectional vs. longitudinal vs. longitudinal and experimental), it appears likely that variation in parent psychological resources contribute independent variance to the development of early-starting CP beyond their indirect influence on CP through parenting.

To increase the focus of this discussion, we chose to focus on maternal depression rather than other measures of parental psychological resources because of the substantial body of research linking lower income to higher levels of parental depression, specifically maternal depression (Goodman & Gotlib, 1999; Shaw et al., 2009). Individuals of lower SES backgrounds experience depression at significantly higher rates than those of higher SES backgrounds (Lorant et al., 2003). Further, while an estimated 17% of mothers of young children demonstrate elevated depressive symptoms (Horwitz, Briggs-Gowan, Storfer-Isser, & Carter, 2007), in the context of low SES, other researchers have found that the percentage increases to nearly 50% (Hall, Williams, & Greenberg, 1985). In addition, depression has been measured more than any other individual parental factor in relation to both parenting and child CP (Goodman et al., 2011; Shaw et al., 2009). Whereas we agree that many facets of parenting previously linked to maternal depression would be accounted for in examining associations between maternal depression and emerging child CP (e.g., hostile, rejecting, and inconsistent caregiving, modeling of these behaviors, higher rates of acrimonious, coercive interaction), models from developmental psychopathology also suggest alternative paths by which the effects of maternal depression would be transmitted intergenerationally during early childhood. First, genetic factors have been implicated in the intergenerational transmission of depression and other forms of psychopathology related to emotion dysregulation, including child CP (Kovacs & Devlin, 1998), with stronger genetic associations found based on the severity of adult depression and earlier timing of onset (Goodman & Gotlib, 1999). Genetic factors may also indirectly increase risk of CP by increasing the heritability of specific traits linked to CP, such as expression of negative emotion (Plomin et al., 1993) and irritability (Goldsmith, Buss, & Lemery, 1997), which in turn place young children at greater risk to react to stressful life events in a disruptive manner. Note that the genesis of individual differences in negative emotionality and irritability may be genetically mediated or if depressed during the pregnancy, through prenatal exposure to neuroendocrine alterations associated with depression, such as constricted blood flow to the fetus (Kagan, 1994). Both of these genetic and prenatal mediated-pathways would likely increase the stress of parenting for depressed mothers relative to nondepressed caregivers, thereby exacerbating parenting stress and subsequent levels of maternal depression. Consistent with this perspective, from the intervention literature Patterson and colleagues (2004) found that improvements in parenting were related to decreases in child CP, which in turn were related to decreases in maternal depression (Patterson et al., 2004). Note that changes in maternal depression were not immediately evident until improvements in child behavior were apparent.

Second, another reason that the effects of maternal depression on child CP have not been found to be mediated through parenting involve the measurement of parenting. Maternal depression is often characterized by the *omission* of caregiving behaviors that are routinely carried out by nondepressed parents. Such omissions may not be captured readily in many parenting coding systems. For example, depressed mothers have been shown to demonstrate high rates of passivity and withdrawal when interacting with their young children (Gelfand & Teti, 1990). Whereas some of this inactivity would be evident from coding contingent *reactive* responsivity to infant cues during infancy and the toddler period, as this style of inactivity also would be expected to include opportunities to be *proactively* responsive by anticipating young children's developmental needs (e.g., anticipating trigger events that elicit frustration or anxiety, bringing toys to entertain on a long car ride or at the grocery store, waiting at the doctor's office), such inactivity would less likely be captured in traditional assessments of parenting (Dishion et al., 2008; Gardner, Ward, Burton, & Wilson, 2003). Thus, parenting may be a stronger mediator of the associations between maternal depression and child CP than previously found because of inadequacies in measuring idiosyncratic caregiving dimensions commonly shown by depressed parents.

A third mechanism by which the association between maternal depression and early-starting CP may not be accounted for by parenting is the consistent covariation in the adult literature between stress and depression. Perhaps most relevant for children living in poverty, who already are exposed to high levels of stressful events in their daily lives, Hammen (1991) has suggested that many of the negative life events experienced by depressed adults, including parents, may represent a consequence rather than a cause of their depression (Goodman & Gotlib, 1999). Evidence for this mechanism of transmission comes from multiple sources. For example, Hammen and colleagues found that depressed mothers reported higher levels of stress in the domains of marital and social relationships, finances, and employment than mothers who were medically ill or were physically well (Hammen, 1991). Among these domains, perhaps the most consistent stressor for which children of depressed mothers are exposed is marital conflict, which in turn, has been identified as another consistent predictor of child problem behavior, including CP (Gotlib, Lewinsohn, & Seeley, 1998). At a broader level, maternal depression has also been linked to underclass neighborhood mobility. Using data from the first-author's Pitt Mother & Child Project, after accounting for such factors as race, parental criminality, family income, and educational and occupational attainment, within a low-income, urban sample, maternal depression independently predicted downward mobility among residents of non-underclass neighborhoods (i.e., to project neighborhoods) and remaining versus leaving underclass (i.e., project) neighborhoods (Winslow, Shaw, Yaggi, & Dougherty, 1999). In turn, living in project neighborhoods was related to a more persistent and high versus high desistant course of child CP from ages 2 to 6 (Winslow & Shaw, 2007). This greater-exposure-to-stressors mechanism complements and expands the perspective of Evans (2004), who in characterizing the daily environmental stressors experienced by low-income children, has noted their greater exposure to structural deficits in the quality of their housing (e.g., leaky roofs, rodent infestation, poor heating), higher levels of air pollution, neighborhood levels of crime including shootings (Evans, 2001, 2004). Exposure to these stressors, would also be expected to be amplified for low-income children living with a depressed parent, who would



likely place young children in more vulnerable contexts than nondepressed mothers living in poverty.

## **Implications for Hybrid Model for Basic Research, Prevention, and Intervention**

Although we focused on revisiting and revising the Family Stress Model specifically in relation to young children's emerging CP for families living in poverty, nonetheless, we encourage future longitudinal *and* experimental research testing the validity of the Resource/Investment and the Cultural Perspective in relation to young children's CP. Clearly, as demonstrated by Hart and Risley (1995) and others (Brotman et al., 2012; Lunkenheimer et al., 2008), it is common to see positive collateral effects on interventions intended to impact one domain, such as CP, on others, including interventions that seek to improve cognitive abilities on child problem behavior. Although research driven by the Cultural perspective is limited in relation to CP (Dodge et al., 1994), particularly in early childhood, it also would be most intriguing to explore how cultural differences in the appropriate use of aggression emerge from a developmental perspective. For example, when are such differences first communicated to children in early childhood (e.g., infancy, toddler period, preschool) and beginning in the late toddler period or preschool period, when do young first become aware about the appropriate use of aggression in the context of peer and sibling interactions? Furthermore, at what age would it be possible for children to be directly assessed about their use of aggression using puppets, vignettes, or other visual mediums?

## **Potential Moderating Effects of Poverty on Effectiveness and Implications for the Design of Preventive Interventions**

Based on the long established pattern of association between different dimensions of poverty and early-starting CP, including both direct effects through exposure to toxins, pollutants, and living in high-risk neighborhoods (Evans, 2004; Ingoldsby & Shaw, 2002), and effects mediated by aspects of the home environment discussed above (Conger et al., 1994; Patterson, 1982), it would follow that effecting lasting change in young children's CP living in poverty would be a challenging undertaking. Such moderating effects of poverty have been consistently found when assessed by comparing effect sizes of two of the most well-known evidence-base practices: Old's (2002) Nurse Family Partnership and Webster-Stratton's (1990) Incredible Years Program. Although in both cases, positive intervention outcomes have still been evident with samples of predominantly low-income families, relative to their outcomes in relation to young children's emerging CP with less pervasively socioeconomically disadvantaged samples, effect sizes have been substantially smaller (Baydar, Reid, & Webster-Stratton, 2003; Olds, 2002).

Consistent with the tenets of the Family Stress Model and other models emphasizing the etiological role of parent management strategies (and their malleability) in treating early-starting CP (Patterson, 1982), most intervention programs specifically targeting CP in early childhood logically focus on modifying parenting practices and implicitly, improving the quality of parent-child relationships. However, based on the evidence cited above indicating

pathways between poverty and parental psychological resources leading to child CP that are not mediated by parenting, it would behoove prevention scientists to consider expanding their target domains to include factors that both compromise parenting quality and appear to be independently associated with child CP and quite commonly found for parents living in poverty (e.g., maternal depression, parental distress, parental conflict, parental social support). Anecdotally, this premise is supported from the first author's work supervising the cases of two urban, low-income cohorts of toddlers with presenting CP problems, with only a minority of families following the classic profile characterized and driven by coercive parent-child interaction. One pattern included parents with reasonably strong parenting skills (i.e., as demonstrated when given the opportunity to work with their child one-on-one in our in-home assessments) challenged by their own mental health concerns (e.g., depression) and/or the stressors associated with raising multiple young children alone with few economic or child care resources. Other parents struggled with past traumas and/or current substance use issues, which impeded their ability to be actively engaged with their child, much less manage their child's disruptive behavior (Shaw, 2013). These observations also are consistent with the logic of Dishion's Family Check-Up model (Dishion & Stormshak, 2007), in which following an ecological assessment of family strengths and challenges, intervention is tailored to fit the risk profile of the individual family. Also in accord with our revised version of the Family Stress Model, programs targeting the prevention of CP for children living in poverty may wish to dedicate more time to the initial assessment of family and community issues that might be directly or indirectly influencing the child's current problem behavior.

In addition to modifying the content of intervention programs designed to reduce risk of emerging CP in early childhood, another relevant issue for families living in poverty with a disruptive child is accessibility. Even for parents who recognize their young child's level of disruptive behavior to be markedly high, without resources for transportation and child care of siblings, families' ability to initially engage and maintain engagement in intervention services is often limited. A related factor is location – in what settings is it possible to identify low-income families who are struggling to manage their young child's behavior and engage them in services in a nonthreatening way? To actually reduce levels of early-starting CP at the *population* level, identifying new platforms and methods to reach and engage low-income families with toddlers and preschool children represent monumental challenges (Shaw, 2013). Fortunately, there are existing examples of 'outreach' programs, including Webster-Stratton research in Head Start centers (Webster-Stratton et al., 2001), Brotman and colleagues work with younger siblings of adjudicated youth (Brotman et al., 2005), and Dishion, Shaw, and colleagues' work at WIC centers (Dishion et al., in press; Shaw et al., 2006). Following in the steps of Olds' (2002) intervention program in engaging at-risk pregnant women in the Nurse-Family Partnership, Dodge and colleagues (Dodge, Goodman, O'Donnell, Sato, & Guptill, 2012) recently have initiated a home visiting program in very early childhood, recruiting parents in hospitals following the birth of their child. Carried out by nurses, random assignment of all children born in Durham, NC during one year resulted in fewer emergency room and overnight hospital visits (Dodge, Goodman, Murphy, O'Donnell, & Sato, in press), more community connections, more positive parenting, use of higher quality out-of-home care, and reduced rates of maternal anxiety when infants were 6

months old (Dodge et al., 2012). Although not yet formally linked to reduced rates of child CP because of the duration of the follow-up, based on established linkages between early parenting, social support, and parental psychopathology with child CP (and consistent with an early-starting cascade model of problem behavior), the program shows promise for preventing rates of early-starting CP.

In addition to using Head Start, WIC, and hospitals as platforms to provide intervention services, other promising alternatives include Early Head Start centers and primary care centers serving predominantly low-income families (Shaw, 2013). Head Start centers are particularly appealing because of research suggesting greater predictive validity associated with children demonstrating CP in multiple contexts (Campbell et al., 2000). Being able to engage parents based on the child's level of disruptive behavior at the Head Start center would provide an opportunity to assess similarities in child behavior across contexts and caregiving strategies that appear to be effective or ineffective at home and at preschool (Webster-Stratton et al., 2001). By enlisting the cooperation of both parents and teachers, an intervention package could be formulated that emphasized consistent ways of managing the child's behavior across contexts, with both parent and teacher input used to identify the most pressing concerns and optimize ways of addressing these issues in a consistent manner. Primary care centers are also attractive because of the trust parents typically bring to the pediatrician's office, adding credibility to the intervention program. Pediatricians themselves are typically overburdened with the number of patients they are required to see each day, and often have modest levels of expertise in behavioral health methods, much less the requisite time to deal with young children's oppositional and aggressive behavior.

Revisiting Figure 1 and the Resource/Investment and Cultural Models also suggests some targets for the design of preventive interventions aimed at reducing early-starting CP. Short of increasing income for families, which we will address in more detail below, the Resource and Investment perspective suggests that providing greater time for parents to spend with children and improving the quality of care in children's home and extra-familial environments, as well as health care, should lead to improvements in child functioning, including reductions in problem behaviors. One innovative intervention consistent with both the Family Stress and Resource/Investment models has found strong effects on infants' and toddlers' cognitive development in low-income, ethnically diverse families. Mendelsohn and colleagues (Mendelsohn et al., 2005) have capitalized on the popularity and credibility of the Reach Out and Read Program to initiate video feedback intervention with low-income parents of infants. The intervention emphasizes parents learning to be more contingently responsive and sensitive to their infant's needs while reading and playing with them, with each session videotaped and select excerpts shown to parents at the next meeting. Importantly for fostering cognitive development, parents are provided direct feedback in ways parents can facilitate learning. To maximize parent's limited time, intervention sessions are conducted while parents are waiting for well-baby visits at primary care centers.

To our knowledge, interventions specifically designed to address the Cultural perspective have not been formally developed, as this perspective suggests that parents' philosophies and values about the appropriate use of aggression would lead to parents being 1) less active in prohibiting children's use of aggression to resolve problems, and/or 2) actively

encouraging children to use aggression to resolve problems with peers, siblings, and possibly older children and adults. As low-income parents living in high-risk communities might see their children's use of aggression as being adaptive to their children's context, it may be quite challenging to convince parents that teaching their children to 'hit back' or initiate aggression in the face of interpersonal conflict is maladaptive. However, in our work with low-income parents holding such perspectives about the use of aggression, using Motivational Interviewing techniques (Miller & Rollnick, 1991) within the context of the Family Check-Up intervention (Dishion & Stormshak, 2007), we have found parents to be open about revisiting their philosophies and management strategies with respect to young children's use of aggression after reflecting upon the benefits and adverse consequences of their child's use of aggression at home with siblings and in preschool with peers and teachers. Upon reflection, parents are often open (but not always) to changing their own rather aggressive caregiving practices, which can unwittingly encourage children to show this behavior outside of the home through modeling. Parents can then teach children to choose when to be aggressive rather than have it be their reflexive and only strategy for resolving conflicts.

## **Income as an Incentive for Improving Child Problem Behavior: Behavioral Economics**

As depicted in Figure 1, according to all three models postulating indirect effects of poverty on child outcomes, including CP, an obvious target for intervention is family income, or at least placing parents in a better position to earn more through job training. As discussed earlier, the MFIP program randomly assigned welfare recipients with young children into a treatment group that received employment training and financial supplements and a control group, which resulted in moderate intervention effects on CP (Morris & Gennetian, 2003). Similarly, taking advantage of a "natural experiment" when a casino opened in the middle of a prospective study of psychopathology among a representative rural sample of 1420 children (one quarter American Indian) ages 9 to 13, symptoms of conduct and oppositional disorders (but not anxiety or depression) among previously poor children decreased to levels of never-poor children, with levels of persistently-poor remaining high (Costello et al., 2003). Although the precise mechanisms underlying associations between increases in income and/or employment skills in relation to decreases in CP are not clear, findings from both studies suggest the potential of increasing income to achieve reductions in child CP and other child outcomes (e.g., school readiness outcomes), likely through decreasing parental stress and improving family resources.

Recently, researchers in the area of behavioral economics have been taking advantage of potential increases in motivation increases in income might elicit to design and test incentive-based strategies for improving conditions for low-income families and children (Aber, 2010; Thaler & Sunstein, 2008). The question is whether through offering cash incentives, is it possible to paternalistically "nudge" low-income parents to do "the right thing" for their children by adhering to health and medical care that promotes prosocial child outcomes. Although much of this research has been directed at improving children's educational performance (Slavin, 2009) or more broadly defined outcomes (e.g., children's

human capital development) in Latin America, South Asia, and Africa (Aber, 2010), based on the pattern of collateral intervention effects documented earlier for programs focusing on either educational achievement or problem behavior, it follows that using behavioral economic approaches similar gains could potentially be generalizable in reducing child CP.

## **Increasing Role of Peers and Neighborhood Context during Middle Childhood and Adolescence**

The current review focused on the intersection between poverty and child CP during early childhood, focusing primarily on within-family factors that mediate associations between poverty and child CP. Whereas the contribution of parenting and parent psychological resources remain important as children move into middle childhood and adolescence, the contribution of peers clearly increases as children spend increasingly more time out of the home environment. As noted earlier, peer effects have now been established on CP for children as young as age 5 based on interactions observed at school (Snyder et al., 2005). Similarly, we know that the contribution of neighborhood adversity on risk for child CP increases as children progress to the school-age period, also likely a function of children's increasing levels of contact with same-age and older peers, as well as other adults in the neighborhood (Duncan et al., 1994; Kellam et al., 1998). Clearly future research examining the validity of the family stress, investment, and/or cultural perspectives needs to incorporate the increasing contributions of peers and neighborhood factors linking poverty to child CP and more serious forms of youth antisocial behavior.

## **Conclusions**

The current paper sought to review extant literature on the intersection between poverty and the development of child CP in early childhood. Consistent with previously developed models linking the effects of poverty to young children's problem through mediating factors in children's family environments, we sought to expand upon the family stress model by emphasizing the direct contribution of parent psychological resources on children's risk for early CP, in addition to indirect effects on parenting. In particular, in we focused on the contribution of maternal depression, both in terms of compromising parenting quality and exposing children to higher levels of stressful events and contexts. We believe the model proposed in the current paper is highly testable and falsifiable and if continued to be proven valid, has important implications for both the prevention and treatment of young children's emerging conduct problems.

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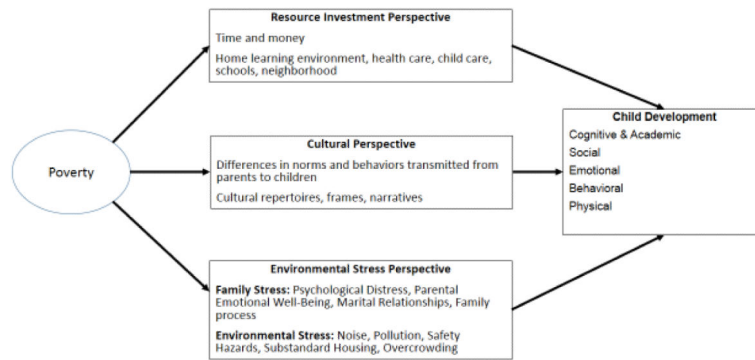
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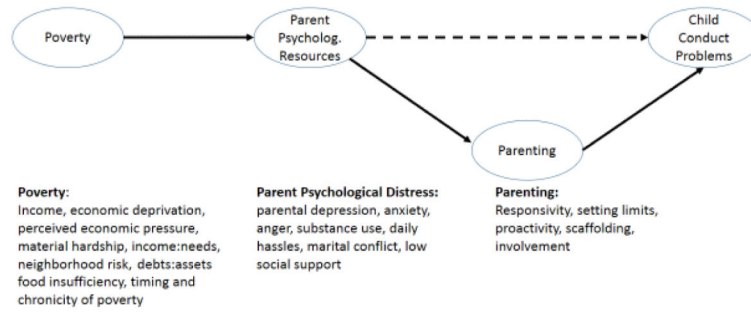
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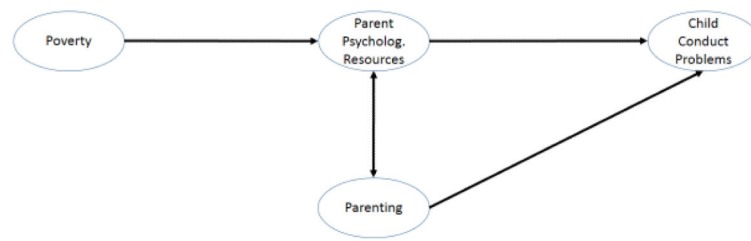
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**Figure 1.** Models and mechanisms by which Poverty Influences Child Development



**Figure 2.**  
Family Stress Model Applied to Early Conduct Problems



**Figure 3.**  
Family Stress Model Applied to Early Conduct Problems: *Revised*