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Future Directions for Research on the Development and Prevention of Early Conduct Problems

Daniel S. Shaw

University of Pittsburgh

Abstract

This paper describes our state of knowledge regarding the development and prevention of conduct problems in early childhood, then identifies directions that would benefit future basic and applied research. Our understanding about the course and risk factors associated with early-developing conduct problems has been significantly enhanced during the past three decades; however, many challenges remain in understanding the development of early conduct problems for girls, the contribution of poverty across variations in community urbanicity, and developing cascading models of conduct problems that incorporate prenatal risk. Significant advances in early prevention and intervention are also described, as well as challenges for identifying and engaging parents of at-risk children in nontraditional community settings.

Review of Extant Literature: What We Know

During the past three decades, our understanding of the developmental course and factors associated with the establishment and maintenance of children's early conduct problems (CP) has advanced exponentially. For the purposes of the present paper, CP include primarily oppositional and aggressive behaviors, with the knowledge that these types of behaviors are often accompanied by symptoms of ADHD, most notably hyperactivity and impulsivity. Beginning with the pioneering works of Campbell and colleagues (Campbell, Pierce, March, Ewing, & Szumowski, 1994) and Richman, Stevenson, & Graham (1982), who were the first researchers to systematically follow the developmental course of hard-to-manage children from the preschool to school-age periods, the field has been developing a richer understanding of both the continuity of early CP from early to middle childhood and beyond, and child, family, and community risk factors associated with their genesis and persistence. A similar developmental progression has followed for research focused on the prevention and treatment of CP during early childhood, although the start of these efforts has lagged behind those investigating basic developmental issues (Eyberg, 1988; Webster-Stratton & Hammond, 1997). The goal of this paper is to briefly review our knowledge base on the course of CP during early childhood (0 to 5), factors reliably associated with its onset and persistence, and advances in prevention and treatment of early-starting CP. The bulk of the paper will then be devoted to discussing future directions for both basic research and prevention and intervention efforts.

Studying Conduct Problems in Early Childhood: Why Start So Young?

There has been growing interest in identifying very young children at risk for early and persistent trajectories of CP (Shaw & Gross, 2008). 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 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 preschool (Moffitt & Caspi, 2001) period or earlier (Hill, Degnan, Calkins, & Keane, 2006; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005; Shaw et al., 2003), it has now been repeatedly documented that a subset of early-starter youth can be identified during early childhood beginning around age 3 (Campbell et al. 1994; 1996; 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; Tremblay & Cote, 2005) has been further reinforced based on findings from two interrelated areas: onset patterns for early disruptive behavior and preventive intervention research. 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 very 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 90th percentile on broad factors of externalizing symptoms at age 2, 63% remained above the 90th percentile at age 5, and 97% remained above the median (Shaw et al., 2000). At age 6, 62% remained at or above the 90th 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 50th 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 95th 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, 1993; 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 (Baydar, Reid, & Webster-Stratton, 2003; Olds, 2002; Shaw, Dishion, Supplee, Gardner, & Arnds, 2006). 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.

The Course and Stability of Early Conduct Problems

In general, the stability of most types of child behavior assessed during infancy in relation to the same or comparable behavior in adolescence is modest, including behaviors known to

have high levels of stability and heritability (e.g., intelligence). It is therefore unclear why one might expect the stability of disruptive behavior to be high between infancy and adolescence. In fact, when different informants have been used to measure continuity between initial disruptive behavior in children less than 2 years of age and later CP, or between early temperament variables associated with CP (e.g., negative emotionality, attention, fearlessness) and later CP, continuity has been modest to nonexistent (Aguilar et al., 2000; Rende, 1993; Shaw, Owens, Giovannelli, & Winslow, 2001). However, consistent with studies of other types of behavior shown to be stable during childhood (e.g., intelligence, sociability), when measured between the ages of 2 and 3, CP and temperamental factors begin to show modest to moderate correlations with CP and more serious forms of antisocial behavior assessed in late middle childhood and adolescence (Campbell et al., 1996; Caspi, Henry, McGee, Moffitt, & Silva, 1995; Henry, Caspi, Moffitt, & Silva, 1996; Olson, Bates, Sandy, & Lanthier, 2000; Olweus, 1979). Interestingly, studies that have found the strongest support for stability, or at least heterotypic continuity in behavior have assessed behavior in early childhood using observational methods beginning around age 3 (Caspi et al., 1995).

Risk factors Associated with Early Emerging Conduct Problems

Similar to the literature on risk factors associated with antisocial behavior during middle childhood and adolescence, several risk factors across child, 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 (Aguilar et al., 2000; Bates, Maslin, & Frankel, 1985; Sanson, Oberklaid, Pedlow, & Prior, 1991), fearlessness (Shaw et al., 2003), and verbal, spatial, and language skills (Moffitt, 1990; Raine, Yaralian, Reynold, Venables, & Mednick, 2002; Stattin & Klackenberglarsson, 1993; Werner & Smith, 1992). 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). 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 & Gross, 2008). 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 during the preschool and school-age years. With respect to attachment theory, parenting characterized by insensitivity and low responsiveness would be associated with distrustful internal working models and children who have little motivation to comply with parental requests for prosocial behavior based on a history of unresponsive care (Aguilar et al., 2000; Erickson et al., 1985; Lyons-Ruth et al., 1993; Shaw & Bell, 1993). Thus, studies of harsh, rejecting, and overcontrolling parenting (Campbell et al., 1996; Shaw et al., 1994, 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., 1998, 2000, 2012).

Future Directions for Research on the Development of Early Conduct Problems

Despite the immense increase in our level of understanding of the course of early-starting CP and risk factors associated with their onset and persistence, as well as advances in the prevention and treatment of early CP, many holes remain to be filled in our knowledge base. The remainder of this paper discusses some of these gaps in our understanding. This review is not meant to be exhaustive, but to highlight some of the more salient issues for both basic and applied research.

The Course and Stability of Early Conduct Problems: Moderating Risk Factors

Child Sex—Based on the pioneering work of Richman and Campbell (Campbell et al., 1994, 1996; Richman et al., 1982) and other researchers who have traced the course of early-starting CP from the toddler to the school-age period and in some cases, through adolescence and beyond (Aguilar et al., 2000, Bates et al., 1985; Moffitt, 1990; Sanson et al., 1991; Shaw et al., 2000, 2003, 2012), we have learned that rates of stability through the school-age period tend to be modest to moderate, with increasing continuity gained by assessing children at later versus earlier ages (i.e., 4 to 5 versus 2 to 3), with persistence rates being as high as 50% (typically using only parent reports). As many early studies focused primarily on boys (e.g., Campbell et al., 1996; Shaw et al., 2003) because of males' higher risk for engaging in more frequent and serious antisocial behavior beginning around age 4 (Keenan & Shaw, 1997), it is only recently that longitudinal studies initiated during the toddler period have included large sample of at-risk toddler-age girls (Hill, Degnan, Calkins, & Keane, 2006; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Whereas many prevention programs have been designed to target parenting or child behavior linked to the development of CP, most of this research base comes from studies that have used primarily male samples. We know a lot less about the predictive validity of traditional child and family risk factors for girls than we know for boys, including such variables as child fearlessness, inhibitory control, and unresponsive and hostile parenting. In part, future research on risk factors for girls' early-starting CP would be invaluable to account for sex differences in CP that emerge in the latter part of the preschool period. Data available suggest that differences in the magnitude of association between individual risk factors and boys' and girls' vulnerability for CP are not consistently found (Brennan & Shaw, in press); rather, it appears that boys' greater vulnerability for CP is based on their greater number of child (versus family) risk factors evident in early childhood (e.g., language delays, higher rates of inattention, impulsivity), consistent with their higher rates of neuropsychological problems (learning disabilities, autism, ADHD; see Keenan & Shaw, 1997). In addition, limited data on the effectiveness of parent-focused interventions for reducing early childhood CP suggest no differences in treatment response based on child sex (Beuchaine, Webster-Stratton, & Reid, 2005; Dishion et al., 2008). However, data on risk factors associated with the development of girls' early-starting CP could still be helpful in tailoring interventions, which are now primarily dictated by research on associations between child and family risk factors associated with CP for early-starting boys. If, for instance, as some research has found (Martin, 1981; Shaw et al., 1994, 1998), that girls are less vulnerable to the effects of unresponsive parenting during infancy in relation to emerging oppositional and aggressive behavior, interventions may place less emphasis on modifying these aspects of parenting for disruptive girls versus boys.

Poverty—Another issue that merits attention based on low-income children's greater risk for developing clinically-meaningful levels of CP (Carter et al., 2010; Heiervang et al., 2007) is formulating models that better reflect the pervasiveness of risk factors associated with living in poverty. There has been much value in adopting family stress models, first articulated by Elder (1974), and later refined by others (Conger et al., 1992; McLoyd, 1990), in which the stressors associated with poverty on emerging child CP are conceived to be mediated by effects on parenting. However, more recent efforts in characterizing the daily environmental stressors experienced by low-income children also have 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, and higher levels of parental psychopathology and family conflict/chaos in the home (Evans, 2001, 2004; Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005; Shelleby et al., 2012). Models of CP have traditionally found that associations between socioeconomic risk and child CP are mediated by parenting attributes (Conger et al., 1992; Patterson, 1982), a pathway that would be even more readily evident during early versus later childhood based on young children's greater psychological and physical dependence on parents during early childhood. However, relatively little of this research has been conducted with samples of predominantly low-income families and focused primarily on CP. For example, in an experimental trial of the Family Check-Up intervention conducted with 731 low-income families recruited from Women, Infant, and Children Nutritional Supplement Centers in rural, suburban, and urban communities (Dishion et al., 2008), changes in both parenting *and* maternal depression evident in relation to engagement in the Family CheckUp were found to *independently* mediate associations between the intervention and children's emerging CP from ages 2 to 4 (Shaw et al., 2009). Whereas modifying parenting was linked to improvements in child CP, additional improvements were found by reducing maternal depressive symptoms, suggesting that while important, other facets of low-income's children ecology might be important to address in modifying early patterns of CP. One of the reasons for carrying out parenting interventions in group formats (e.g., the Incredible Years) was to facilitate parents developing support networks to address issues that compromise parenting quality (e.g., social support and parental well-being).

Relatedly, the precise types of community-level, environmental stressors for those living in poverty vary by level of urbanicity, with most research in this area conducted on children from large urban communities (Miller, Votruba-Drzal, & Setodji, in press). Urban, suburban, and rural areas differ in terms of their population density, resources, availability of transportation, and social and community capital. Rural communities are often characterized by lack of access to public transportation, health care, libraries, child care, and other social services (Vernon-Feagans, Gallagher, & Kainz, 2008), inner-city neighborhoods often include little green spaces, high rates of crime and poverty concentration, overcrowding, and noise and air pollution (Evans, 2006), while low-income families living in suburban communities report feeling isolated from social service providers and social support (Miller et al., in press). It remains to be seen how these differences in urbanicity relate to the development and persistence of CP.

Subtypes of Conduct Problems

Based on research suggesting that the persistence of early-starting CP can be predicted by its intensity and pervasiveness (e.g., evident at home and preschool), and the co-occurrence of related problem behaviors (e.g., ADHD symptoms, emotional problems; Campbell, Shaw, & Gilliom, 2000), it is recommended that researchers continue to investigate patterns of CP and related problem behaviors beginning in early childhood. For example, using existing longitudinal databases noted earlier, several researchers could test the pervasiveness issue by examining whether toddlers with primarily elevated CP symptoms are more likely to

continue to show elevated levels of CP during middle childhood than toddlers with co-occurring ADHD and/or internalizing symptoms. As with research on sex differences, it would also be helpful to know whether children with co-occurring patterns are more or less likely to respond to early interventions. In an example of this type of analysis, Connell and colleagues (2008) found that the Family Check-Up was more successful in reducing problem behavior from ages 2 to 4 among children with CP *and* co-occurring internalizing problems than children with CP alone. This finding is somewhat surprising finding based on the relative brevity of the Family Check-Up (i.e., mean of 3–4 sessions per year over two years), but consistent with other intervention research suggesting that initial levels of problem behavior predict more positive intervention outcomes (Conduct Problems Prevention Research Group, 2007, 2011; Shelley & Shaw, 2012).

Just as rumination has been linked to a more persistent course of depression for adolescent girls (Nolen-Hoeksema & Girgus, 1994), a growing body of research on school-age children and adolescents has demonstrated that children with high levels of callous and unemotional (CU) behavior show a more severe and stable course of CP and more serious forms of antisocial behavior (Frick, 2012; Frick & White, 2008). Recently, efforts have been made to operationalize CU-like behaviors for younger children (Dadds, Fraser, Frost, & Hawes, 2005; Pardini, Obradovic, & Loeber, 2006), including toddlers and preschoolers (Hyde et al., in press; Waller et al., 2012). Using developmentally-comparable items, a factor for “deceitful-callous” (D-C) behaviors emerged for children who demonstrated low levels of empathy coupled with a propensity to lie, with factor loadings moving into acceptable ranges at ages 3 and 4 (versus age 2). From the same trial of the Family Check-Up described above, D-C behaviors at age 3 predicted problem behavior concurrently and longitudinally within and across informant, contributing to the prediction of age 4 CP after accounting for age-3 levels of CP (Hyde et al., in press). In terms of moderating intervention response, D-C behaviors did not moderate intervention response to the Family Check-Up, a parenting-focused intervention. As other research has suggested that 4 to 8 year-old children with CP and CU respond less favorably to parent training than CP-only children (Hawes & Dadds, 2005), this finding raises the possibility that CU-like behaviors might be more malleable to parenting interventions during the toddler period. Clearly more research on this topic is warranted, including continued validation work on the construct of D-C behaviors and its longitudinal course, as well as response to intervention.

Cascading models of early conduct problems: When to Begin?

In the past decade, much attention has been drawn to cascade models of child CP and substance use (Dodge et al., 2009; Masten et al., 2005; Sitnick, Shaw, & Hyde, in press). This research has emphasized how factors in early childhood, most notably early coercive parenting practices and escalating levels of child CP, lead to more severe conduct and academic problems during the school-age period, which in turn leads to peer rejection (by normative peers) and affiliation with deviant peers (Dishion, Capaldi, & Yoerger, 1999; Dodge et al., 2009; Kellam, Brown, Rubin, & Ensminger, 1983; Shaw et al., 2003; Sitnick et al., in press), and more serious antisocial behavior, substance use, and high-risk sexual behavior. However, from research on prenatal risk factors, most notably direct linkages between prenatal exposure to alcohol and tobacco and increased risk of early-starting antisocial behavior (Brennan, Grekin, & Mednick, 1999; Fergusson, Horwood & Lynskey, 1993; Jacobson & Jacobson, 1994; Olson et al., 1997), it is clear that the field would benefit by conceptualizing how risk process are set in motion for coercive parent-child interaction and toddler-age CP beginning in the prenatal period. The effects of prenatal tobacco and alcohol use also appear to be moderated by the quality of the post-natal environment, including family conflict, early parenting, and parental mental health (Ellis, Zucker, & Fitzgerald, 1997; Loukas, Zucker, Fitzgerald, & Krull, 2003). Moving beyond correlational

studies, it should also be noted that interventions designed to improve prenatal physical and psychological health have repeatedly been linked to reduced levels of offspring antisocial behavior in childhood and adolescence (Olds, 2002). Connecting the more developed research base on risk factors associated with early-starting CP in the toddler period with studies initiated during the prenatal period would be of great value for more carefully delineating pathways linked to early-starting CP. It is possible that similar cascading processes theorized to occur between early childhood and early adolescence might become manifest before children are born.

Moreover, Utilizing genetically-informed designs would allow researchers to better partition the contribution of prenatal and post-natal environmental influences from genetic contributions. The adoption design is of particular value in this regard because of its ability to tease apart the contribution of biological parent risk from adoptive parent risk, while carefully assessing prenatal and perinatal risk (Leve et al., 2010). Consistent with a developmental psychopathology perspective that has emphasized the value of examining how interactions across domains of influence impact the development and persistence of CP, the adoption design is particularly useful for identifying GxE interactions and evocative (and passive) genotype-environment correlations (r_{GE}). Because of its value in isolating genetic (biological parent), environmental (adoptive parent) effects, as well as GxE interactions, adoption studies can also be invaluable in identifying targets for early prevention efforts. For example, in a study using an adoption design by Leve and colleagues (2009), adoptive parent structured parenting was found to be beneficial for toddlers at high genetic risk (assessed by birth parent psychopathology) in relation to emerging CP, but positively associated with CP for toddlers at low genetic risk, suggesting different intervention approaches might be in order for families varying on levels of parent psychopathology. As maternal depression is a common correlate and predictor of early-starting CP (Shaw et al., 2003, 2012), these results have implications for the focus of parenting interventions in such families, and perhaps using alternative approaches in the context of fewer parental mental health concerns (e.g., addressing acute stressors in the family environment, working on ways parents can exert less rather than more control over child behavior).

New Directions in Prevention and Intervention

Prevention of and intervening with early conduct problems

Several intervention programs have been developed in early childhood to promote positive development in at-risk infants, toddlers, and preschoolers. These programs have been initiated beginning as early as the prenatal period (Olds, 2002), during infancy (Van Zeijl et al., 2006), and through the preschool period (Lieberman, Van Horn, & Ippen, 2005). Although some of these programs have examined and demonstrated positive outcomes on child CP, they tend to focus on more general indices of positive adjustment and preventing problem behavior through either improving attachment bonds in the mother-child relationship or focusing on maternal mental and physical health. Those intervention programs that have explicitly targeted child CP in early childhood have typically been theoretically driven by social learning models (Patterson, 1982). In such programs, the overarching goals have been to reduce parent-child coercive interactions by increasing parent reinforcement of child positive behavior and other forms of positive parenting behavior (e.g., proactive parenting), as well as teaching parents ways of setting limits in a firm but calm manner (e.g., using time out). In addition, some of these programs dedicate a significant number of sessions to teaching parents ways of being attentive to child cues (i.e., child directed) and coaching parents in helping children regulate their emotions and achieving academic goals (Webster-Stratton, Reid, & Hammond, 2001). Following similar work carried out on school-age children (e.g., Martinez & Forgatch, 2001), a number of intervention programs have established parent management training as a reliable way to

reduce child CP with toddlers and preschool-age children (Dishion et al., 2008; Eyberg, 1988; Forehand & McMahon, 1981; Shaw et al., 2006, Webster-Stratton, Reid, & Stoolmiller, 2008). Whereas much of this research began with families seeking clinical services for their disruptive preschooler at traditional clinical service agencies (Eyberg, 1988, Webster-Stratton et al., 1997), during the past 15 years the breadth of populations has been expanded to include 'recruitment' of at-risk children identified by preschool teachers (e.g., at Headstart Centers) or by parents at public health agencies (e.g., primary care centers, WIC, Dishion et al., 2008; Shaw et al., 2006) based on the presence of child disruptive behavior and/or family risk factors linked to early-starting CP (e.g., maternal depression, harsh parenting).

Expanding the Accessibility and Platforms of Evidence-Based Practices

As discussed earlier, the evidence-base for Parent Management training has been firmly established during the past 15 years for treating early CP (Dishion et al., 2008; Eyberg, 1988; Webster-Stratton et al., 2008). However, despite advances in the content and format of parent training for toddlers and preschool-age children (e.g., individual, group, use of the internet, incorporating teacher- and child-based components into the intervention), many challenges remain.

First, in terms of the content of parent management programs, effect sizes for parent training programs for CP tend to be small to moderate (Lundahl, Risser, & Lovejoy, 2006; Piquero, Farrington, Welsh, Tremblay, & Jennings, 2009), with estimates of one-fifth to one-third of children failing to show improvements in CP (Shelleby & Shaw, 2012; Webster-Stratton et al., 2001, 2008). Although it is unreasonable to expect that all children would improve in response to the same or similar intervention, it is still possible to improve outcomes for a larger percentage of children with CP. This raises issues about the content of parenting training programs. Based on the diverse number of risk factors associated with CP and the diverse number of pathways leading to the same outcome (i.e., equifinality, Richters & Cicchetti, 1993), it would follow that similar types of parenting issues would not be relevant for all parents with a child with elevated CP symptoms. This idea is supported anecdotally from my work supervising the cases of two 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.

Following the logic of the 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, it would behoove intervention programs to dedicate more time to the initial assessment of child problem behavior and family and community issues that might amplify or attenuate such concerns. Catering interventions to family's specific assets and concerns (e.g., limit setting, proactively anticipating contexts for child misbehavior, co-parenting, more accurately reading child cues, developing better emotion regulation skills in general and specifically in response to child disruptive behavior) could easily result in a more focused and time-limited course of treatment compared to the 14–20 sessions typically conducted for most group-based models. As an example, in two randomized control trials with toddler and preschool-age children, the average number of in-person sessions for the Family Check-Up has been approximately three to four (Dishion et al., 2008; Shaw et al., 2006). Part of the reduced amount of time

may reflect the FCU's structure of meeting with individual families; however, it might also be possible to reduce the number of intervention sessions by tailoring the content of group meetings to families' presenting strengths and challenges. In addition to modifying the content of parent training, another burgeoning issue is identifying ways to increase the accessibility of parent training for families with children demonstrating early CP and/or risk factors associated with emerging CP (e.g., parental depression, parenting concerns). As noted earlier, despite low-income children's heightened risk for CP and higher rates of environmental risk factors linked to CP (e.g., harsh parenting, parental psychopathology, quality of day care, neighborhood dangerousness), accessibility to parent training programs is also modest. Thus, 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 should be a priority in the coming years. Fortunately, there are existing examples of 'outreach' programs, including Webster-Stratton research in Headstart centers (Webster-Stratton et al., 2001), and Dishion, Shaw, and colleagues' work at WIC centers (Dishion et al., 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, & Gupitill, 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 Headstart, WIC, and hospitals as platforms to provide intervention services, other promising alternatives include Early Headstart centers and primary care centers serving predominantly low-income families. Headstart 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 Headstart 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. Based on my prior work in such settings, pediatricians are typically quite open to using behavioral approaches to treat child disruptive behavior.

Whereas providing the accessibility to services is one critical challenge for the field, generating ways of engaging families with high levels of CP in nontraditional settings represents another concern. As parents using WIC services are there primarily to obtain food vouchers, pregnant women are coming to hospitals to birth their children, and parents are typically bring children to primary care centers to address a child physical malady, although

the opportunity to engage parents in their children's behavioral health is possible at these sites, it represents an obvious challenge for using such nontraditional platforms. However, without a national health care system for identifying at-risk infants and toddlers used by well over 95% of the population (e.g., as is the case in Sweden and Australia), prevention scientists in the US have had to be creative in identifying ways to engage parents in such settings. For example, Dodge and colleagues have used nurses to recruit families into the Durham Connects program in hospitals before parents leave home with their newborn infants. Beginning with the infant's first visit to the pediatrician (i.e., 2 weeks after birth), 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 for parents, emphasizing their contingent responsiveness and sensitivity while reading to their children. The authors have taken advantage of time parents are waiting to see pediatricians at primary care centers to implement this intervention. Also noted above, WIC Centers have been used to successfully engage parents of at-risk 2-year olds in the Family Check-Up, with engagement rates between 73% and 92% in two trials of children varying in urbanicity (Dishion et al., 2008; Shaw et al., 2006). We believe an important component of the success of the Family Check-Up to engage families with toddlers at WIC sites is the embedding of motivational interviewing (MI) into the intervention, as previous research with adult drinkers (Miller & Rollnick, 1991) and parents with at-risk adolescents (Connell, Dishion, Yasui & Kavanagh, 2007) has demonstrated the use of MI to promote change in multiple forms of behavior. Dishion incorporated the use of MI as a core feature of the Family Check-Up to promote changes in parenting in families of at-risk youth, an approach that has been found to be particularly useful to apply during developmental periods of biological and/or social transitions, most notably adolescence and the 'terrible twos' (Shaw & Bell, 1993), when parents often find children's behavior challenging to manage. The use of MI is just one example of strategies that could be used to engage parents of at-risk toddlers and preschoolers into preventive interventions at nontraditional mental health settings. In the next decade, more innovative and creative methods will need to be developed to both identify *and* engage parents of young children (including expecting parents) who are at-risk for early-starting conduct problems.

Conclusion

In summary, our knowledge of the course and risk factors associated with early-developing CP has come a long way in the past three decades. We also now have multiple longitudinal data sets that have shown direct pathways between risk factors identified in early childhood and serious antisocial behavior in adolescence and adulthood (Henry et al., 1996; Shaw & Gross, 2008; Shaw et al., 2012). Although such direct associations tend to be modest in magnitude, early childhood risk factors have been more powerfully linked to adolescent problem behavior via cascading processes with risk factors during middle childhood and early adolescence (e.g., deviant peer affiliation, low parental monitoring; Dodge et al., 2009; Sitnick et al., in press). Whereas prevention and intervention efforts have identified reliable methods for intervening with children showing CP in early childhood, in the next decade it is critical that prevention efforts be directed at using nontraditional settings for identifying at-risk children and families, and also further developing methods for engaging such families in these contexts.

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References

- Aguilar B, Sroufe A, Egeland B, Carlson E. Distinguishing the early-onset/ persistent and adolescence-onset antisocial behavior types: From birth to 16 years. *Development and Psychopathology*. 2000; 12:109–132. [PubMed: 10847620]
- Bates, JE.; Maslin, CA.; Frankel, KA. Attachment security, mother-child interaction, and temperament as predictors of behavior-problem ratings at age three years. In: Bretherton, I.; Waters, E., editors. *Monographs of the Society for Research in Child Development*. Vol. 50. 1985. p. 167-193.
- Baydar N, Reid MJ, Webster-Stratton C. The role of mental health factors and program engagement in the effectiveness of a preventive parenting program for Head Start mothers. *Child Development*. 2003; 74:1433–1453. [PubMed: 14552407]
- Beauchaine TP, Webster-Stratton C, Reid JM. Mediators, moderators, and predictors of one-year outcomes among children treated for early-onset conduct problems: A latent growth curve analysis. *Journal of Consulting and Clinical Psychology*. 2005; 73:371–388. [PubMed: 15982136]
- Brennan L, Shaw DS. Revisiting data related to the age of onset and developmental course of female conduct problems. *Clinical Child and Family Psychology Review*. in press.
- Brennan P, Grekin E, Mednick S. Maternal smoking during pregnancy and adult male criminal outcomes. *Archives of General Psychiatry*. 1999; 56:215–219. [PubMed: 10078497]
- Campbell SB, Pierce EW, March CL, Ewing LJ, Szumowski EK. Hard-to-manage preschool boys: Symptomatic behavior across contexts and time. *Child Development*. 1994; 65:836–851. [PubMed: 8045171]
- Campbell SB, Pierce EW, Moore G, Marakovitz S. Boys' externalizing problems at elementary school age: Pathways from early behavior problems, maternal control, and family stress. *Development and Psychopathology*. 1996; 8:701–719.
- Campbell SB, Shaw DS, Gilliom M. Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*. 2000; 12:467–488. [PubMed: 11014748]
- Carter AS, Wagmiller RJ, Gray SA, McCarthy KJ, Horowitz SM, Briggs-Gowan MJ. Prevalence of DSM-IV disorder in a representative, healthy birth cohort at school entry: Sociodemographic risks and social adaptation. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2010; 49:686 – 698. [PubMed: 20610138]
- Caspi A, Henry B, McGee R, Moffitt T, Silva P. Temperamental Origins of Child and Adolescent Behavior Problems: From Age Three to Age Fifteen. *Child Development*. 1995; 66:55–68. [PubMed: 7497829]
- Conduct Problems Prevention Research Group. Fast track randomized controlled trial to prevent externalizing psychiatric disorders: Findings from grades 3 to 9. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2007; 46(10):1250–1262. [PubMed: 17885566]
- Conduct Problems Prevention Research Group. The effects of the Fast Track preventive intervention on the development of conduct disorder across childhood. *Child Development*. 2011; 82(1):331–345. [PubMed: 21291445]
- Conger RD, Conger KJ, Elder GH Jr, Lorenz FO, Simons RL, Whitbeck LB. A family process model of economic hardship and adjustment of early adolescent boys. *Child Development*. 1992:526–541. [PubMed: 1600820]
- Conger R, Ge X, Elder G, Lorenz F, Simons R. Economic stress, coercive family process, and developmental problems of adolescents. *Child Development*. 1994; 65:541–561. [PubMed: 8013239]
- Connell A, Bullock BM, Dishion TJ, Shaw D, Wilson M, Gardner F. Family intervention effects on co-occurring behavior and emotional problems in early childhood: A latent transition analysis approach. *Journal of Abnormal Child Psychology*. 2008; 36:1211–1225. [PubMed: 18473160]
- Connell A, Dishion TJ, Yasui M, Kavanagh K. An adaptive approach to family intervention: Linking engagement in family-centered intervention to reductions in adolescent problem behavior. *Journal of Consulting and Clinical Psychology*. 2007; 75:568–579. [PubMed: 17663611]

- Dadds MR, Fraser J, Frost A, Hawes DJ. Disentangling the underlying dimensions of psychopathy and conduct problems in childhood: a community study. *Journal of Consulting and Clinical Psychology*. 2005; 73:400–410. [PubMed: 15982138]
- Dishion TJ, Capaldi DM, Yoerger K. Middle childhood antecedents to progression in male adolescent substance use: An ecological analysis of risk and protection. *Journal of Adolescent Research*. 1999; 14(2):175–206.
- Dishion TJ, Shaw DS, Connell A, Wilson MN, Gardner F, Weaver C. The Family Check Up with high-risk families with toddlers: Outcomes on positive parenting and early problem behavior. *Child Development*. 2008; 79:1395–1414. [PubMed: 18826532]
- Dishion, TJ.; Stormshak, EA. Intervening in children's lives: An ecological, family-centered approach to mental health care. Washington, DC: American Psychological Association; 2007.
- Dodge KA, Goodman WB, Murphy R, O'Donnell K, Sato J. Toward population impact from home visiting. *Zero to Three*. in press.
- Dodge KA, Goodman WB, O'Donnell K, Sato J, Guptill S. Implementation and randomized controlled trial of universal postnatal nurse home-visiting. 2012 Manuscript submitted for publication.
- Dodge KA, Malone PS, Lansford JE, Miller S, Pettit GS, Bates JE. A dynamic cascade model of the development of substance-use onset: Early peer relations problem factors. *Monographs of the Society for Research in Child Development*. 2009; 74(3):51–54.
- Elder, G. *Children of the Great Depression*. Chicago, IL: University of Chicago Press; 1974.
- Ellis D, Zucker R, Fitzgerald H. The role of family influences in development and risk. *Alcohol Health and Research World*. 1997; 21:218–226. [PubMed: 15706772]
- Eyberg S. Parent-child interaction therapy: Integration of traditional and behavioral concerns. *Child & Family Behavior Therapy*. 1988; 10:33–46.
- Evans, GW. Environmental stress and health. In: Baum, A.; Revenson, TE.; Singer, JE., editors. *Handbook of health psychology*. Mahwah, NJ: Erlbaum; 2001. p. 365–385.
- Evans GW. The environment of childhood poverty. *American Psychologist*. 2004; 59:77–92. [PubMed: 14992634]
- Evans GW. Child development and the physical environment. *Annual Review of Psychology*. 2006; 57:423–451.
- Evans GW, Gonnella C, Marcynyszyn LA, Gentile L, Salpekar N. The role of chaos in poverty and children's socioemotional adjustment. *Psychological Science*. 2005; 17:560–565. [PubMed: 16008790]
- Fergusson D, Horwood J, Lynskey M. Maternal smoking before and after pregnancy: Effects on behavioral outcomes in middle childhood. *Pediatrics*. 1993; 92:815–822. [PubMed: 8233743]
- Forehand, RL.; McMahon, RJ. *Helping the noncompliant child: A clinician's guide to parent training*. Guilford Press; New York: 1981.
- Frick PJ. Developmental pathways to Conduct Disorder: Implications for future directions in research, assessment, and treatment. *Journal of Clinical Child and Adolescent Psychology*. 2012; 41:378–389. [PubMed: 22475202]
- Frick PJ, White SF. Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*. 2008; 49:359–375. [PubMed: 18221345]
- Goldsmith HH, Buss KA, Lemery KS. Toddler and childhood temperament: Expanded content, stronger genetic evidence, new evidence for the importance of environment. *Developmental Psychology*. 1997; 33:891–905. [PubMed: 9383612]
- Hawes DJ, Dadds MR. The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology*. 2005; 73:737–741. [PubMed: 16173862]
- Heiervang E, Stormark KM, Lundervold AJ, Heimann M, Goodman R, Posserud M, et al. Psychiatric disorder in Norwegian 8- to 10-year-olds: An epidemiological survey of prevalence, risk factors, and service use. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46:438 – 447. [PubMed: 17420678]
- Henry B, Caspi A, Moffitt T, Silva P. Temperamental and familial predictors of violent and nonviolent criminal convictions: Age 3 to age 18. *Developmental Psychology*. 1996; 32:614–623.

- Hill AL, Degnan KA, Calkins SD, Keane SP. Profiles of externalizing behavior problems for boys and girls across preschool: The roles of emotion regulation and inattention. *Developmental Psychology*. 2006; 42:913–928. [PubMed: 16953696]
- Hyde LW, Shaw DS, Gardner F, Cheong J, Dishion TJ, Wilson MN. Deceitful-callous behavior in early childhood: links to externalizing and role in intervention. *Development and Psychopathology*. in press.
- Jacobson JL, Jacobson SW. Prenatal alcohol exposure and neurobehavioral development: Where is the threshold? *Alcohol Health & Research World*. 1994; 18:30–36.
- Jouriles EN, Murphy CM, Farris AM, Smith DA, Richters JE, Waters E. Marital adjustment, parental disagreements about child rearing, and behavior problems in boys: Increasing the specificity of the marital assessment. *Child Development*. 1991; 62:1424–1433. [PubMed: 1786725]
- Keenan K, Shaw DS. Developmental influences on young girls' behavioral and emotional problems. *Psychological Bulletin*. 1997; 121:95–113. [PubMed: 9000893]
- Kellam, SG.; Brown, CH.; Rubin, BR.; Ensminger, ME. Paths leading to teenage psychiatric symptoms and substance use: Developmental epidemiological studies in Woodlawn. In: Guze, SR.; Earns, FJ.; Barrett, JE., editors. *Childhood psychopathology and development*. New York: Raven; 1983. p. 17-51.
- Leve LD, Harold GT, Ge X, Neiderhiser J, Shaw DS, Scaramella LV, Reiss D. Structured parenting of toddlers at high versus low genetic risk: Two pathways to child problems. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2009; 48:1102–1109. [PubMed: 19797981]
- Leve LD, Kerr D, Shaw D, Ge X, Neiderhiser JM, Reid JB, et al. Infant pathways to externalizing behavior: Evidence of Genotype x Environment interaction. *Child Development*. 2010; 81:340–356. [PubMed: 20331671]
- Lieberman AF, Van Horn P, Ippen CG. Toward evidence-based treatment: Child-Parent Psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2005; 44:1241–1248. [PubMed: 16292115]
- Loukas A, Zucker R, Fitzgerald H, Krull J. Developmental trajectories of disruptive behavior problems among sons of alcoholics: Effects of parent psychopathology, family conflict, and child undercontrol. *Journal of Abnormal Psychology*. 2003; 112:119–131. [PubMed: 12653420]
- Lundahl B, Risser HJ, Lovejoy MC. A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review*. 2006; 26:86–104. [PubMed: 16280191]
- Lyons-Ruth K, Alpern L, Repacholi B. Disorganized infant attachment classification and maternal psychosocial problems as predictors of hostile-aggressive behavior in the preschool classroom. *Child Development*. 1993; 64:572–585. [PubMed: 8477635]
- Martin J. A longitudinal study of the consequences of early mother-infant interaction: A microanalytic approach. *Monographs of the Society for Research in Child Development*. 1981; 190:46.
- Mendelsohn AL, Dreyer BP, Flynn V, Tomopoulos S, Rovira I, Tineo W, et al. Use of videotaped interactions during pediatric well-child care to promote child development: a randomized, controlled trial. *Journal of Developmental & Behavioral Pediatrics*. 2005; 26:34–41. [PubMed: 15718881]
- Martinez CR, Forgatch MS. Preventing problems with boys' noncompliance: Effects of a parent training intervention for divorcing mothers. *Journal of Consulting and Clinical Psychology*. 2001; 69:416–428. [PubMed: 11495171]
- Masten AS, Roisman GI, Long JD, Burt KB, Obradovi J, Riley JR, et al. Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology*. 2005; 41:733–749. [PubMed: 16173871]
- McLoyd VC. The impact of economic hardship on Black families and children: Psychological distress, parenting, and socioemotional development. *Child Development*. 1990; 61:311–346. [PubMed: 2188806]
- Miller, WR.; Rollnick, S. *Motivational interviewing: Preparing people to change addictive behavior*. New York: Guilford; 1991.
- Miller P, Votruba-Drzal E, Setodji CM. Family income and achievement across the urban-rural continuum. *Developmental Psychology*. in press.

- Moffitt TE. Juvenile delinquency and Attention Deficit Disorder: Boys' developmental trajectories from age 3 to age 15. *Child Development*. 1990; 61:893–910. [PubMed: 2364762]
- Moffitt TE. Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*. 1993; 100:674–701. [PubMed: 8255953]
- Moffitt T, Caspi A. Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*. 2001; 13:355–375. [PubMed: 11393651]
- Nolen-Hoeksema S, Girgus JS. The emergence of gender differences in depression during adolescence. *Psychological Bulletin*. 1994; 115:424–443. [PubMed: 8016286]
- Offord, DR.; Boyle, MH.; Racine, YA. The epidemiology of antisocial behavior in childhood and adolescence. In: Pepler, DJ.; Rubin, KH., editors. *The development and treatment of childhood aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1991. p. 31-54.
- Olds D. Prenatal and infancy home visiting by nurses: From randomized trials to community replication. *Prevention Science*. 2002; 3:153–172. [PubMed: 12387552]
- Olson H, Streissguth A, Sampson P, Barr H, Bookstein F, Thiede K. Association of prenatal alcohol exposure with behavioral and learning problems in early adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1997; 36:1187–1195. [PubMed: 9291719]
- Olson S, Bates J, Sandy J, Lanthier R. Early developmental precursors of externalizing behavior in middle childhood and adolescence. *Journal of Abnormal Child Psychology*. 2000; 28:119–133. [PubMed: 10834765]
- Olson SL, Sameroff AJ, Kerr DCR, Lopez NL, Wellman HM. Developmental foundations of externalizing problems in young children: The role of effortful control. *Development and Psychopathology*. 2005; 17:25–45. [PubMed: 15971758]
- Olweus D. Stability of aggressive reaction patterns in males: A review. *Psychological Bulletin*. 1979; 86:852–875. [PubMed: 482487]
- Pardini DA, Obradovic J, Loeber R. Interpersonal callousness, hyperactivity/impulsivity, inattention, and conduct problems as precursors to delinquency persistence in boys: A comparison of three grade-based cohorts. *Journal of Clinical Child & Adolescent Psychology*. 2006; 35:46–59. [PubMed: 16390302]
- Patterson, G. *Coercive family processes*. Vol. 3. Eugene, OR: Castalia; 1982.
- Patterson, GR.; Capaldi, DM.; Bank, L. An early starter model for predicting delinquency. In: Pepler, D.; Rubin, RK., editors. *The development and treatment of childhood aggression*. Hillsdale, NJ: Erlbaum; 1991.
- Patterson, GR.; Reid, J.; Dishion, TJ. *Antisocial boys*. Eugene, OR: Castalia; 1992.
- Piquero AR, Farrington DP, Welsh BC, Tremblay R, Jennings WG. Effects of early family/parent training programs on antisocial behavior and delinquency. *Journal of Experimental Criminology*. 2009; 5:83–120.
- Raine A, Yaralian PS, Reynolds C, Venables PH, Mednick S. Spatial but not verbal cognitive deficits at age 3 years in persistently antisocial children. *Development and Psychopathology*. 2002; 14:25–44. [PubMed: 11893093]
- Reid JB. Prevention of conduct disorder before and after school entry: Relating interventions to developmental findings. *Development and Psychopathology*. 1993; 5:243–243.
- Reid MJ, Webster-Stratton C, Baydar N. Halting the development of externalizing behaviors in Head Start children: The effects of parenting training. *Journal of Clinical Child and Adolescent Psychology*. 2004; 33:279–291. [PubMed: 15136193]
- Rende R. Longitudinal relations between temperament traits and behavioral syndromes in middle childhood. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1993; 32:287–290. [PubMed: 8444756]
- Richman, M.; Stevenson, J.; Graham, PJ. *Preschool to school: A behavioral study*. London: Academic Press; 1982.
- Richters JE, Cicchetti D. Mark Twain meets DSM-III-R: Conduct disorder, development, and the concept of harmful dysfunction. *Development and Psychopathology*. 1993; 5:5–30.

- Sanson A, Oberklaid F, Pedlow R, Prior M. Risk indicators: Assessment of infancy predictors of pre-school behavioural maladjustment. *Journal of Child Psychology and Psychiatry*. 1991; 32:609–626. [PubMed: 1864892]
- Shaw DS, Bell RQ. Developmental theories of parental contributors to antisocial behavior. *Journal of Abnormal Child Psychology*. 1993; 21:493–518. [PubMed: 8294650]
- Shaw DS, Bell RQ, Gilliom M. A truly early starter model of antisocial behavior revisited. *Clinical Child and Family Psychology Review*. 2000; 3:155–172. [PubMed: 11225751]
- Shaw DS, Dishion TJ, Connell A, Wilson MN, Gardner F. Improvements in maternal depression as a mediator of intervention effects on early child problem behavior. *Development and Psychopathology*. 2009; 21:417–439. [PubMed: 19338691]
- Shaw DS, Dishion TJ, Supplee LH, Gardner F, Arnds K. A family-centered approach to the prevention of early-onset antisocial behavior: Two-year effects of the family check-up in early childhood. *Journal of Consulting and Clinical Psychology*. 2006; 74:1–9. [PubMed: 16551138]
- Shaw, DS.; Gilliom, M.; Giovannelli, J. Aggressive behavior disorders. In: Zeanah, CH., editor. *Handbook of Infant Mental Health*. 2. New York: Guilford; 2000. p. 397–411.
- Shaw DS, Gilliom M, Ingoldsby EM, Nagin D. Trajectories leading to school-age conduct problems. *Developmental Psychology*. 2003; 39:189–200. [PubMed: 12661881]
- Shaw DS, Hyde LW, Brennan LM. Early predictors of boys' antisocial trajectories. *Development and Psychopathology*. 2012; 24:871–888. [PubMed: 22781860]
- Shaw DS, Keenan K, Vondra JI. Developmental precursors of externalizing behavior: Ages 1 to 3. *Developmental Psychology*. 1994; 30:355–364.
- Shaw DS, Winslow EB, Owens EB, Hood N. Young children's adjustment to chronic family adversity: A longitudinal study of low-income families. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1998; 37:545–553. [PubMed: 9585657]
- Shaw DS, Owens EB, Giovannelli J, Winslow EB. Infant and toddler pathways leading to early externalizing disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40:36–43. [PubMed: 11195559]
- Shelleby EC, Votruba-Drzal E, Shaw DS, Dishion TJ, Wilson MN. Income, depression, household chaos and children's behavioral functioning. 2012 Manuscript submitted for publication.
- Shelleby EC, Shaw DS. Outcomes of parenting interventions for child conduct problems: A review of differential effectiveness. Manuscript submitted for publication.
- Sitnick S, Shaw DS, Hyde LW. Risk factors for adolescent substance use during early childhood and early adolescence. *Development and Psychopathology*. in press.
- Stattin H, Klackenberg-Larsson I. Early language and intelligence development and their relationship to future criminal behavior. *Journal of Abnormal Psychology*. 1993; 102:369–378. [PubMed: 8408948]
- Tremblay, RE.; Cote, S. The developmental origins of aggression: Where are we going?. In: Tremblay, RE.; Hartup, WW.; Archer, J., editors. *Development origins of aggression*. New York: Guilford Press; 2005.
- Tremblay RE, Nagin DS, Seguin JR, Zoccolillo M, Zelazo P, Boivin M, Perusse D, Japel C. Physical aggression during early childhood: Trajectories and predictors. *Pediatrics*. 2004; 114:43–50.
- Van Zeijl J, Mesman J, Van IJendoorn MH, Bakermans-Kranenburg MJ, Juffer F, Stolk MN, Koot HM, Alink LRA. Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behavior problems: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*. 2006; 74:994–1005. [PubMed: 17154730]
- Vernon-Feagans, L.; Gallagher, K.; Kainz, K. The transition to school in rural America: A focus on literacy. In: Meece, J.; Eccles, J., editors. *Handbook of Research on Schools, Schooling, and Human Development*. New York, NY: Routledge, Taylor, & Associates; 2008.
- Waller R, Gardner F, Hyde LW, Shaw DS, Dishion TJ, Wilson MN. Do harsh and positive parenting predict parent reports of deceitful-callous behavior in early childhood? *Journal of Child Psychology and Psychiatry*. 2012; 53:946–953. [PubMed: 22490064]
- Webster-Stratton C. Long-term follow-up of families with young conduct problem children: From preschool to grade school. *Journal of Clinical Child Psychology*. 1990; 19(2):144–149.

- Webster-Stratton C. Preventing conduct problems in Head Start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology*. 1998; 66:715–730. [PubMed: 9803690]
- Webster-Stratton C, Hammond M. Treating children with early-onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology*. 1997; 65:93–109. [PubMed: 9103739]
- Webster-Stratton C, Reid JM, Hammond M. Preventing conduct problems, promoting social competence: A parent and teacher training partnership in Head Start. *Journal of Clinical Child Psychology*. 2001; 30:283–302. [PubMed: 11501247]
- Webster-Stratton C, Reid JM, Stoolmiller M. Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years Teacher and Child Training Programs in high-risk schools. *Journal of Child Psychology and Psychiatry*. 2008; 49:471–488. [PubMed: 18221346]
- Werner, EE.; Smith, RS. *Overcoming the odds: High risk children from birth to adulthood*. Cornell University Press; Ithaca, NY: 1992.