Serious Conduct Problems and Callous Unemotional Traits In offending adolescents: Unique and Shared Contributions of Parenting and Community Risk

Elizabeth R. Corning
ecorning17@gmail.com

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ABSTRACT

SERIOUS CONDUCT PROBLEMS AND CALLOUS UNEMOTIONAL TRAITS IN OFFENDING ADOLESCENTS: UNIQUE AND SHARED CONTRIBUTIONS OF PARENTING AND COMMUNITY RISK

Elizabeth R. Corning, Ph.D.
Department of Psychology
Northern Illinois University, 2023
Elizabeth C. Shelleby, Director

A growing body of research has suggested that parenting behaviors influence the development of youth conduct problems (CP) and callous-unemotional traits (CU). However, few studies have examined how parenting impacts CP and CU growth over time, and whether these associations differ based on the presence of additional community-level risk factors. This study used data from the Pathways to Desistance project (N = 1,354) to investigate how distinct parenting behaviors (i.e., positive parenting, harsh parenting, and parental knowledge) impact the initial level and growth in CP and CU across four years among adolescents involved in the juvenile justice system. Interaction effects between neighborhood risk factors (i.e., neighborhood disorder, community violence exposure) and each parenting behavior on both CU and CP outcomes were also assessed. Latent growth modeling indicated that youth exposed to higher levels of harsh parenting were more likely to demonstrate higher CP and CU at time 1. Higher harsh parenting was further associated with a steeper decline in both CP and CU over time, with an acceleration in CU at later time points. Adolescents who received higher positive parenting demonstrated lower CU at time 1; higher parent knowledge was also found to be associated with lower time 1 CP and CU. Hypothesized interaction effects between parenting and ND/CVE on CP/CU outcomes were unsupported. Implications of findings in terms of both research and
intervention efforts are discussed, including emphasis on intervention programs aimed at promoting adaptive and prosocial parenting behavior.
SERIOUS CONDUCT PROBLEMS AND CALLOUS UNEMOTIONAL TRAITS IN OFFENDING ADOLESCENTS: UNIQUE AND SHARED CONTRIBUTIONS OF PARENTING AND COMMUNITY RISK

BY

ELIZABETH R. CORNING
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A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

Thesis Director:
Elizabeth C. Shelleby
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CHAPTER 1
INTRODUCTION AND REVIEW OF LITERATURE

Conduct problems (CP) in youth broadly have been defined as a range of behaviors including aggression, oppositionality, delinquency, and antisociality that involve violating the rights of others (e.g., stealing, physical violence, destruction of property) or violation of societal norms (e.g., substance use, running away from home; Frick et al., 2014; McMahon et al., 2006). Conduct problems represent the leading reason that youth are referred to mental health treatment centers in the United States (Booker et al., 2016; Loeber et al., 2000) and are associated with functional impairment in emotional, social, and academic domains (Erskine et al., 2016; Moffitt et al., 2002; Odgers et al., 2007) as well as increased risk for substance abuse (Baskin-Sommers et al., 2015; Cohen et al., 2007) and the development of antisocial personality disorder and other types of psychopathology (Caspi et al., 1998). Beyond individual-level risk, CP presents a significant threat to public health through societal costs associated with juvenile misconduct (e.g., direct harm to others, public service utilization; McMahon & Frick, 2005; Rivenbark et al., 2018). As such, it is necessary to continue to refine ways to identify the subgroup of youth who are at highest risk for exhibiting more severe conduct problems to inform early prevention and intervention efforts.

Within the literature, it has been established that children and adolescents with CP represent a heterogeneous group within which the origin, development, and trajectory of problem behaviors differs substantially (Frick & Ellis, 1999). Among youth who display CP, there is high
variability regarding the types of CP exhibited, degree of impairment associated with CP, and response to CP treatment (Frick, 2012). The biopsychosocial model of CP development suggests that various factors dynamically interplay across time to give rise to conduct problems; biological predispositions (e.g., genetic and hormonal abnormalities), child-level risks (e.g., callous-unemotional behaviors, co-occurring problems, age of onset of conduct problems), family functioning (e.g., parenting behaviors, inter-parental conflict, single parent families), stressful life events, deviant peer influences, and sociocultural context (e.g., family socioeconomic conditions, neighborhood disorder and violence, cultural values) have all been identified as increasing vulnerability for CP development (Clark & Frick, 2018; Dodge & Pettit, 2003; Frick et al., 2003; Hinshaw, 1994; Moffitt, 1993). In exploring these risk factors, research has identified the related yet distinct construct of youth callous-unemotional (CU) traits as accounting for significant heterogeneity in CP outcomes, such that the presence of CU traits is associated with a trajectory of CP that is more severe and persistent compared to that of youth with conduct problems alone (Frick et al., 2003).

Extending from the construct of adult psychopathy, CU traits are characterized by a reduced capacity for guilt and empathy, insensitivity to punishment, fearlessness, and general lack of emotion (Frick et al., 2014). Following empirical advances identifying CU as a unique construct with predictive utility for long-term antisocial behavior, the most recent edition of the *Diagnostic and Statistical Manual* (DSM-5; American Psychiatric Association, 2013) included a limited prosocial emotion (LPE) specifier to the diagnosis of conduct disorder allowing for separate classification of youth with CU traits. Although CU traits have been found to be relatively stable over time (Frick et al., 2005), limited research on CU traits in young children, use of behavioral (as opposed to trait-like) measures of CU for samples of younger children
(Hyde et al., 2013), and the desire to avoid labeling children in a way that suggests a permanent deficit, has led researchers to favor the term callous-unemotional behaviors. As the presence of CU has been found to identify youth at the highest risk for severe and persistent CP (Frick et al., 2003), CU poses a similar, if not increased, threat to individual and societal well-being. A growing body of research has therefore attempted to uncover salient risk and protective factors that contribute to CU development in addition to broader CP. Among these risks, increasing research has focused on parenting behaviors, and more recently community-level risks, as particularly important environmental determinants (Waller et al., 2018).

In order to accurately conceptualize the contribution of familial and community-level factors to youth CP and CU, it is necessary to acknowledge the individual-level risk of genetic vulnerability. Genetically informed twin and adoption studies have indicated that, despite strong heritability estimates, environmental influences account for a substantial proportion of variance in both CP (Caspi et al., 2004; O’Connor et al., 1998) and CU (Viding & McCroy, 2012). These conclusions validate the need for further empirical work elucidating how aspects of the environment across varying ecological levels of influence may individually or collectively impact growth in CP and/or CU over time. Within the current body of literature, parenting behaviors have emerged as a promising environmental focus for empirical and intervention efforts aimed at understanding, preventing, and reducing CU/CP outcomes.

Extant research has demonstrated that parenting practices play an important role in the development of CP in childhood and adolescence (Campbell et al., 2000; McKee et al., 2007; Reuben et al., 2016; Shaw et al., 1994; Sng et al., 2018). Past studies have shown that positive parenting practices (e.g., warmth, responsiveness, support, and acceptance) as well as high parental knowledge (i.e., knowledge of youth’s whereabouts and activities) are negatively
associated with childhood conduct problems, while harsh parenting practices (e.g., threats, shaming, and harsh punishment) are associated with higher levels of child conduct problems (Racz & McMahon, 2011; Stormshak et al., 2000; Tavassolie et al., 2016). In support of developmental research, parenting intervention studies have further demonstrated promising effectiveness of adaptive parenting in preventing and reducing CP in youth (Gardner et al., 2006; Piotrowska et al., 2019).

The body of work investigating how parenting may uniquely contribute to youth CU outcomes, as opposed to CP, is considerably less extensive. This may be attributed to an earlier theory in the literature suggesting that youth presenting with high levels of CU may be less susceptible to the effects of parenting as compared to children with low levels of these traits (Oxford et al., 2003; Wootton et al., 1997). In contrast, more recent studies have challenged this original assertion through demonstrating malleability in CU in response to specific parenting behaviors (Frick et al., 2014; Waller et al., 2013), highlighting parenting as a meaningful intervention target for reducing CU. Comparable to CP, positive parenting and parental knowledge have been shown to protect against CU development, whereas harsh parenting has been found to function as a risk factor (Childs et al., 2014; Fontaine et al., 2011; Hawes et al., 2011). In support of this alternative perspective indicating parent-driven malleability in CU, parenting intervention programs aimed at increasing positive parenting have been shown to successfully reduce CU symptomology in younger samples of children (Kimonis et al., 2019). However, findings in this area have been mixed; aligning with earlier theoretical models, some studies have continued to suggest that parenting does not exert a meaningful influence on youth CU (Viding et al., 2009; Vitacco et al., 2003). Given exceptions to broad findings and a lack of consensus regarding how parenting impacts CU across developmental periods and within
varying populations, further research is needed to clarify how parents may promote growth or reduction in their child’s CU over time.

Despite strong empirical support indicating parenting as an important contributor to CP/CU outcomes in youth, exclusive focus on the environmental influence of parenting neglects broader systems of contextual forces that have been determined to impact youth development. The necessity of examining interplay between multiple levels of nested ecological systems on youth psychopathology aligns with Bronfenbrenner’s (1977, 1986) ecological systems theory. In relation to youth developmental outcomes, Bronfenbrenner’s model suggests that the influence of the immediate familial environment must be considered in the context of the larger environment, such as neighborhood- and community-level factors. This perspective is supported by research suggesting that the associations between parenting behaviors and youth behaviors are contextually specific rather than universal (Roche et al., 2007). Assessing how parent and community variables interact to predict the development and trajectory of youth CP/CU can therefore provide a more realistic and comprehensive picture of development that, in turn, may aid in the identification of intervention targets across levels of environmental influence.

Numerous socialization contexts have been shown to influence youth development, and past research has highlighted the four contextual domains of family (e.g., parenting, household size), peer (e.g., perceived peer support, peer rejection), school (e.g., school connectedness, relationships with teachers), and neighborhood (e.g., collective efficacy, perceptions of neighborhood safety, structural elements of the community) as particularly important in considering youth’s risk for the development of behavior problems (Blum et al., 2002; Brooks-Gunn et al., 1997; Gerard & Buehler, 2004). The neighborhood context, in particular, has received a great deal of empirical attention as each other primary ring of social influence is
embedded within the community. Exposure to high-risk communities, characterized by violence and limited resources, has been shown to impair cognitive and behavioral functioning in youth (Leventhal & Brooks-Gunn, 2000; Sadeh et al., 2010) as well as hinder broad emotional development (Gerard & Buehler, 2004). Frequently studied community-level risks that have been linked to maladaptive developmental outcomes in youth include exposure to toxins (e.g., lead, hazardous waste), air and water pollution, ambient noise, residential crowding, and neighborhood quality (e.g., access to basic municipal services, the presence of broad structural defects; Evans & Kantrowitz, 2002).

One construct that has been commonly included in assessments of community-level risk is neighborhood disorder (i.e., physical and social manifestations of neighborhood-level loss of control; Martin-Storey et al., 2021; Skogan, 1990). Neighborhood-level disorder is thought to represent the lasting detrimental impact of discriminatory housing practices and economic dislocation experienced by residents of historically disinvested neighborhoods (Travis, 2019). Common indicators of neighborhood disorder (ND) include observable litter, poorly maintained or abandoned buildings, and public intoxication (Martin-Storey et al., 2021). ND has been linked to long-term maladaptive health and psychosocial outcomes (O’Brien et al., 2019) and more specifically to elevated levels of youth CP (Curtis et al., 2013) and CU (Ray et al., 2019).

Fewer studies have attempted to determine how the effect of ND on youth CU and CP may vary in the context of parenting behaviors; focusing on CP, some studies have reported that high parental knowledge weakens the association between ND and CP (Herman et al., 2020; Sharma et al., 2019) while others have determined that parenting characterized as high harshness/low warmth strengthens this link (Brody et al., 2003). Alternatively, it has been suggested that positive parenting does not significantly buffer the detrimental influence of ND on CP outcomes.
(Xu et al., 2020). Turning to CU, while past empirical work has suggested that the association between parenting behaviors and adolescent CU varies based on the related construct of household disorder (Kahn et al., 2016), no studies to date have explicitly assessed interaction effects between focal parenting behaviors of the present study (i.e., harshness, positive parenting, and knowledge) and ND on growth in CU over time.

An additional community-level risk factor that has been frequently explored as it relates to youth antisocial outcomes is community violence exposure (CVE). CVE is defined as parent or youth reports of violent events personally experienced by youths outside of their homes (Lynch, 2003; Richters & Martinez, 1993). Consistent with other sources of serious youth trauma including exposure to natural disasters, physical and sexual abuse, and intimate partner violence, CVE has been linked to a range of detrimental developmental outcomes in adolescence (Lambert et al., 2005). CVE is thought to be more common and repetitive than alternative sources of youth violence exposure (e.g., domestic violence; Margolin & Gordis, 2000), with adolescents experiencing higher levels of CVE than children or adults (Baum, 2005; Finkelhor, 2008). It has been estimated that 38% of U.S. adolescents have experienced CVE (Zinzow et al., 2009), and CVE prevalence within higher-risk populations (i.e., youth who have had contact with the juvenile justice system) is estimated to be significantly greater (Martin-Storey et al., 2021). In light of past research demonstrating main effects of CVE on higher CP (Curtis et al., 2013), as well as CVE on higher CU (Davis et al., 2015), additional studies are required to determine how CVE may interact with more immediate familial risk and protective factors (i.e., specific parenting behaviors) to produce meaningful effects on CP and CU development. Given that adolescents involved with the justice system represent a significantly higher risk for violence
exposure than the general population, gaining a better understanding of potential interactional processes is especially important within this demographic.

A scarcity of studies have evaluated interactions between parenting and CVE on CP outcomes during adolescence, with even fewer studies including CU. Among these studies, distinct parenting behaviors have often been combined to form broader parenting constructs (Gorman-Smith et al., 2004; Mazefsky & Farrell, 2005), inhibiting interpretation regarding the influence of unique parenting behaviors. Previous research has indicated that the association between CVE and CP is weakened by higher parent knowledge (Bacchini et al., 2011) and positive parenting (Brookmeyer et al., 2005) and strengthened by lower levels of knowledge (Zhang et al., 2021). However, alternative investigations have failed to replicate these findings (Chen & Jacobson, 2013; Pearce et al., 2003). Regarding CU, one study determined that both positive parenting and CVE exerted direct effects on adolescent CU longitudinally, however there was no evidence of moderation (Davis et al., 2015). As no studies have attempted to determine how alternative parenting behaviors such as harshness and knowledge interact with CVE to predict growth CU during adolescence, additional research is needed to supplement limited study in this area and extend preliminary findings to populations determined to represent a high risk for CU.

Presently, the literature offers insufficient evidence to establish whether parents may exacerbate or protect against harmful community-level influences of ND and CVE on youth CP or CU through exposure to distinct parenting behaviors (i.e., positive parenting, harsh parenting, parental knowledge). In addition to the need to address this gap in the literature, preliminary findings demonstrating individual pathways from each identified parenting behavior, as well as ND and CVE, to both CU and CP outcomes support the potential for interaction effects. The
necessity of examining concurrent familial and community-level influences has been outlined in prominent theories of child and adolescent development (Bronfenbrenner, 1977, 1986), and further emphasized by research demonstrating that the association between parenting and youth behavior outcomes does not function inside of a vacuum (i.e., this link must be considered in the context of larger socioenvironmental influences outside of the home; Eamon, 2001; Roche et al., 2007). As such, the current study aims to replicate past findings regarding the direct effects of specific parenting behaviors on adolescent CP/CU outcomes while extending on existing work through further assessing how the community risk factors of ND and CVE may impact the nature of these associations longitudinally. In what follows, literature examining the association between CU and CP will be reviewed, followed by literature examining associations between parenting behaviors (i.e., positive parenting, harsh parenting, parental knowledge) and both CP and CU. Then, research involving the effects of ND and CVE on CP and CU, both directly and through interactions with parenting, is presented. Finally, aims and hypotheses of the present study are described in the context of the current literature.

The Role of CU Behaviors in the Path to CP

Previous empirical work has suggested several distinct pathways that lead to the development of conduct problems in youth based on factors such as the age at which an individual begins to demonstrate antisocial behavior (Moffitt, 1993) as well as the presence or absence of CU behaviors (Frick & Dickens, 2006). One widespread approach involves distinguishing between children based on the time of onset of antisocial behavior. Moffitt (1993) suggested classification of behavior into 2 distinct groups based on the stability of symptoms, the first group being life course persistent (LCP) and the second being adolescence-limited (AL).
This conceptualization defines LCP individuals as those who demonstrate a continuous course of problem behavior from childhood, whereas AL individuals are only temporarily involved in antisocial behavior during adolescence. Aligning with this developmental model, longitudinal analysis of CP trajectories has suggested that a majority of youth demonstrate increases in CP in early adolescence followed by a decline in symptoms as they progress towards adulthood (i.e., the AL trajectory; Moffitt, 2006). Less commonly, when antisocial behavior onsets in early childhood, youth are more likely to demonstrate a persistent and stable trajectory of antisociality. Examination of CU trajectories during adolescence, while considered to be more stable over time as compared to CP (da Silva et al., 2013), has evidenced a similar pattern such that CU generally decreases as youth reach older adolescence and begin to transition to adulthood (Muratori et al., 2016).

Following earlier studies establishing youth CU as a salient predictor of a steeper and more severe CP trajectory (Frick et al., 2003; Frick & Viding, 2009; Hawes & Dadds, 2007), numerous longitudinal studies have demonstrated that the presence of CU behaviors at various developmental stages is associated with an elevated risk for the development and severity of conduct problems later in life (Enebrink et al., 2005; Fanti & Centifanti, 2014; Frick & White, 2008; Waller et al., 2015). Exploring this association during early childhood, Hyde et al. (2013) reported that age 3 CU behaviors (termed deceitful-callous behaviors in this study and defined as deceitfulness, lack of guilt, and lack of affect) significantly predicted conduct problems at age 4 after controlling for baseline conduct problems. Moving to middle childhood, Pardini et al. (2007) reported similar findings in a sample of fifth grade children, with CU behavior being significantly correlated with conduct problems over a one-year period, even after controlling for initial levels of conduct problems. Extending through adult development, one longer longitudinal
study found that the presence of psychopathic traits in adolescence, including a dimension of CU behavior, was significantly associated with conduct problems 10 years later in life (Gretton et al., 2004).

Research has also evidenced bidirectionality between these constructs, such that conduct problems may also predict higher levels of CU behaviors longitudinally (Servera et al., 2019). Specifically, Servera et al. (2019) found that conduct problems in the first grade were associated with higher levels of CU behavior in the fourth grade after controlling for baseline levels of CU. However, the relationship between CU and CP has been characterized as asymmetrical, such that youth with high CU are highly likely to display high CP, whereas youth with high CP are only moderately likely to demonstrate high CU (Pardini & Loeber, 2008). Although CU behaviors have been shown to be useful predictors of the development and trajectory of conduct problems, ecological systems perspectives caution that additional environmental influences, such as parenting and broader contextual risk, must also be considered when examining the origins of conduct problem development in youth.

**How Parenting Impacts Conduct Problems**

Extant research exists indicating that parenting practices play a crucial role in the development of behavioral problems in youth (McKee et al., 2007; Reuben et al., 2016; Shaw et al., 1994). Specifically, affective dimensions of parenting (e.g., parental harshness and warmth) as well as informed knowledge of youth’s activities and whereabouts (e.g., parental knowledge) have been identified as important environmental contributors to child and adolescent conduct problem outcomes (McFadyen-Ketchum et al., 1996; Ray et al. 2017; Waller et al., 2012). The necessity of examining these constructs individually as they relate to CP outcomes has been
supported by research demonstrating that youth CP is differentially affected by different parenting behaviors (Caron et al., 2006). Within affective parenting dimensions, it is also important to consider the separate impact of harsh and positive parenting, as low parental warmth is not synonymous with parental harshness. Similarly, low parental harshness does not signify parental warmth. Further exploration of the influence of parenting on CP in youth is necessary to inform parenting programs, often considered to be the most effective intervention for youth CP (Sanders et al., 2003), aimed at preventing and reducing CP growth through promotion of adaptive parenting.

**Harsh Parenting and Conduct Problems**

Parental harshness (e.g., threats, shaming, punishment) has been shown to be positively related to elevated levels of child and adolescent conduct problems (Stormshak et al., 2000; Tavassolie et al., 2016; Wang & Kenny, 2014). Based in a social learning perspective, Patterson’s coercive cycles theory (Patterson et al., 1992) purports that child conduct problems are escalated and maintained when parents use harsh punishment as a strategy to control youth behavior. This pattern is thought to, in turn, socialize children to become more aggressive themselves and further perpetuate cyclical parent-child coercive interactions. Meta-analytic studies have supported the association between harsh parenting and CP in early childhood (Campbell et al., 2000) as well as later childhood and adolescence (Pinquart, 2017). Notably, a review of 1,435 studies by Pinquart (2017) examining various dimensions of parenting concluded that harsh parenting and psychological control evidenced the strongest associations with child and adolescent externalizing outcomes, including conduct problems.
The association between harsh parenting and youth CP has been repeatedly established across numerous independent studies (Bauer et al., 2021; Criss et al., 2002; Fontaine et al., 2011; Kim et al., 2003; McKee et al., 2007; Pardini et al., 2007; Stormshak et al., 2000). For example, a longitudinal study using a community sample \( N \approx 7,000 \) reported that parental harshness at age 4 predicted conduct problems at age 13 (Barker et al., 2011). These findings have also been replicated in clinical samples of adolescents (Goulter et al., 2020), with some evidence supporting a differential effect of harsh parenting on youth CP based on the presence of high versus low levels of CU behavior (Pasalich et al., 2011). Exposure to harsh parenting later in childhood has been shown to similarly influence youth CP, as a recent investigation by Kingsbury et al. (2020) using a large \( N = 9,882 \) community sample found that exposure to harsh parenting at age 10/11 was associated with elevated physical and social aggression during early adolescence. Focusing on parent-child processes occurring explicitly within the period of adolescence, Wang and Kenny (2014) found that mothers’ and fathers’ harsh parenting at age 13 predicted an increase in adolescent CP between ages 13 and 14 within a sample of 976 two-parent families. Notably, CP was also found to drive increases in harsh parenting over the 1-year period. Evidence of a bidirectional relationship between youth CP and harsh parenting has been supported by additional longitudinal studies (Hipwell et al., 2008; Pardini et al., 2007; Pardini et al., 2008), suggesting that reciprocal parent-child coercive interactions may collectively contribute to increases in youth CP. Overall, past studies have repeatedly identified harsh parenting as a risk factor for CP. However, there is evidence to suggest that parents may also protect youth against CP through consistent, positive parent-child interactions.
Positive Parenting and Conduct Problems

The protective influence of positive (e.g., warm, responsive, accepting) parenting on maladaptive child behavior outcomes is well supported in the literature, with meta-analytic investigations highlighting the unique role of positive parenting in reducing the development and maintenance of youth conduct problems (Kawabata et al., 2011; McMahon et al., 2006; Rothbaum & Weisz, 1994). The importance of considering positive parenting as it relates to child CP has been demonstrated through the successful implementation of parenting programs considered to be the most effective intervention strategy for reducing CP (Leijten et al., 2019). These programs, based in relational and social learning perspectives, aim to improve parent-child relationships through increasing parental warmth and nurturance through behavioral reinforcement to promote youths’ internalization of social bonds and reduce coercive parent-child cyclical interactions (Leijten et al., 2019; Sanders et al., 2003; Thomas & Zimmer-Gembeck, 2007). In a review examining the effectiveness of the Triple P Positive Parenting Program, Thomas and Zimmer-Gembeck (2007) found that all included studies produced moderate to large effect sizes regarding the effectiveness of the program in reducing negative parent and child behaviors (with the exception of a media-administered version of the intervention).

The association between positive parenting and conduct problems has been thoroughly explored through individual studies during early and middle childhood (McFayden-Ketchum et al., 1996; Reuben et al., 2016; Stormshak et al., 2000), with fewer studies extending focus through adolescence. In considering how the relationship between positive parenting and youth conduct problems may vary across development, conflicting perspectives have emerged in the
literature. While some have theorized that parents enact a stronger influence over youth CP during early childhood when there are fewer competing social influences (Hoeve et al., 2009), it has also been suggested that the association between parenting and youth CP may become stronger in late childhood and adolescence due to reciprocal parent-child interactions that accumulate over time (Rothbaum & Weisz, 1994). Supporting the latter perspective, a more recent comprehensive review of 1,435 studies utilizing both child and adolescent samples (M age = 10.70, SD = 4.61) conducted by Pinquart (2017) concluded that parental warmth exhibited a stronger influence on youth conduct problems in older as compared to younger samples. This finding illustrates the need for additional research evaluating the protective influence of positive parenting on youth CP during the developmental period of adolescence.

With regard to individual studies demonstrating that positive parenting practices impact adolescent conduct problems by acting as a protective factor, an 8-year longitudinal study by Chronis et al. (2007) found that children of mothers who displayed the highest level of positive parenting at baseline (i.e., when children were 4-7 years of age) evidenced the lowest levels of CP by early adolescence while controlling for initial levels of CP. Notably, this study exclusively focused on youth who met diagnostic criteria for ADHD which may affect the generalizability of findings. In a short-term longitudinal study utilizing a sample of adolescents (M age =15.29; SD 1.29) involved with the juvenile justice system, Ray et al. (2017) reported that youth exposed to higher levels of parental warmth evidenced lower levels of self-reported conduct problems 6 months later. These findings are consistent with patterns observed in a large (N≈1,000) community sample of adolescents assessed across three time points from age 11 to age 15 (Wang et al., 2011). Findings from parenting intervention studies focused on the adolescent age range have aligned with developmental research; increased positive parenting is associated with
decreased levels of adolescent CP and reduced parent-adolescent conflict (Nitsch et al., 2015; Salari et al., 2014). Despite some exceptions (de Haan et al., 2012; Yun et al., 2016), the notion that positive parenting may protect against youth CP outcomes has received strong empirical support. However, further research has suggested that it is also necessary to consider nonaffective components of parenting, such as parental monitoring of youth behavior, to gain a more complete understanding of parent-child processes that may increase risk for CP.

Parental Knowledge and Conduct Problems

Effective parental monitoring (i.e., active parenting behaviors involving attention to and tracking of the child’s whereabouts, activities, and adaptations) and knowledge (i.e., knowledge gained about youth and their activities) have been widely recognized as protective factors for the development of youth CP (Racz & McMahon, 2011). Parental monitoring describes active efforts to gain information from and about youth (e.g., amount of direct parental supervision, frequency of parent solicitation). Parental knowledge, alternatively, is characterized as more passive and thought to result from the combination of successful parent monitoring and youth disclosure of information (Lippold et al., 2014). Evaluating these relationships during adolescence is particularly important given that parents must adjust their monitoring strategies to accommodate adolescent autonomy development. For example, parental monitoring and subsequent knowledge in childhood primarily involves home and school contexts; in contrast, monitoring and knowledge regarding unsupervised activities with peers and within the broader community is required as children develop into adolescents (Racz & McMahon, 2011). The importance of thorough and accurate parent knowledge as it relates to CP outcomes during adolescence has been demonstrated through the success of Multisystemic Therapy (MST;
Henggeler et al., 2009) in treating serious adolescent CP. Derived from a social ecology perspective, MST is a multi-faceted intervention approach that emphasizes the influence of interconnected social systems on adolescent antisocial behavior and potential involvement in the juvenile justice system (Weiss et al., 2013). As compared to widely used CP interventions for younger children that primarily target parent and child behaviors within the home, MST programs focus on understanding and reducing adolescent engagement in antisocial behavior across all primary social contexts (e.g., school, peer, community; Henggeler et al., 2009). Research supporting the efficacy of this multi-faceted approach demonstrates the notable impact of sufficient monitoring and knowledge of youth activities outside of the home during this developmental period.

It has been speculated that conceptual confusion regarding the related, yet distinct constructs of parent monitoring and knowledge has limited the ability to draw consistent conclusions from this body of research (Keijsers, 2016; Racz & McMahon, 2011). While numerous early studies initially reported a link between low parental monitoring and adolescent conduct problems (Glueck & Glueck, 1950; Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1986; Patterson & Dishion, 1985; Patterson & Stouthamer-Loeber, 1984), a subsequent body of work by Stattin and Kerr (2000; Kerr and Stattin, 2000) alternatively suggested that previous measures of parental monitoring actually captured the construct of parental knowledge (i.e., knowledge gained about youth and their activities), calling for a reinterpretation of previous empirical findings. Following this distinction, more recent studies exploring how parenting behaviors impact youth CP have largely chosen to focus on the role of parental knowledge as opposed to parental monitoring (Lin et al., 2020; Neumann et al., 2010; Walters, 2018). This pattern was highlighted in a 10-year comprehensive review of studies exploring the association
between parental monitoring/knowledge and youth CP (Racz & McMahon, 2011); researchers noted that, of the 47 studies reviewed, 26 examined parental knowledge while only 7 assessed parental monitoring. This distinction was made through a careful review of conceptualization and operationalization of measures used in previous studies, and studies were considered to capture parent monitoring if measures examined active parental efforts to attend to and track children and their activities.

Expanding on conclusions drawn by Stattin and Kerr, further research has attempted to clarify the conceptual and temporal relationships between parental knowledge and youth CP. While some studies have suggested an indirect effect of parental monitoring on youth externalizing problems through parental knowledge (Fletcher et al., 2004), alternative investigations have concluded that parental knowledge is primarily determined by child factors (e.g., level of youth self-disclosure) as opposed to active parent monitoring behaviors (Crouter & Head, 2002; Keijsers & Laird, 2010; Kerr et al., 2010; Willoughby & Hamza, 2011). Research emphasizing the role of youth self-disclosure in predicting parental knowledge has prompted speculation that the association between parental knowledge and youth CP may be spurious (i.e., youth willingness to disclose information may be directly determined by level of CP). Considering confounding relationships with alternative components of parenting, research has additionally suggested that youth are more willing to disclose information when they perceive higher levels of parental warmth and support (Klevens & Hall, 2014). However, assertions that parent knowledge does not enact a meaningful influence on CP on account of the role of self-disclosure have been challenged through longitudinal studies evidencing a direct association between parental knowledge and adolescent CP above and beyond the influence of youth self-
disclosure (Lahey et al., 2008), indicating parental knowledge as a meaningful contributor to the development of youth CP.

Additional independent studies have supported an inverse association between parental knowledge and adolescent CP (Parker & Benson, 2004; Walters et al., 2018) with some evidence of bidirectional effects (Pardini et al., 2008). A unique, genetically-informed twin study by Marceau et al. (2015) concluded that higher parental knowledge was cross-sectionally associated with lower levels of youth CP via a direct environmental influence independent of genetic contributions. Focusing on studies utilizing a longitudinal design, Willoughby and Hamza (2011) found that higher parental knowledge predicted lower levels of adolescent CP over three years in a large ($N = 2,941$) community sample, with evidence suggesting a reciprocal association such that higher adolescent CP also predicted lower parental knowledge. Within a comparable community sample ($N = 4,597$) constituted at age 12 and assessed annually through age 17, higher levels of parental knowledge were linked to subsequent decreases in CP with additional evidence of a bidirectional effect (Neumann et al., 2010). Consistent findings were reported by Laird et al. (2003) in a smaller ($N = 426$) community sample of adolescents assessed annually from grade 9 to grade 12; higher levels of parental knowledge were associated with lower levels of CP whereas higher CP was linked to lower levels of parental knowledge. Though most past research has utilized community samples, these findings have also been replicated in clinical and offending samples of adolescents. Assessing a sample of boys from ages 6 to 16 demonstrating elevated CP, Pardini et al. (2008) reported that low parent knowledge was associated with higher teacher- and parent-reported CP at each time point. Within a sizable ($N = 1,170$) sample of youth involved in the juvenile justice system, Walters et al. (2018) found support for an indirect effect
of low parental knowledge on high adolescent CP outcomes through increased adolescent engagement in unsupervised routine activities.

In sum, empirical work has generally supported that parent knowledge exerts meaningful influence on the development of CP. However, further research is needed to clarify the specific protective influence of parent knowledge as compared to alternative parenting behaviors given past failure to consistently operationalize the construct and a scarcity of investigations within high-risk (e.g., clinical, offending) samples of adolescents.

Parenting and CP: Summary of Findings

Collectively, higher positive parenting and parental knowledge have been indicated as protective factors in the development of youth CP, whereas harsh parenting has been shown to act as a risk factor. Nevertheless, it is also necessary to highlight conflicting empirical findings. Reitz et al. (2006), for example, found that while adolescent conduct problems at age 13 impacted parenting behaviors (e.g., parental responsiveness, parent knowledge) one year later, there was no evidence of a parent-driven effect on adolescent CP over the same period. Notably, researchers attributed this finding to the brief, one-year time frame captured by the study and suggested that the effects of parenting may take more time to develop. In light of some conflicting evidence, and to clarify if the well-established links between parenting and CP in childhood extend through adolescence, additional replication of past findings is necessary.

How Parenting Impacts CU Behavior

Extending on literature demonstrating links between parenting and broader CP outcomes, more recent studies have identified parenting practices in childhood and adolescence as
contributing factors to the development of youth CU behavior (Waller et al., 2013). One prominent theory in the literature suggests that conduct problems develop independent of parenting in children with callous interpersonal styles (Lykken, 1995), potentially due to the affective and motivational styles characteristic of individuals with antisocial tendencies (e.g., an attenuated response to punishment cues or others’ distress; Kochanska, 1991; Oxford et al., 2003). However, a more recent alternative perspective has suggested malleability in children with CU behaviors in response to parenting, such that children may be influenced by parenting despite the presence of CU behaviors. For example, a meta-analysis by Waller et al. (2013) concluded that various dimensions of parenting were associated with both growth and stability in CU behaviors in children and adolescents. Studies examining the influence of parenting in regard to youth CU outcomes have assessed several parenting domains reflecting Baumrind’s (1975) constructs of authoritative, authoritarian, and permissive parenting. Within this body of research, affective dimensions of parenting (i.e., harshness, warmth) as well as level of knowledge regarding youth activities and whereabouts (i.e., parental knowledge) have been identified as salient environmental risk factors in the development of youth CU (Frick et al., 2014; Waller et al., 2013; Waller et al., 2018). However, it is necessary to first consider the impact of genetic factors on CU behaviors in order to highlight the importance of both genetic and environmental risks.

Research exploring genetic transferability of child and adolescent CU behavior in samples of twins supports moderate heritability for CU (Viding et al., 2005). A review of research by Viding and McCrory (2012) examining genetic and neurocognitive influences related to the development of CU traits highlighted consistently moderate to strong heritability estimates across studies, suggesting that between 40-78% of variation in CU behaviors in
children and youth are attributable to genetic influences. Despite clear indication of genetic vulnerability in the development of CU behaviors, Viding and colleagues concluded that existing research supports the important role of environmental influence above and beyond genetic predisposition. Among environmental influences explored in the literature review, parenting was highlighted as a promising aspect of CU prevention and intervention efforts. In agreement with meta-analytic findings reported by Viding and McCrory (2012), a recent genetically-informed analysis of a large twin sample ($N = 8,958$ twin pairs) revealed that, in addition to genetic risk, environmental influence acts as an important determinant of maintenance and growth in CU over time (Takahashi et al., 2021).

**Harsh Parenting and CU Behavior**

Literature exploring how differential aspects of parenting predict the level and growth of youth CU behaviors has most commonly focused on the influence of harsh parenting, with consistent evidence demonstrating that exposure to harsh parenting is associated with higher levels of CU behavior in childhood and adolescence (Barker et al., 2011; Fontaine et al., 2011; Pardini et al., 2007; Waller et al., 2012). Considering reduced guilt and empathy as core aspects of CU behavior, the association between harsh parenting and CU can be seen through early studies reporting that children who are exposed to harsh parenting display less guilt and are less concerned about the feelings of others (Hastings et al., 2000; Kochanska et al., 2002). Theoretical research has attributed the relationship between harsh parenting and youth CU to the idea that callous or harsh displays from parents as well as ineffective communication may leave their children unable to understand other’s emotions, inhibiting empathy development (Daversa, 2010). An additional perspective, informed by the social control theory, has similarly
emphasized the role of early social learning in explaining the link between parenting and CU behaviors. The social control theory suggests that social learning aids in the development of prosocial values that, in turn, help children develop self-control that reduces their inclination to engage in antisocial behavior (Hirschi, 1969). Harsh parenting, in particular, is thought to elicit increased arousal in children, inhibiting a child’s ability to internalize parental messages about prosocial behavior and subsequently increasing risk for CU (Pardini et al., 2007; Waller et al., 2018). From a theoretical standpoint, it has also been speculated that parental modeling may be responsible for the association between harsh parenting and the development of CU behaviors. Through consistent modeling of harsh parenting behaviors, parents may communicate to their child that aggression is an effective way to exert control over others despite suffering endured by the victim (Bandura, 1973; Gershoff, 2002; Pardini et al., 2007). This lack of disregard for the feelings of others is consistent with deficient empathy, which is considered a central component of CU behavior.

Longitudinal studies have repeatedly demonstrated the association between harsh parenting and the development of CU behaviors in youth. In a systematic review of nine studies examining the relationship between parenting and CU behaviors, Waller et al. (2013) concluded that harsh parenting in early childhood as well as negative discipline and corporal punishment in middle childhood were significant predictors of CU behaviors. However, alternative meta-analytic review findings have questioned the directionality of this relationship, citing that CU traits have been more predictive of changes in parenting over time than parenting has been predictive of changes in CU traits over time (Frick et al., 2014).

Limited studies assessing the relationship between harsh parenting and CU behaviors during early childhood have generally concluded that early exposure to harsh parenting
contributes to the development of CU behavior during preschool years (Trentacosta et al., 2019; Waller et al., 2012). Within the literature examining middle to late childhood, Waller et al. (2012) found that higher levels of maternal aggression at 18 months were associated with higher levels of CU behavior at ages 10-12 in a sample of 310 low income, urban males. Frick et al. (2003) reported that third through seventh grade children exposed to negative parenting practices, defined by corporal punishment, inconsistent discipline, and poor monitoring, exhibited increases in CU behavior from childhood to adolescence over a four-year period. Pardini et al. (2007) similarly found that fifth-grade children exposed to higher levels of corporal punishment, in addition to those who reported their caregivers as being low in warmth and involvement, displayed increases in CU behaviors over a 1-year period even after controlling for prior levels of CU behaviors. In an additional study that examined environmental predictors of CU trajectories in a large ($N = 9,578$) community sample of youth across ages 7 to 12, negative parental discipline (i.e., harsh physical punishment) was associated with a stable “high” trajectory of CU behaviors (Fontaine et al., 2011).

Moving to the adolescent age range, a prospective longitudinal study of a large nationally representative sample ($N = 7,000$), determined that harsh parenting at age 4 predicted higher levels of CU at age 13 (Barker et al., 2011). Salihovic et al. (2014) reported that adolescents with high/stable trajectories of psychopathic traits, including CU, reported experiencing the highest levels of negative parental behavior (e.g., angry outbursts, coldness-rejection) as compared to those found to follow lower and less stable CU trajectories. Participants in this study were 1,068 youths ages 10-18 who were assessed annually for five years. Focusing in on developmental trajectories of CU within adolescence (i.e., ages 14-18), parent physical punishment was found to be associated with a higher CU intercept (Pardini & Loeber, 2008). However, dysfunctional
parent-child communication was identified as the most robust predictor of CU trajectories over time. A more recent, alternative investigation modeling adolescent CU trajectories through young adulthood in the same sample that will be utilized for the current analyses replicated past findings; youth with stable/high CU trajectories reported the most dysfunctional parenting, including higher levels of parental harshness (Waller et al., 2018). Notably, these effects emerged while controlling for the effects of other individual and contextual risk factors for CU (e.g., youth psychopathology, neighborhood risk). In sum, research has consistently found a positive association between youth exposure to harsh parenting and CU, with some studies suggesting that parental harshness may additionally predict increases in CU over time.

Positive Parenting and CU Behavior

In the same way that exposure to harsh parenting has been theorized to contribute to the development of youth CU through inhibiting empathy development and the internalization of prosocial values, positive aspects of parenting (e.g., warmth, responsiveness, acceptance) are thought to influence the development and prevention of CU though promoting adaptive emotional functioning and strong social bonds (Kochanska, 1997; Waller et al., 2018). In a review of the literature, Waller and colleagues (2013) concluded that focus on positive affective dimensions of parenting may be particularly important to the development and maintenance of youth CU behavior.

With regard to specific studies examining this association, a study by Frick et al. (2003) assessing stability of CU measured over a four-year period in a sample of third through seventh grade children reported that positive parent-child relationships (based on measures of warmth, involvement, and positive reinforcement) were associated with a decrease in CU. Similar
findings involving the influence of specific positive parenting behaviors on CU were reported by Muratori et al. (2016) in a sample of 126 elementary aged children as well as Hawes et al. (2011) in a large community sample of children aged 3 to 10 ($N = 1,008$). Findings from Pardini et al. (2007) evidenced a decrease in fifth-graders CU over a 1-year period that was predicted by higher levels of child-reported parental warmth. An additional study by Waller et al. (2015) reported direct associations between maternal warmth and child CU at ages 10-12, controlling for concurrent conduct problems. In a partial replication of past findings, an observational study by Pasalich et al. (2011) indicated that paternal, but not maternal, warmth was associated with lower levels of CU behaviors in a modestly sized ($N = 95$) clinical sample of boys ages 4 to 12. These findings support the notion that CU behaviors in childhood are typically less stable than antisocial personality traits found in adults (McCrae et al., 2002).

Fewer studies have utilized adolescent samples when exploring how parental warmth may act as a risk or protective factor against the development of CU. Pardini et al. (2008) modeled developmental trajectories of CU from ages 14 to 18 in a community sample of 506 boys and found that low parental warmth predicted higher initial levels of CU but did not enact substantive change on CU over time. Among 236 low-income adolescents ($M_{age} = 13$ years, $SD = 1.56$ years), supportive parent relationships were found to be negatively associated with CU longitudinally (Davis et al., 2015). Examining a comparable sample of 227 urban male adolescents ($M_{age} = 15.73$, $SD = 1.27$), Kimonis et al. (2013) reported that low maternal warmth and affection was associated with higher levels of adolescent CU, above and beyond the effects of childhood trauma found to be predictive of CU. A recent study by Goulter et al. (2020) additionally replicated past findings; low parental warmth in kindergarten through grade 2 was found to positively predict CU in adolescence ($N = 753$). Taken together, the current literature
strongly suggests that demonstrating consistent positive parenting behaviors may mitigate the risk of CU development in youth. Positive parenting, however, is not the only adaptive parenting construct that has emerged as a potentially meaningful contributor to CU development and growth.

**Parental Knowledge and CU**

While the influence of affective parenting behaviors (e.g., harshness, warmth) on youth CU have been more thoroughly explored in the current literature, parent knowledge of youth behavior has emerged as a potential predictor of youth CU (Waller et al., 2013). This parenting construct is considered to be particularly important during the developmental period of adolescence, when the emphasis of parenting shifts from regulating youth behavior in the home to regulating youth behavior within social groups and in other environmental contexts (Kerr & Stattin, 2000; Stattin & Kerr, 2000). In specific relation to CU traits as compared to other forms of youth behavior problems, it has been speculated that parents may have less knowledge about their child’s behavior when children are considered “cold” or emotionally closed (Kerr & Stattin et al., 2000; Muñoz et al., 2011).

Individual studies assessing direct effects of parental knowledge on child and adolescent CU have generally found low levels of parent knowledge to be associated with higher levels of CU (Frick et al., 2003). In a clinical sample of 120 fourth graders (M age = 10.56 years, SD = 0.56), Childs et al. (2014) reported that poor supervision/monitoring predicted increases in CU behaviors over a 4-year period. Notably, the supervision/monitoring subscale of the Alabama Parenting Questionnaire (APQ; Shelton et al., 1996) used by Childs and colleagues (2014) has been reported to more accurately capture the construct of parental knowledge, as opposed to
monitoring, in an alternative study measuring knowledge and monitoring separately (Muñoz et al., 2011). Exploring the influence of various parenting dimensions on child CU in a large \( N = 1,008 \) community sample of youth aged 3 to 10 years (M age = 6.5 years, SD = 1.3), Hawes et al. (2011) found that poor parental monitoring/supervision (i.e., knowledge), also measured using the APQ, uniquely predicted increases in CU over a 1-year period while controlling for child conduct problems. However, an age effect was detected in that this relationship was only evidenced within the lower age range of the sample.

Despite its noted importance during adolescent years, few studies have investigated the impact of parent knowledge on level and growth in CU in older samples of youth. One study using a community sample of 506 boys found that adolescents who reported low levels of parent knowledge (e.g., “Do your parent(s) know who you are with when you are away from home?”) exhibited higher levels of CU at baseline and throughout adolescence (i.e., from ages 14-18), despite experiencing greater decreases in CU over time (Pardini & Loeber, 2008). These findings have also been demonstrated in high-risk samples of adolescents (i.e., adolescents involved with the juvenile justice system). Examining the sample of offending adolescents that will be utilized in the present study, Waller et al. (2018) found that youth characterized as having stable/high CU trajectories across ages 14 to 18 reported the lowest levels of parental knowledge while controlling for alternative individual, familial, and contextual risk factors associated with CU outcomes. Notably, the measure of parental knowledge used by Waller and colleagues (2018) is identical to that of the present study. Extending on the larger body of work linking higher levels of parental knowledge to lower CP, studies focusing on CU outcomes have collectively proposed that parent knowledge may demonstrate unique associations with CU, such that insufficient knowledge increases CU vulnerability.
Parenting and CU: Summary of Findings

A vast majority of studies, including empirical reviews, have indicated that parenting is important in predicting CU behaviors, such that high positive parenting and knowledge are negatively associated with CU whereas harsh parenting is positively associated with CU. Nevertheless, notable exceptions have reported that positive parenting (Waller et al., 2012), harsh parenting (Viding et al., 2009), or parental knowledge (Vitacco et al., 2003) do not significantly impact changes in youth CU, calling for further clarification of inconsistent findings through extension and replication of existing work. In considering meaningful extensions of research in this area, more recent studies have revealed that broader community contexts outside of the family may additionally dispose youth for a greater risk of CU and CP development (Waller et al., 2018).

Neighborhood Disorder to CP/CU Outcomes

Beyond familial influence, broader contextual influences such as ND have been identified as risk factors to the development of youth CP and CU (Curtis et al., 2013; Leventhal & Brooks-Gunn, 2000; Ray et al., 2019). ND has been conceptualized as including physical disorder of the environment (e.g., graffiti, litter, abandoned buildings) as well as social disorder (e.g., adults fighting or arguing loudly, public intoxication; Neumann et al., 2010). Research in this area has been strongly based in an ecological systems perspective, which emphasizes the importance of examining how nested structures of both immediate and broader contextual factors collectively influence development (Bronfenbrenner, 1977). Adolescence has been noted as a particularly important developmental period for the influence of neighborhood effects as adolescents spend
increasingly more time in community settings (Leventhal & Brooks-Gunn, 2000; Neumann et al., 2010). In attempting to explain causal mechanisms between neighborhood disorder and youth antisocial behavior, Sampson et al. (1997) theorized that poor neighborhood structural characteristics inhibits social cohesion and collective efficacy among residents, creating increased opportunity for antisocial behavior. Aligning with the described theoretical models, numerous studies have focused on understanding how neighborhood disorder may contribute to adolescent CP, and more recently, CU.

**Neighborhood Disorder and CP**

A growing body of literature has assessed whether neighborhood disorder represents a risk factor for the development and maintenance of youth CP. A notable review of this literature by Curtis et al. (2013) assessing multiple neighborhood factors as they relate to maladaptive health outcomes in young individuals aged 10-20 concluded that higher neighborhood poverty was consistently and positively associated with youth CP. While researchers indicated that only a sparsity of studies have examined the influence of physical neighborhood degradation as compared to broader poverty, these studies have also generally evidenced an association between worse physical conditions and a greater risk for youth CP (Curtis et al., 2013). These findings mirror earlier meta-analytic conclusions, based on a review of both regional and national studies, that neighborhood disadvantage (e.g., neighborhood poverty, residential instability, structural defects) is associated with higher levels of CP in childhood and adolescence (Leventhal & Brooks-Gunn, 2000).

Two genetically-informed studies have highlighted the role of neighborhood disorder in shaping the development of youth CP through the examination of shared environmental risk.
Using a sample of twins ages 16-17, Tuvblad et al. (2006) found that shared environmental influence had a stronger effect on adolescent CP in socioeconomically disadvantaged neighborhoods as compared to affluent neighborhoods. These findings were also replicated in a sample of younger children (Burt et al., 2016), suggesting that shared environmental influence on youth CP increases with increasing neighborhood disorder. The impact of ND on youth CP has been further demonstrated through studies utilizing unique experimental designs; findings from the Moving to Opportunity (MTO) experiment, which offered randomly selected families living in high-poverty housing vouchers to move to lower-poverty neighborhoods, suggested that moving to a lower-poverty neighborhood significantly reduces juvenile involvement in more severe forms of CP (i.e., violent crime; Ludwig et al., 2001).

Despite broad conclusions from literature reviews evidencing a positive association between neighborhood disorder and CP, individual studies assessing this relationship have produced mixed findings. Utilizing cross-sectional data, Chung and Steinberg (2006) determined that poor neighborhood social organization assessed through census-level data was indirectly associated with adolescent CP through parenting behaviors and peer deviance in a sample of 14-18 year old adolescent offenders (\(N = 488\)). Extending findings drawn from a single time point, a longitudinal investigation by Goodnight et al. (2012) comparing cousins differentially exposed to neighborhood disorder determined that observed neighborhood disorder (e.g., residents’ respect for rules and laws, crime and violence, abandoned or run-down buildings, level of police protection, available public transportation, unsupervised children, unemployment) was robustly associated with both parent- and child-report CP across ages 4-13 while controlling for measured risk factors known to be correlated with neighborhood disorder as well as unmeasured confounds. These findings are consistent with an additional longitudinal study evidencing a main
effect of neighborhood risk (i.e., neighborhood economic deprivation) on adolescent CP in a large, adolescent community sample ($N = 4,597$) assessed from age 12 to 17 (Neumann et al., 2010). Research has also suggested that neighborhood disorder may predict growth in CP over time; a study by Wang et al. (2014) found that neighborhood factors at baseline, conceptualized as the frequency of substance use and drug trafficking present in the youth’s environment, predicted following moderate-risk/increasing and high-risk/increasing CP trajectories. Participants in this study were 1,276 youth assessed from grade 6 through grade 9.

Exceptions to the described findings linking ND to CP must also be considered. Schneiders et al. (2003) evidenced a cross-sectional association between ND and CP in a substantially-sized ($N = 2,587$) community sample of 10- to 14-year-olds in the Netherlands while controlling for individual level socioeconomic status (SES). However, ND did not predict increases in CP at a 2-year follow-up. In this study, ND was conceptualized as a combination of eight indices of disadvantage (i.e., percentage of 17-year-olds enrolled in education, percentage of adults receiving welfare, percentage of residents with non-Dutch nationality, percentage of unemployed adult males, residential instability within the previous year, percentage of households with married couples, mean income, mean age of residential buildings). In a comparable short-term longitudinal study, Martin-Storey et al. (2021) reported that observed ND (i.e., elements of both physical and social disorder as assessed using the Neighborhood for Child Rating Scale; Coulton et al., 1996) was not significantly associated with CP one year later in a clinical sample of youth ($N = 774$; M age = 12.23 years). Inconsistent findings within the neighborhood disorder literature have been attributed to differences in measurement of neighborhood quality (i.e., self- or parent-report as compared to census level data) as well as sampling discrepancies (i.e., differences in the severity of neighborhood disadvantage captured
across studies; Goodnight et al., 2012). As such, further research is needed to disentangle empirical inconsistencies and provide a clearer understanding of how neighborhood disorder may shape CP development during the critical period of adolescence.

**Neighborhood Disorder and CU**

In comparison to broader conduct problems, the impact of ND on youth CU has received notably less empirical attention (Waller et al., 2017). It has been proposed that youth with high CU may be more susceptible to reductions in social control and increased opportunity to engage in antisocial behavior present in neighborhoods with elevated levels of physical and social disorder due to individual characteristics (e.g., low impulse control) commonly associated with CU (Ray et al., 2016). In support of this perspective, various individual studies have indicated links between quality of neighborhood conditions and youth CU outcomes (Ray et al., 2019; Waller et al., 2015).

Although not conceptually identical to neighborhood disorder, low SES has been identified as developmental precursor to CU in youth. Markowitz et al. (2015), for example, found that the association between youth CU and violence was strongest among youth living in low-income neighborhoods as compared to more affluent neighborhoods in a sizable \( N = 8,695 \) sample of adolescents ages 13-18 (M age = 16.2). Similarly examining the contextual influence of socioeconomic status on CU, a large \( N \approx 7,000 \) 14-year longitudinal study by Barker et al. (2011) concluded that adolescents demonstrating CU and CP were from lower SES circumstances as compared to CP only youth. Waller et al. (2015) assessed a moderately sized \( N = 310 \) sample of urban male adolescents and determined that higher levels of neighborhood impoverishment, conceptualized as a combination of contextual factors
including neighborhood poverty, residents receiving public assistance, unemployment rates, and education level, was directly associated with higher CU behavior at ages 10-12 and age 20. Notably, participants in this sample were considered high-risk due to oversampling for socioeconomically disadvantaged families. The association between SES and CU has also been evidenced in earlier developmental periods; Mills-Koonce et al. (2016) found that family socioeconomic status during the first year of life predicted increased risk for CU during first grade, with evidence of mediation through sensitive and harsh parenting.

A few key studies have specifically considered how neighborhood social and physical disorder, as compared to neighborhood- or family level-SES, may impact the development and maintenance of CU behavior in adolescence. Aligning with literature examining the related construct of SES, Ray et al. (2019) found that neighborhood disorganization assessed using an adapted version of the Neighborhood Conditions Measure (Sampson & Raudenbush, 1999) showed consistent, positive associations with CU at each time point. The sample of this study consisted of 1,216 adolescent first-time offenders between the ages of 13 and 18 that were assessed at 6-month intervals over 3 years. Contrasting findings reported by Ray et al. (2019), an additional recent study by Waller et al. (2018) attempted to determine whether neighborhood disorder represented a salient risk factor for growth trajectories of CU behavior in the sample of offending male adolescents \((N = 1,170)\) that will be utilized for the current analyses. Although the measure of neighborhood disorder was identical to that used by Ray et al. (2019), results indicated that CU trajectory membership did not significantly differ based on youths’ experience of neighborhood disorder. Given the described inconsistencies in conceptualizing ND as well as discrepant findings between studies reporting on comparable ND constructs, additional studies are needed to clarify past findings through replication. Further, given mixed findings in this area
of the literature, it is also necessary to consider alternative contextual forces that may account for additional variability in youth CU longitudinally.

Community Violence Exposure to CP/CU Outcomes

Youth exposed to higher levels of CVE, conceptualized as parent or youth reports of violent events personally experienced by youths outside of their homes (Lynch, 2003; Richters & Martinez, 1993), present an increased risk for the development of CP and CU (Curtis et al., 2013; Davis et al., 2015; Fowler et al., 2009; Waller et al., 2018). The link between violence exposure and antisocial behavior broadly has been supported through social learning theories purporting that community violence exposure models violence as appropriate behavior (Bandura, 1973; Pardini et al., 2007). Chronic exposure to community violence has also been shown to interfere with moral and emotional processing, such that violence-exposed youth are more prone to cognitive deficits that interfere with adaptive coping (Davis et al., 2015; Kimonis et al., 2011).

From a physiological perspective, it has been suggested that youth repeatedly exposed to community violence experience blunted arousal during violent acts, which contributes to the likelihood of engaging in aggressive behavior. However, physiological-based theories have alternatively suggested youth with higher levels of community violence exposure may experience hyperarousal in benign situations, resulting in a more hostile attribution bias that further facilitates antisocial behavior (Dodge & Somberg, 1987). Aligning with Hirschi’s (1969) social control theory, it has also been proposed that neighborhoods characterized as violent may limit youth’s opportunities to engage in groups and activities that foster prosocial behavior, resulting in weak social bonds that are less effective in inhibiting antisocial behavior (Hong et al., 2014). Alternatively, from an evolutionary life history perspective, adolescent aggression and
risk-taking behaviors can represent adaption to environmental unsafety and unpredictability (Lu & Chang, 2019), which may be further reinforced through restrictive and controlling parenting practices aimed at protecting youth living in chronically dangerous environments (Kotchick & Forehand, 2002). Despite overlap in theoretical foundations linking CVE to CU and CP outcomes, individual studies assessing these distinct pathways must also be considered.

**Violence Exposure to CP**

A breadth of research has explored how neighborhood risk factors contribute to the development of youth conduct problems, with both meta-analytic and individual studies specifically highlighting CVE as a meaningful contextual risk factor (Hong et al., 2014). A literature review by Curtis et al. (2013) examining associations between neighborhood risk and psychopathology in individuals ages 10-20 concluded that CVE is associated with higher adolescent externalizing problems, including general misconduct, delinquency, and hostility. These findings echo that of an earlier review of 114 studies by Fowler et al. (2009) who similarly reported that community violence exposure increases risk for the development of youth conduct problems, additionally concluding that witnessing community violence was more impactful for CP development than hearing about community violence. Specific to the adolescent age range, research has also evidenced a transactional relationship between community violence exposure and adolescent externalizing behavior, such that youth with higher levels of externalizing problems are more likely to place themselves in situations that increase their risk for violence exposure (Fowler et al., 2009; Lynch & Cicchetti, 1998).

Cross-sectional literature has consistently demonstrated a positive association between community violence exposure and youth CP (Chen et al., 2016; Poquiz & Fite, 2018). For
example, Bacchini et al. (2011) found that higher community violence exposure was associated with higher CP within a sample of 489 adolescents between the ages of 16 and 19 (M age = 17.53, SD = 1.24). Notably, this pattern was detected for both victims and witnesses of community violence. Expanding on cross-sectional investigations, Gorman-Smith et al. (2004) reported that low-income urban males (N = 236) exposed to higher community violence in mid-adolescence were more likely to engage in violent behavior by early adulthood. These findings replicate earlier short-term longitudinal conclusions drawn from a comparable sample (Gorman-Smith & Tolan, 1998). An alternative study examining a similar developmental period evidenced a link between community violence exposure and adolescent CP over two years (McCabe et al., 2005); participants in this study were 423 high-risk adolescents (i.e., youth who were enrolled in alcohol/drug treatment, mental health services, or school services for emotional disturbance) initially assessed at age 12-17. Consistent with findings from high-risk samples, a study by Slattery et al. (2014) utilizing a large (N = 1,196), nationally representative community sample identified CVE exposure in grades 7-12 as a strong and direct predictor of adolescent CP approximately 1-2 years later.

Taken together, evidence from cross-sectional and longitudinal studies support community violence exposure as a salient contributor to CP during adolescence. However, a notable exception by Wiesner et al. (2015) exploring correlates of conduct problems in a representative community sample of fifth graders (N = 4,705) failed to detect a significant relationship between exposure to neighborhood violence and CP symptoms in multivariate models. Considering these contradicting findings in the context of broader theoretical cautions regarding directionality of the relationship between violence exposure and youth CP, further research in this area is necessary.
Violence Exposure to CU

Conceptual models exploring how CVE may specifically impact CU, as compared to broader CP, are supported by studies consistently linking higher levels of trauma exposure to elevated CU (Kimonis et al., 2012; Tatar et al., 2012). It has been suggested that adolescents exposed to high, chronic rates of violence may respond by becoming more emotionally detached to the effects of violence on others (Kerig et al., 2012; Ray et al., 2019), potentially serving as an adaptive coping mechanism for unescapable trauma (Lansford et al., 2006; Porter, 1996). However, despite short-term effectiveness, research has demonstrated that this cycle of emotional suppression conversely produces an increase in emotional distress (Craig et al., 2021). These findings highlight the need for additional studies clarifying how specific types of trauma, including CVE, contribute to the development and maintenance of CU in order to inform intervention efforts aimed to disrupt maladaptive patterns of emotional detachment and numbing.

Numerous correlational studies have reported a positive association between community violence exposure and adolescent CU (Kimonis et al., 2008; Oberth et al., 2017; Schraft et al., 2013), although some have noted that this association was no longer significant when included in a model with other contextual variables (Ray et al., 2019). Alternative investigations exploring the link between violence exposure and youth CU have evidenced bidirectionality in the relationship, with one study suggesting that adolescent community violence exposure mediates the relationship between CU and subsequent criminal offending (Howard et al., 2012). Less frequently, past studies have utilized longitudinal models assessing temporal relationships between community violence exposure and CU outcomes. For example, among 236 low-income adolescents (M age = 13.00, SD =1.56), both witnessing and hearing about community violence
were associated with higher CU one year later (Davis et al., 2015). These findings were replicated in a more recent investigation by Waller et al. (2018) modeling growth in CU from adolescence to early adulthood in the substantially-sized ($N = 1,170$) sample of high-risk youth (i.e., youth involved with the juvenile justice system) utilized in the present study; researchers found that higher levels of community violence exposure predicted that adolescents were more likely to follow a high/stable CU trajectory. Collectively, past findings highlight the notion that adolescent exposure to violent contextual risk within the community setting may directly predict increased CU above and beyond broader CP.

The Interaction Between Parenting and Contextual Risk on CP Outcomes

Consistent with an ecological systems perspective (Bronfenbrenner, 1986), past empirical work has indicated that the influence of parenting behaviors on youth behavior outcomes varies based on neighborhood characteristics (Beyers et al., 2003). Social disorganization theorists have suggested that parents may be less effective in deterring youth problem behavior in socially disorganized (i.e., economically fragile, residentially unstable) communities as these environments counteract the protective effects of adaptive parenting though discouragement of social ties among residents and reduced informal social control over youth behavior (Roche et al., 2007). Previous research has also highlighted the potential confounding role of family resources in linking neighborhood risk with maladaptive parenting, such that lower SES families with fewer resources (e.g., financial, time) are more likely to live in communities with higher ND/CVE (Stein et al., 2003). Parents with limited access to resources may also have less time to dedicate to supervising youth or engaging in positive, supportive interactions (Dorsey & Forehand, 2003). These findings demonstrate the necessity of accounting for differences in SES
when attempting to examine the individual and interactive effects of parenting and community risks on youth behavior outcomes. Considering theoretical support for the differential impact of parenting on youth behavior outcomes as determined by community-level risk factors, research has begun to uncover how established contextual risk factors for CP (i.e., ND and CVE) may interact with specific parenting behaviors to more accurately account for CP outcomes in youth.

**Parenting by Neighborhood Disorder on CP**

A scarcity of studies have explicitly assessed how different parenting behaviors may interact with neighborhood characteristics to predict youth CP, with varying conceptualizations of neighborhood disorder and parenting constructs further contributing to a lack of clarity in the current literature. Providing preliminary support for the protective influence of adaptive parenting on the association between neighborhood disorder and CP outcomes, a review of the knowledge literature by Racz and McMahon (2011) concluded that parental knowledge may be particularly important to CP development in neighborhoods characterized as high-risk.

Additionally assessing the construct of parental knowledge, Sharma et al. (2019) demonstrated that cumulative risk (i.e., a combination of neighborhood ecology, violence exposure, life stressors, and racial discrimination) was more weakly associated with adolescent CP for youth reporting high parental knowledge ($N = 576$; $\text{Mage} = 16$, $\text{SD} = 1.44$).

These cross-sectional findings indicating the potential protective role of parent knowledge in the context of neighborhood disorder have also been replicated in longitudinal models. Beyers et al. (2003), for example, found that higher residential instability measured through census level data was associated with higher adolescent CP two years later, but only for youth who received low levels of parent monitoring (i.e., parents knowledge of children’s
activities, the people present during the activities, parents’ opinions regarding the degree of
difficulty tracking their children’s activities and whereabouts, and parents’ beliefs about the level
of monitoring their children receive at friends’ houses). Adolescents in this sample ($N = 440$)
were assessed from age 11 to 13. Similar conclusions were drawn from a more recent
longitudinal study (Herman et al., 2020) within a sample of youth ($N = 522$) assessed between
grades 7 and 12; parental knowledge was found to moderate the influence of neighborhood
disorder on CP such that low parent knowledge was associated with increased CP in high- as
compared to low-risk neighborhoods. Neighborhood disorder was measured using the
Neighborhood Environment Scale (NES; Elliot et al., 1985) with items suggesting conceptual
similarity to the neighborhood disorder variable included in the present study.

As compared to parental knowledge, fewer empirical investigations have focused on how
affective parenting behaviors, including harshness and warmth, may interact with neighborhood
disorder to predict adolescent CP outcomes. One notable study of 236 sibling pairs with mean
ages of 10 and 13 years by Brody et al. (2003) found that a latent parenting construct
representing harsh-inconsistent parenting and low levels of nurturant-involved parenting was
more strongly associated with CP for adolescents living in the most disadvantaged
neighborhoods. However, neighborhood disadvantage in this study was conceptualized as
economic disadvantage at the neighborhood level according to census data rather than
individual-level perceptions of physical and social disorder. Capturing a larger developmental
period, Xu et al. (2020) detected main effects of early (i.e., age 3) parental involvement and
neighborhood disorder on adolescent (i.e., age 15) CP, such that involvement acted as a
protective factor whereas neighborhood disorder represented a risk factor. However, analysis of
interaction effects revealed that parent involvement failed to buffer against the damaging effects of neighborhood disorder on CP.

While commonly considered to contribute to CP outcomes, it has conversely been suggested that harsh parenting may be less important for CP development for youth living in high-risk contexts (Herman et al., 2020). In support of this perspective, a short-term longitudinal study by Roche et al. (2007) found that harsh parenting was less strongly associated with youth CP in dangerous and disorganized neighborhoods, as compared to communities characterized as safe and socially organized. The sample in this study was comprised of 800 African American and Latino youth ranging from 10 to 14 years old. In support of these findings, a follow-up study by Roche et al. (2011) assessing a large \( N = 1,147 \) sample of low-income urban youth reported that harsh parental discipline in childhood was associated with increased CP during mid adolescence when accompanied by low, but not high, levels of neighborhood disorder. Importantly, the measure used to assess neighborhood disorder is identical to that of the present study.

Overall, the current literature provides the strongest support for the protective effect of parental knowledge on adolescent CP outcomes in the context of neighborhood disorder as compared to positive or harsh parenting. While one study determined that a combination of high harshness/low warmth parenting exacerbated the maladaptive influence of neighborhood disorder on CP (Brody et al., 2003), others have found that harsh parenting enacted a weaker influence on CP for youth living in neighborhoods with higher levels of disorder (Roche et al., 2007, 2011). Given inconsistencies with construct operationalization across studies as well as inconsistency of findings between studies assessing similar constructs, further research is needed
to better understand potential interactions between the described familial and contextual-level influences in the prediction of youth CP.

**Parenting by Exposure to Violence on CP**

While a number of studies have conceptualized the relationship between community violence exposure and youth CP through simple theoretical models suggesting a direct effect of violence exposure on CP outcomes (Horn & Trickett, 1998; Ng-Mak et al., 2004), others have suggested a more complex pattern of influence such that family- and community-level ecological contexts may combine in a way that exerts a meaningful influence on CP development (Curtis et al., 2013; McCabe et al., 2005). Supporting the specific influence of parenting behaviors, a comprehensive review by Ozer et al. (2017) assessing environmental moderators (i.e., family, school, and community factors) of the relationship between CVE and mental health among youth identified the quality of parent-child relationships as the protective factor that has been most commonly found to moderate the association between community violence exposure and youth externalizing outcomes.

Consistent with meta-analytic conclusions, one cross-sectional study of 1,196 ninth graders in rural communities reported that parenting and family support moderated the link between witnessing violence and CP such that this association was stronger among adolescents who reported low family support (i.e., lower companionship, lower emotional support, higher conflict, higher criticism) or high levels of poor parenting (i.e., a combination low monitoring and maladaptive discipline; Mazefsky & Farrell, 2005). An additional study by Gorman-Smith et al. (2004) similarly combined various parenting behaviors (i.e., positive parenting, discipline practices, extant of monitoring and involvement, and family relationship characteristics) to create
four family types through cluster analysis. Results, based on 236 urban youth participants between the ages of 11 and 15 at baseline, indicated that adolescents exposed to community violence were less likely to demonstrate violent CP 4 years later when their family type was considered “exceptional” (i.e., families that demonstrated the highest levels of adaptive parenting practices and structure over time who were also emotionally enriching) as compared to each other family type.

Few studies have assessed the moderating influence of individual parenting behaviors, such as harshness, positive parenting, and parental knowledge, on the association between CVE and adolescent CP. Assessing the construct of parental monitoring, conceptualized as how often youth kept their parents informed and how often their parents kept track of youth’s activities outside the home, Bacchini et al. (2011) determined that the relationship between CVE and adolescent CP was weaker for youth who received higher levels of parental monitoring. However, this pattern only applied to adolescents who reported being victims of, rather than solely witnessing, community violence. Participants in this single time-point study were 489 adolescents between the ages of 16 and 19 (M age = 17.53, SD = 1.24). In an alternative cross-sectional study (Zhang et al., 2021), parental knowledge was found to moderate the association between community violence exposure and adolescent CP in a community sample of 1,797 high school students, such that the positive association between community violence exposure and adolescent CP was significantly stronger for adolescents who reported low parent knowledge.

Findings supporting the protective moderating influence of positive parenting were also reported within a large (N = 1,599) sample of urban middle school students ranging from 11-15 years old; receiving both average and high levels of parental support, as compared to low levels, weakened the association between CVE and subsequent violence perpetration one year later.
(Brookmeyer et al., 2005). In contrast, a cross-sectional investigation by Chen and Jacobson (2013) determined that, while parental warmth was negatively associated with adolescent CP, warmth did not interact with CVE to predict CP outcomes in a community sample of sixth through eighth graders (M age = 12.48; N = 2,980). Two short-term longitudinal studies additionally failed to detect a significant interaction between parent-child relationship quality (Kliewer et al., 2004) or positive parental involvement (Pearce et al., 2003) and youth CVE on CP. Additional studies are therefore needed to resolve conflicting findings as well as supplement the lack studies utilizing long-term longitudinal designs.

The Interaction Between Parenting and Contextual Risk on CU Outcomes

In comparison to broader CP, even fewer studies have attempted to uncover how parenting behaviors may moderate the association between the contextual risk factors of ND and CVE on youth CU development and growth. However, as previously described, the necessity of considering both parenting and neighborhood-level variables in predicting CU outcomes is supported by ecological theories of development asserting that nested structures of both immediate and broader contextual factors collectively influence developmental outcomes (Bronfenbrenner, 1977). In relation to CU outcomes specifically, meta-analytic findings have suggested that parenting practices must be considered in the context of broader environmental risk in order to fully assess their impact on CU development (Waller et al., 2017). As parenting has been found to moderate the association between individual-level risk (i.e., fearlessness) and CU outcomes (Waller et al., 2016), it is possible that interactions between parenting and community-level risk may similarly impact growth in CU.
A majority of previous investigations evaluating links between parenting behaviors, community risk, and CU have focused on interactions between CU behavior and community risk (i.e., neighborhood disorder, violence exposure), or CU and parenting behaviors, in predicting subsequent antisocial behavior (Howard et al., 2012). A lack of research assessing how level and growth in CU is predicted by interactive contextual risk factors may be attributed to the notion that CU is highly heritable and stable over time (Frick et al., 2003, 2005), prompting researchers to more commonly include CU as a predictor rather than an outcome variable. However, studies highlighting malleability in CU in response to parental and community risk factors (Waller et al., 2018) demonstrate the potential for interaction effects, such that parenting behaviors may protect against or exacerbate the maladaptive impact of community risk on CU outcomes. This position was supported by a recent review of CU etiology in children and adolescents, concluding that genetic vulnerability, in interaction with parenting and alternative environmental factors, shapes the development and growth in CU over time (Pisano et al., 2017). Given established malleability in CU, clarification of which specific risk factors (e.g., adaptive parenting, ND, CVE) may collectively impact change in CU over time is necessary to identify youth with the highest risk for CU development and maintenance as well as to inform intervention efforts targeting environmental influences.

**Parenting by Neighborhood Disorder on CU**

As previously reviewed, studies examining independent contributions of parenting and neighborhood disorder to variability in CU outcomes have generally found that adaptive parenting (i.e., higher positive parenting and knowledge, lower harshness) protects against CU development (Waller et al., 2015, 2018), whereas conclusions about neighborhood disorder have
been mixed (Ray et al., 2019; Waller et al., 2018). While no studies to date have explicitly assessed interaction effects between the specific parenting behaviors of harshness, positive parenting, and knowledge and neighborhood social/physical disorder on growth in CU over time, studies of related constructs provide preliminary support for potentially meaningful interactions between parenting and neighborhood risk on CU.

For example, a longitudinal study by Waller et al. (2015) demonstrated main effects of low childhood parental warmth and high census-level neighborhood impoverishment on higher CU in early adolescence, with additional evidence of an indirect effect of contextual risk on CU development through low maternal warmth. These findings suggest that negative parenting behaviors may enhance CU development particularly among families residing in more disadvantaged neighborhoods (Pisano et al., 2017). Additional empirical work has also examined interactions between parenting and household, versus neighborhood, disorder in predicting CU outcomes, finding that higher levels of household disorder (i.e., environmental chaos on the home) exacerbated the positive association between harsh parenting and CU during adolescence (Kahn et al., 2016). While household and neighborhood disorder are conceptually distinct, studies including both constructs have identified a positive correlation between these two types of environmental disorder (Jocson & McLoyd, 2015), noting that both household- and neighborhood-level disorder are characterized by crowding and density, noise and confusion, lack of social structure/routine, and physical incivilities.

Findings from alternative study of 1,292 families of young children assessing the interplay between positive and harsh parenting behaviors, contextual risk (i.e., household disorder and socioeconomic status), and CU development longitudinally contradict those of Kahn et al. (2016). While household disorganization, positive parenting, and harsh parenting all
independently predicted CU behavior in the expected direction, level of household disorder did not significantly moderate the association between either parenting behavior and early childhood CU (Mills-Koonce et al., 2016). However, the nature of the sample (i.e., community, preschool) limits generalizability to older, higher-risk populations.

Taken together, the current literature offers some distal support for interaction effects between the environmental influences of parenting and neighborhood disorder on youth CU development. However, a lack of research in this area limits the ability to draw conclusions regarding these potential pathways to CU, indicating the need for additional studies to provide further clarification.

**Parenting by Exposure to Violence on CU**

Harsh parenting and community violence exposure have both shown independent associations with higher levels of youth CU (Waller et al., 2013; Waller et al., 2018), whereas positive parenting and higher parental knowledge have been repeatedly linked to lower levels of CU (Frick et al., 2003; Pardini & Loeber, 2008). However, consistent with the state of the literature on neighborhood disorder, limited research has assessed whether parenting behaviors may interact with community violence exposure to predict level and growth of CU during adolescence. A review of the literature assessing risk and protective factors for antisocial behavior in children exposed to intimate partner violence (IPV), an alternative form of youth trauma, offers preliminary insight to the interrelations between parenting behaviors, CVE, and youth CU (Fong et al., 2019). This meta-analysis concluded that both youth CU as well as quality of parenting (i.e., maternal harshness and warmth) emerged as having meaningful effects on association between IPV exposure and subsequent antisocial behavior (i.e., through mediation
and/or moderation). Despite some indication of links between the constructs of parenting, violence-based trauma, and youth CU behavior, alternative studies explicitly assessing the distinct construct of CVE must also be considered.

One noteworthy individual study examining the protective effects of positive parenting on CU in the context of CVE demonstrated main effects of higher violence exposure on higher CU as well as higher positive parenting on lower CU two years later (M age = 13.00 yrs, SD = 1.56 yrs) but failed to detect a significant interaction (Davis et al., 2015). Interpretation of findings suggested that youth who received higher levels of positive parenting, regardless of violence exposure, reported lower levels of CU. Conversely, positive parenting did not attenuate the risk for CU in youth exposed to high levels of violence. However, researchers noted a limitation in their inability to assess CU over multiple time points, clarifying that the study did not capture change in CU over time.

No studies to date have examined how parental knowledge or harshness may interact with community violence exposure to predict level and growth of CU during adolescence. Further clarification of potential additive or protective effects is necessary given similarities between theories linking violence exposure and maladaptive parenting to CU development. For example, it has been suggested that violence exposure may increase youth risk for CU by inducing emotional detachment from interpersonal violence (Ray et al., 2019). Harsh parenting is also thought to impact CU through normalizing interpersonal antisocial behavior despite suffering endured by the victim, modeling disregard for the emotions of others (Pardini et al., 2007). One aim of the present study is therefore to address this gap in the literature by expanding the current understanding of how parenting behaviors may interact with the broader contextual risk of community violence exposure to determine CU outcomes during adolescence.
Summary of Empirical Findings

The contribution of parenting behaviors to the development and maintenance of adolescent CP has been well-documented; harsh parenting is positively associated with CP (Barker et al., 2011; Goulter et al., 2020) while positive parenting and parental knowledge are negatively associated with CP (Pardini et al., 2008; Pinquart, 2017; Ray et al., 2017; Willoughby & Hamza, 2011). While some early research suggested that youth with higher CU are generally unresponsive to the effects of parenting (Lykken, 1995; Oxford et al., 2003), a more recent body of work has evidenced malleability in CU, such that higher harsh parenting is linked to higher CU, whereas positive parenting and knowledge are linked to lower CU (Pardini & Loeber, 2008; Waller et al., 2013). However, studies in this area have produced more mixed findings as compared to the CP literature, with notable exceptions reporting that parenting behaviors do not significantly impact CU longitudinally (Viding et al., 2009; Vitacco et al., 2003). Clarification through further study is therefore necessary to advocate for the efficacy of intervention among youth with high CU who have been previously characterized as resistant to treatment.

Regarding broader contextual influences outside of the home, meta-analytic findings have determined that both ND and CVE increase risk for the development of adolescent CP (Curtis et al., 2013; Fowler et al., 2009). CVE has also shown to be positively associated with CU in correlational (Kimonis et al., 2008; Oberth et al., 2017; Schraft et al., 2013) and, less frequently, longitudinal (Davis et al., 2015; Waller et al., 2018) studies. Weaker empirical support has been offered for the relationship between ND and CU, which may be partially attributed to discrepancies in how neighborhood-level dysfunction has been operationalized (Goodnight et al., 2012). Among longitudinal studies explicitly measuring ND in relation to
adolescent CU outcomes, two recent contradicting investigations have reported that ND does (Ray et al., 2019) and does not (Waller et al., 2018) significantly contribute to CU development.

Turning to familial and neighborhood-level interaction effects, there is little consensus in the literature regarding how the parenting behaviors of harsh parenting, positive parenting, and knowledge may interact with ND and CVE to predict CP and CU outcomes in adolescence. Among the scarcity of studies exploring relationships between these constructs, previously described conceptual confusion has further limited the ability to synthesize findings across studies. Given theoretical cautions regarding the dangers of ignoring broader contextual forces when assessing familial-level influences on youth development (Simons et al., 2004), further research in this area offers the ability to establish a more accurate picture of contributors to change in CP and CU over time.
CHAPTER 2

METHODOLOGY

Using data from the Pathways to Desistance project (Schubert et al., 2004), the proposed study aimed to assess how the distinct parenting behaviors of positive parenting, harsh parenting, and parental knowledge in adolescence impact the initial level and growth in CP and CU across four years among high-risk youth involved in the juvenile justice system. Further, the present study aimed to extend on past research demonstrating individual links between parenting, ND, CVE, CP, and CU within Pathways to Desistance dataset (e.g., Waller et al., 2018) through further assessment of interaction effects between neighborhood risk factors (i.e., ND, CVE) and each focal parenting behavior on both CU and CP outcomes. Gaining a better understanding of specific risk and protective factors that increase vulnerability for adolescent CP/CU across levels of environmental influence is imperative to accurate identification of effective intervention targets, both in and beyond the home environment. While potential limitations regarding generalizability of findings to nonjuvenile justice involved youth represents a notable limitation of the present study, research in this area is especially important within the population of high-risk adolescents sampled in the Pathways to Desistance study given increased likelihood for exposure to violent and disordered community environments (Martin-Storey et al., 2021). Adolescence additionally represents a key developmental window for understanding maintenance of both CP and CU as youth face increasing independence and a range of social challenges (Arnett, 2004). However, many previous studies have examined CP/CU outcomes in
response to parent or community level predictors at a single timepoint, failing to capture broader developmental trajectories. The present study addressed this empirical gap through modeling concurrent growth in CP and CU across adolescence in response to both individual and combined effects of parenting behaviors (i.e., harsh parenting, positive parenting, knowledge) and contextual risks (i.e., ND, CVE). As such, the following hypotheses and research questions were examined:

H1: Higher harsh parenting will be associated with higher CP (i.e., both the intercept and growth over time).

H2: Higher positive parenting will be associated with lower CP (i.e., both the intercept and growth over time).

H3: Higher parent knowledge will be associated with lower CP (i.e., both the intercept and growth over time).

H4: Higher harsh parenting will be associated with higher CU (i.e., both the intercept and growth over time).

H5: Higher positive parenting will be associated with lower CU intercept.

H6: Higher parent knowledge will be associated with lower CU (i.e., both the intercept and growth over time).

H7: Positive parenting will moderate the association between ND and growth in CP, such that the link between ND and growth in CP will be weaker for those who experience greater positive parenting.

H8: Parental knowledge will moderate the association between ND and growth in CP, such that the link between ND and growth in CP will be weaker for those who report higher levels of parent knowledge.
H9: Harsh parenting will moderate the association between CVE and growth in CP, such that the link between CVE and growth in CP will be stronger for those who experience greater harsh parenting.

H10: Positive parenting will moderate the association between CVE and growth in CP, such that the link between CVE and growth in CP will be weaker for those who experience greater positive parenting.

H11: Parental knowledge will moderate the association between CVE and growth in CP, such that the link between CVE and growth in CP will be weaker for those who report higher levels of parent knowledge.

H12: Harsh parenting will moderate the association between CVE and growth in CU, such that the link between CVE and growth in CU will be stronger for those who experience greater harsh parenting.

H13: Parental knowledge will moderate the association between CVE and growth in CU, such that the link between CVE and growth in CU will be weaker for those who report higher levels of parent knowledge.

RQ1: Will ND be more strongly associated with growth in CU for adolescents with lower or higher levels of harsh parenting?

RQ2: Will ND be more strongly associated with growth in CU for adolescents with lower or higher levels of positive parenting?

RQ3: Will ND be more strongly associated with growth in CU for adolescents who report lower or higher levels of parent knowledge?

No specific hypotheses were developed regarding positive parenting and growth in CU over time given a lack of empirical studies assessing positive parenting driven change in CU.
during adolescence at multiple time points. Although not a primary research question of this study, it was hypothesized that higher levels of CU at time 1 (i.e., intercept) would be associated with higher CP (i.e., intercept and growth over time).

Participants

The present study used data collected as part of the Pathways to Desistance project, which is a multi-site longitudinal study following a large sample of youth involved with the juvenile court system across the transition from adolescence to early adulthood (Schubert et al., 2004). The study included 1,354 adolescents (86.4% male) between the ages of 14 and 17 who were enrolled between November, 2000 and January, 2003 in Maricopa County, Arizona \((N = 654)\) and Philadelphia County, Pennsylvania \((N = 700)\). Eligibility requirements included being found guilty of a serious offense (e.g., felony assault, property offenses, weapon offenses), with the proportion of male youth found guilty of a drug charge capped at 15% to avoid over-representation of drug offenders. Previous investigations modeling growth in CU behavior using the Pathways to Desistance data have been unable to include female participants in analyses due to an insufficient number of females required to obtain a stable model for deriving CU trajectories over the 5-year period of time included in the studies (Baskin-Sommers et al., 2015; Waller et al., 2018). The present study will attempt to take an alternative approach through the inclusion of both male and female Pathways participants in analyses while controlling for sex. While the analytic approach utilized for modeling CU growth in the current analyses differs from that of previous investigations, interpretation and generalizability of findings involving females may be limited due to the low number of females within the Pathways sample \((N = 184)\).
At baseline, adolescents were asked the following question: What is your ethnicity? And provided with the following six response options: white, black, Asian, Native American, Hispanic, Other. Unfortunately, data was not collected on participant race, preventing the ability to include participant race and ethnicity separately in analyses. The ethnicity variable was recoded by Pathways researchers due to low frequencies in the Asian, Native American, and Other groups, resulting in the following ethnic breakdown of the sample: 41.4% black, 33.5% Hispanic, 20.2% white, and 4.8% other. Data were collected from participants at baseline interviews as well as follow-up interviews at 6, 12, 18, 24, 30, 36, 48, 60, 72, and 84 months post-baseline. The present study will focus on data collected at 5 time points from baseline through time point 4 (i.e., 24 months post-baseline). Sample retention was high at each follow up time point, ranging from 84% to 94% (M = 90%).

Power Analysis

The recommended sample size for the study was determined using a-priori sample size calculation software for structural equation models (Soper, 2009). The sample size estimate is calculated based on the anticipated effect size, desired statistical power level, number of latent and observed variables, and the desired probability level. The recommended minimum sample size is 947 assuming a small to medium effect size, 80% power, and a probability level of $p = .05$. There are 1,354 participants in the Pathways to Desistance sample, which is adequate for the present analysis.
Procedure

Pathways to Desistance participants were recruited for potential enrollment following a review of court files in each of the two participating locales identifying adolescents who had been found guilty of a serious offense (Schubert et al., 2004). Of all youth approached for participation, 20% declined. Informed assent was obtained from all adolescents and informed consent from all parents who agreed to participate in the study, and baseline interviews were conducted within 75 days of youths’ adjudication hearing (M days = 36.9, SD = 20.6). Due to the breadth of information collected at baseline, baseline interviews took place on two separate days lasting two hours each. For most participants (i.e., 80%), an adult collateral informant was also interviewed at baseline to substantiate participant reporting.

Following the baseline interview, participants completed follow up time-point interviews administered in 6-month intervals extending 7 years post-baseline. Although not included in the present study, participants additionally completed “release interviews” following any stay in a residential facility throughout the duration of data collection. With the exception of situations for which there was concern for the interviewer’s safety, a concerted effort was made to interview adolescents in a comfortable environment. A majority of interviews were conducted in the participant’s home (53%), 36% were conducted in a private room within a facility, and 11% were conducted elsewhere (i.e., libraries, other public places; Schubert et al., 2004). All interviews were conducted on laptop computers programmed with all measures and associated skip patterns; interviewers sat side-by-side with participants so that the computer screen was visible to both. Each interview item was read aloud by a trained researcher, and participants were given the option to respond verbally or indicate their answers using a keypad to maximize
confidentiality of responses. Baseline and follow-up interviews assessed the following 6 domains: background characteristics (e.g., demographics, academic achievement, psychiatric diagnoses, offense history, neurological functioning, personality), indicators of individual functioning (e.g., work and school status, substance abuse, psychopathology and antisocial behavior), psychosocial development and attitudes (e.g., impulse control, susceptibility to peer influence, perceptions of opportunity), family context (e.g., household composition, quality of family relationships), personal relationships (e.g., quality of romantic relationships and friendships, peer delinquency, contact with a caring adult) and community context (e.g., neighborhood conditions, social ties, community involvement).

In addition to self-report information obtained through baseline and follow-up interviews, information on study participants was also routinely collected from official record sources (i.e., FBI arrest records, child welfare histories, and state Medicaid services records; Mulvey et al., 2014). A notable limitation of assessing antisocial behavior in serious offender samples is the potential for underreporting of engagement in illegal activities, which may occur due to participants’ desire to present themselves in a more favorable light while navigating the justice system (Mills et al., 2003). However, consistent with prior research suggesting moderate to strong agreement between self-report and official records of antisocial behavior in delinquent samples (Junger-Tas & Marshall, 1999; Piquero et al., 2014), analysis of congruence between Pathways self-report arrest data with official arrest records evidenced high and stable agreement across all waves of data collection (Piquero et al., 2014). Interestingly, the prevalence of arrest was found to be slightly higher according to self-report data as compared to arrest prevalence based on official records for most waves of the Pathways study (Piquero et al., 2014).
Assessments and Measures

Demographic Questionnaire

Adolescents completed a demographic questionnaire at each wave of the study that included information such as participants’ ethnicity, parent marital status, employment, household characteristics, and education. Information on these variables for both mothers and fathers was collected from adolescents when possible. A single item was used to identify the primary caretaker for each participant, and adolescents reported on this primary caretaker for all parenting measures included in the present study. A majority of participants (86.3%) indicated their primary caretaker as a parent (i.e., biological, step, adopted, foster). Female relatives, male relatives, and siblings were indicated as the primary caretaker for 10.6%, 1.5% and 1.5% of the sample, respectively. This study focuses on youth self-report of only the primary caregiver’s parenting, with a majority (76.3%) of youth reporting on their biological mothers.

Positive Parenting

Baseline maternal positive parenting was assessed using a version of the Behavioral Affect Rating Scale (BARS; Conger, 1989) originally developed for the Iowa Youth and Families Project (Elder & Conger, 2000) and adapted for the Pathways study. All items included in the measure begin with the sentence stem, “When you and your mother have spent time talking or doing things together how often did your mother…” The maternal warmth subscale includes 9 items (i.e., Help you do something that was important?; Let you know she really cares about you?; Listen carefully to your point of view?; Act supportive and understanding towards you?; Act loving or affectionate towards you?; Have a good laugh with you about something that
was funny?; Lets you know that she appreciates you, your ideas, or the things you do?; Tells you she loves you?; Understand the way you feel about things?) capturing the affective tone of the parent-adolescent relationship. Adolescents responded to each item on a 4-point Likert scale ranging from “Always” to “Never” (i.e., 1 = Always, 2 = Often, 3 = Sometimes, 4 = Never). All items were reverse-coded and averaged to generate composite scores, with higher scores indicating more supportive and nurturing parenting. The BARS has been shown to demonstrate high internal consistency (Schofield et al., 2016; Taylor et al., 2012), as well as concurrent, convergent, and predictive validity (Haycraft & Blissett, 2010; Matthews et al., 1996; Melby et al., 2003). The use of an adolescent self-report measure of parenting is supported by past research indicating adolescent perceptions of parenting as a reliable and valid indicator of parenting behaviors (Silk et al., 2003; Williams & Steinberg, 2011). Within the Pathways to Desistance sample, the reliability of the maternal warmth subscale is $\alpha = .92$.

**Harsh Parenting**

Baseline harsh maternal parenting was also assessed using an adapted version of the Behavioral Affect Rating Scale (Conger, 1989). The maternal hostility scale includes 12 items capturing parental harshness (i.e., “When you and your mother have spent time talking or doing things together how often did your mother… Get angry at you?; Get so mad at you that she broke or threw things?; Shout or yell at you because she was mad at you?; Threaten to hurt you physically?; Criticize you or your ideas?; Push, grab, hit, or shove you?; Argue with you when you disagreed about something?; Slap or hit you with her hands?; Strike you with an object?; Boss you around a lot?; Throw things at you?; Insult or swear at you?). Adolescents responded to each item on a 4-point Likert scale ranging from “Never” to “Always” (i.e., 1 = Never, 2 =
Sometimes, $3 = \text{Often}, \ 4 = \text{Always}$). The mean of the 12 items was calculated to produce composite scores with higher scores indicating higher parental harshness. The reliability of the maternal hostility scale is $\alpha = .85$ within the Pathways to Desistance sample.

**Parental Knowledge**

Baseline maternal knowledge was measured using the Parental Monitoring Scale (Silverberg & Small, 1991) aimed at assessing parenting practices related to the supervision of the adolescent. Previous research supporting the use of adolescent self-report parental knowledge measures has suggested that parents tend to overestimate their knowledge of youth whereabouts and that adolescent reports more accurately reflect a parent’s true level of knowledge (Laird et al., 2003; Neumann et al., 2010). Of the 9 items included in the full measure, 5 assess parental knowledge while 4 assess parent monitoring. A preliminary question was asked to establish a single individual (X) who was primarily responsible for the participant. Items capturing parent knowledge are as follows: How much does X know who you spend time with?, How much does X know about how you spend your free time?, How much does X know about how you spend your money?, How much does X know about where you go right after school or work is over for the day?, and How much does X know about where you go at night? Adolescents responded to each item on a 4-point Likert scale ranging from “Doesn’t know at all” to “Knows everything” (i.e., 1 = Doesn’t know at all, 2 = Knows a little bit, 3 = Knows a lot, 4 = Knows everything). Construct validity has been demonstrated for the Parental Monitoring Scale (Okhakhume, 2014), and the parental knowledge subscale has repeatedly produced high internal consistency (Cottrell et al., 2017; Crosby et al., 2015). Within the Pathways to Desistance sample, the reliability of the maternal knowledge subscale at baseline is $\alpha = .66$. 
Neighborhood Disorder

Neighborhood disorder at baseline was captured using The Neighborhood Conditions Measure (Sampson & Raudenbush, 1999). While collateral reports of ND are also available within the Pathways data, the present study will focus on adolescent perceptions of ND in light of research suggesting that subjective perceptions of neighborhood conditions are more strongly related to youth health outcomes as compared to parent-report or census-level data (Schaefer-McDaniel, 2007). Of the 21 items included in the self-report measure, 12 tap physical disorder of the neighborhood (i.e., cigarettes on the street or in the gutters, garbage in the streets or on the sidewalk, empty beer bottles on the streets or sidewalks, boarded up windows on buildings, graffiti or tags, graffiti painted over, gang graffiti, abandoned cars, empty lots with garbage, condoms on sidewalk, needles or syringes, and political messages in graffiti) and 9 assess social disorder (i.e., adults fighting or arguing loudly, gangs or other teen groups hanging out, adults hanging out on the street, people drinking beer, wine, or liquor, people drunk or passed out, prostitutes on the streets, people smoking marijuana, people smoking crack, people using needles or syringes to take drugs.) Adolescents were given the prompt “How often does each of the following occur within your neighborhood?” and responses were provided on a 4-point Likert scale ranging from “Never” to “Often” (i.e., 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often), with higher scores indicating a higher degree of disorder within the community. In addition to evidence of convergent and discriminant validity (Raudenbush & Sampson, 1999), the Neighborhoods Conditions Measure has demonstrated high internal consistency (Mujahid et al., 2007; Sampson & Raudenbush, 1999). The reliability of the total neighborhood disorder composite at baseline is $\alpha = .94$ within the Pathways to Desistance sample.
Community Violence Exposure

Baseline community violence exposure was measured using a modified version of The Exposure to Violence Inventory (ETV; Selner-O'Hagan et al., 1998), which assesses exposure to violent events in the community in the form of victimization and witnessing. Adolescents reported on 6 items measuring violence they have experienced (i.e., Have you been chased where you thought you might be seriously hurt?, Have you been beaten up, mugged, or seriously threatened by another person?, Have you been raped, had someone attempt to rape you or been sexually attacked in some other way?, Have you been attacked with a weapon, like a knife, box cutter, or bat?, Have you been shot at?, Have you been shot?) and 7 items measuring observed violence (i.e., Have you seen anyone get chased where you thought they could be seriously hurt?, Have you seen anyone else get beaten up, mugged, or seriously threatened by another person?, Have you seen someone else being raped, an attempt made to rape someone, or any other type of sexual attack?, Have you seen someone else get attacked with a weapon, like a knife, box cutter, bat, chain, or broken bottle?, Have you seen someone else get shot at?, Have you seen someone else get shot?, Have you seen someone else get killed as a result of violence, like being shot, stabbed, or beaten to death?) Responses were indicated as either 1 (yes) or 0 (no). All 13 items are summed to create a total violence exposure composite, with higher scores indicating higher violence exposure. Initial validation of the measure indicated high internal consistency and test-retest reliability as well as construct validity (Selner-O'Hagan et al., 1998). Within the Pathways to Desistance sample, the reliability of the total CVE scale at baseline is $\alpha = .67$. 
Antisocial Conduct Problems

As previously conceptualized (Chauhan & Reppucci, 2009; Moffitt et al., 1996; Steinberg et al., 2015), adolescent antisocial conduct problems at 6, 12, 18, and 24 months post-baseline were assessed using The Self-Report of Offending (SRO; Huizinga et al., 1991). The version of the SRO adapted for the Pathways study consists of 22 identical items for each time point measuring adolescent’s account of their involvement in antisocial and illegal activities (e.g., purposely destroyed or damaged property that did not belong to you, purposely set fire to a house, building, car, or vacant lot, taken something from another person by force.) With X representing the number of months since the previous data collection time point, participants were asked, “In the last X months, have you…” and asked to respond with yes (1) or no (0). Items were coded to reflect whether the respondent reported engaging in each act at least once in the designated time period. A total CP proportion score was computed in which the numerator represented the number of positively endorsed SRO items and the denominator represented the number of SRO items a participant responded to, with higher scores indicating higher levels of CP. Past research has determined that the SRO demonstrates adequate reliability and validity in community (Thornberry & Krohn, 2000) as well as offending (Chung & Steinberg, 2006; Huizinga & Elliot, 1986) populations. Internal consistency for this scale ranged from $\alpha = .83-.84$ at 6, 12, 18, and 24 months post-baseline within the Pathways sample.

Callous-Unemotional Traits

Callous-unemotional traits at 6, 12, 18, and 24 months post-baseline were assessed using the Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002). The YPI contains 50
self-report items that correlate with 10 subscales of psychopathic features. These subscales map on to three broader domains of youth psychopathy (i.e., grandiose-manipulative, impulsive-irresponsible, and callous-unemotional). The present study will measure CU using the callous-unemotional dimension, which consists of the callousness (i.e., It’s important to me not to hurt other people’s feelings, I usually become sad when I see other people crying, both reverse scored) unemotionality (i.e., I usually feel calm when other people are scared, To be nervous and worried is a sign of weakness), and remorseless (i.e., I seldom regret things I do, even if other people feel that they are wrong, To feel guilt and regret when you have done something wrong is a waste of time) subscales. Each subscale contains 5 items, resulting in 15 items summed to create a CU total score. Adolescents responded using a 4-point Likert scale ranging from (1) Does not apply at all to (4) Applies very well (i.e., 1 = Does not apply at all, 2 = Does not apply well, 3 = Applies fairly well, 4 = Applies very well.) Several items are reverse-coded so that higher scores indicate higher CU. Prior studies evaluating the psychometric properties of the widely-used YPI have reported high internal consistency (Andershed et al., 2002) as well good test-retest reliability, convergent validity, and discriminant validity (Skeem & Cauffman, 2003). Within the Pathways sample, reliability of the YPI CU dimension is $\alpha = .74$, .73, .76, and .77 at 6, 12, 18, and 24 months, respectively.

Covariates

Aligning with research consistently linking a variety of demographic variables to child and parent behavioral outcomes (Alavi et al., 2017; Raikes et al., 2006), covariates in the present study included several demographic variables assessed on the demographics questionnaire during the baseline interview. Covariates to be included in the analyses are as follows: participant sex...
(0 = male, 1 = female), number of biological parents living in the home (i.e., 0, 1, or 2), mother’s age, and family index of social position (i.e., an index computed by Pathways researchers indicating a combination of parent occupational and educational attainment.) Participant race/ethnicity was also included as a covariate; Pathways data offers one variable categorizing participant race/ethnicity as Black, White, Hispanic, or Other. Preliminary one-way ANOVAs suggested significant between-group differences in relation to mean CP at time 1 F(3, 1257) = 8.25, p < .001, time 2 F(3, 1256) = 5.46, p < .001, and time 3 F(3, 1224) = 2.92, p = .033. As such, dummy coded variables were created to represent Hispanic, White, and Other (e.g., 1 = Hispanic, 0 = Not Hispanic) to be included as covariates in primary analyses. The largest racial group (i.e., Black, 41%) was used as the reference category.

In an effort to control for heritable CP and CU influences, parent antisocial behavior was controlled for through the inclusion of a variable representing baseline incarceration history of both biological parents (i.e., 0 = Neither biological parent has been arrested or jailed, 1 = Biological mother or father were arrested or jailed, but not both, 2 = Both biological father and mother were arrested or jailed.) A measure of early onset conduct problems (i.e., problem behaviors occurring before age 11) was also included as a control variable given theoretical support for differences in CP trajectories based on the emergence of CP in childhood as compared to adolescence (Moffit, 1993). The early onset CP measure consists of five items (i.e., getting into trouble for cheating, disturbing class, substance use, stealing, and fighting), and adolescents indicated whether or not they engaged in each behavior prior to age 11. This scale ranged from 0 to 5, with higher scores indicating greater early onset CP.

A final covariate included in the present study was a variable representing youth placement across time points (i.e., the number of time points during which youth were located in
a facility during data collection). Facility is defined by pathways researchers as “detention, jail, or other locked facility”. The percentage of participants in each coded placement category (i.e., home, in a facility, other) at each time point is as follows: 42.8% home, 51.6% in a locked facility, 5.7% other at baseline; 45.8% home, 47.9% in a locked facility, 6.2% other at Time 1; 52.6% home, 37.2% in a locked facility, 10.2% other at Time 2; 54.5% home, 32.0% in a locked facility, 13.5% other at Time 3; and 54.0% home, 30.5% in a locked facility, 15.4% other at Time 4. A composite placement variable was created by summing the number of time points youth were located in facilities, with scores ranging from 0-5. This composite variable was then included as a covariate in primary analyses to account for the potential influence of incarceration status on outcomes of interest.

Analytic Approach

The present study aimed to assess the influence of distinct parenting behaviors (i.e., positive parenting, harsh parenting, parental knowledge) on CP and CU growth during adolescence, and further determine if the contextual risk factors of ND and CVE interact with parenting to differentially influence CP and CU outcomes. Latent growth models included in the present investigation were examined using structural equation modeling with the R statistical software program (R Core Team, 2013).

Initially, a main effects model was run that included pathways from each of the 3 identified parenting behaviors at baseline to CP intercept and slope (Hypotheses 1-3) as well as CU intercept and slope (Hypotheses 4-6). The CP intercept and slope latent variables were indicated by the level of adolescent CP at each of the 4 follow-up time points (i.e., 6, 12, 18, and
24 months), with intercept factor loadings fixed to “1” and slope factor loadings corresponding with the time point of each CP variable (i.e., slope factor loadings of 0, 1, 2, 3 for 6, 12, 18, and 24 months when modeling linear growth; slope factor loadings of 0, 1, 4, 9 for 6, 12, 18, and 24 months when modeling quadratic growth). Similarly, the CU intercept and slope latent variables were indicated by the level of adolescent CU at each of the 4 follow up time points (i.e., 6, 12, 18, and 24 months), with intercept factor loadings fixed to “1” and slope factor loadings corresponding with the time point of each CU variable (i.e., slope factor loadings of 0, 1, 2, 3 for 6, 12, 18, and 24 months when modeling linear growth; slope factor loadings of 0, 1, 4, 9 for 6, 12, 18, and 24 months when modeling quadratic growth).

Building off the initial model, Model 2 examined interaction effects between each type of community risk factor at baseline (i.e., ND and CVE) and each parenting behavior at baseline on CP and CU growth, resulting in the 6 following interaction terms: ND by harsh parenting (Research Question 1), ND by positive parenting (Hypothesis 7 and Research Question 2), ND by parental knowledge (Hypothesis 8 and Research Question 3), CVE by harsh parenting (Hypotheses 9 and 12), CVE by positive parenting (Hypothesis 10), and CVE by parental knowledge (Hypotheses 11 and 13). Each of the 6 interaction terms were examined in relation to the intercept and slope of CP and CU outcomes as defined in Model 1.
CHAPTER 3

RESULTS

Missing Data

Missing data analyses revealed a significant amount of missing data across variables, as is expected due to the longitudinal nature of the Pathways sample. Little’s MCAR test was conducted to examine the randomness of the missingness. Little’s test was significant ($\chi^2 = 1314$, $p<.001$) suggesting that the data were not missing completely at random. For variables where >1% of data were missing, logistic regressions were then conducted to examine whether or not missingness for each variable was associated with any other included variables. Analyses indicated that missingness among all variables was predicted by several other included variables (e.g., number of biological parents with a history of arrest, youth age, number of biological parents living in the home, site of data collection), suggesting that the data can be considered missing at random (MAR). Multiple demographic variables identified as predictors of missingness were included in analytic models as control variables. Full information maximum likelihood (FIML) was used to account for missing data, as FIML has been shown to be particularly effective in addressing missingness in models including latent variables (Carter, 2006). Missing data analysis findings are listed in Table 1.
Table 1

Predictors of Missingness Within Missing Data Analyses

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<th>Variable (0 = Not Missing, 1= Missing)</th>
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<th>Parents Arrest</th>
<th>Youth Sex</th>
<th>Youth Age</th>
<th>ISP</th>
<th>Early CP</th>
<th>Site-Phil.</th>
<th>Placement</th>
<th>Race His.</th>
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<td>.270</td>
<td>-.192</td>
<td>.385***</td>
<td>.013</td>
<td>-.177</td>
<td>-.569</td>
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<td>.107</td>
<td>.794**</td>
<td>.264*</td>
<td>-.014</td>
<td>-.102</td>
</tr>
<tr>
<td>Not Missing</td>
<td>n=1225</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Preliminary Analyses

Data screening revealed that several variables (i.e., conduct problems across all time points) demonstrated significant skew (i.e., outside of the range -2 to 2). On account of this nonnormality, maximum likelihood estimation with robust standard errors (MLR) was utilized in order to produce standard errors and chi-square that are robust against nonnormality. Several outliers were identified for multiple continuous variables; however, these outliers were considered reasonable and representative due to typical patterns observed when examining severe pathology in nonclinical samples. Descriptive statistics and bivariate correlations for all included continuous variables appear in Tables 2 and 3. Table 4 consists of frequencies of dichotomous and categorical variables.
Table 2

Descriptive Statistics of Continuous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M (SD)</th>
<th>Range</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth Age</td>
<td>1,354</td>
<td>16.04 (1.14)</td>
<td>14-19</td>
<td>-0.23</td>
<td>-0.75</td>
</tr>
<tr>
<td>Parent Index of Social Position</td>
<td>1,346</td>
<td>51.41 (12.30)</td>
<td>11-77</td>
<td>-0.07</td>
<td>-0.35</td>
</tr>
<tr>
<td>Baseline Maternal Warmth</td>
<td>1,306</td>
<td>3.21 (0.70)</td>
<td>1-4</td>
<td>-0.82</td>
<td>0.003</td>
</tr>
<tr>
<td>Baseline Maternal Hostility</td>
<td>1,306</td>
<td>1.61 (0.45)</td>
<td>1-3.92</td>
<td>1.40</td>
<td>2.56</td>
</tr>
<tr>
<td>Baseline Parent Knowledge</td>
<td>1,183</td>
<td>5.53 (1.38)</td>
<td>2-8</td>
<td>-0.20</td>
<td>-0.62</td>
</tr>
<tr>
<td>Neighborhood Disorder</td>
<td>1,352</td>
<td>2.35 (0.75)</td>
<td>1-4</td>
<td>0.10</td>
<td>-0.82</td>
</tr>
<tr>
<td>Community Violence</td>
<td>1,351</td>
<td>5.34 (2.99)</td>
<td>0-13</td>
<td>-0.01</td>
<td>-0.92</td>
</tr>
<tr>
<td>Early Onset Conduct Problems</td>
<td>1,354</td>
<td>1.52 (1.19)</td>
<td>0-5</td>
<td>0.43</td>
<td>-0.44</td>
</tr>
<tr>
<td>Time 1 Conduct Problems</td>
<td>1,261</td>
<td>0.09 (0.13)</td>
<td>0-0.77</td>
<td>2.39</td>
<td>6.79</td>
</tr>
<tr>
<td>Time 2 Conduct Problems</td>
<td>1,260</td>
<td>0.07 (0.12)</td>
<td>0-0.82</td>
<td>2.52</td>
<td>7.79</td>
</tr>
<tr>
<td>Time 3 Conduct Problems</td>
<td>1,228</td>
<td>0.07 (0.11)</td>
<td>0-0.73</td>
<td>2.32</td>
<td>6.22</td>
</tr>
<tr>
<td>Time 4 Conduct Problems</td>
<td>1,230</td>
<td>0.06 (0.11)</td>
<td>0-0.86</td>
<td>2.93</td>
<td>11.30</td>
</tr>
<tr>
<td>Time 1 Callous-Unemotional</td>
<td>1,079</td>
<td>33.33 (6.90)</td>
<td>7-58</td>
<td>0.28</td>
<td>0.24</td>
</tr>
<tr>
<td>Time 2 Callous-Unemotional</td>
<td>1,260</td>
<td>32.49 (6.70)</td>
<td>15-55</td>
<td>0.28</td>
<td>0.22</td>
</tr>
<tr>
<td>Time 3 Callous-Unemotional</td>
<td>1,227</td>
<td>32.09 (6.88)</td>
<td>13-59</td>
<td>0.36</td>
<td>0.32</td>
</tr>
<tr>
<td>Time 4 Callous-Unemotional</td>
<td>1,225</td>
<td>32.47 (6.75)</td>
<td>15-60</td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td>Youth Detained Placement</td>
<td>968</td>
<td>1.99 (1.17)</td>
<td>0-5</td>
<td>0.12</td>
<td>-0.60</td>
</tr>
</tbody>
</table>
Table 3

Bivariate Correlations Among Continuous Variables

| Variables          | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Youth Age      | --  | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2. Bio Par.       | -.08**| -- |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3. Parent ISP     | -.05* | .02 | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4. Maternal Warmth| -.04 | -.04 | .04 | --  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5. Maternal Hostility| .10**| .03 | -.02| -.40**| -- |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 6. Parent Know.   | -.24**| .03 | -.03| .21**| -.19**| -- |     |     |     |     |     |     |     |     |     |     |     |     |
| 7. ND             | .04  | -.05| .13**| .03| .11**| -.15**| --   |     |     |     |     |     |     |     |     |     |     |     |
| 8. ETV            | .18**| .08**| -.008| .05| .26**| -.32**| .31**| --  |     |     |     |     |     |     |     |     |     |     |
| 9. Early CP       | -.03 | -.02| -.03| -.04| .14**| .19**| .12**| .30**| --  |     |     |     |     |     |     |     |     |     |     |
| 10. CP T1         | -.004| .05| -.02| -.13**| .19**| -.17**| .06*| .33**| .25**| --  |     |     |     |     |     |     |     |     |     |
| 11. CP T2         | -.02| .008| .02| -.08**| .18**| -.16**| .09**| .29**| .21**| .48**| --  |     |     |     |     |     |     |     |     |     |
| 12. CP T3         | .01  | -.004| .03| -.03| .13**| -.13**| .09**| .27**| .23**| .37**| .43**| --  |     |     |     |     |     |     |     |     |
| 13. CP T4         | -.01| .02| -.06*| -.03| .10**| -.14**| .12**| .26**| .25**| .36**| .41**| .51*| --  |     |     |     |     |     |     |
| 14. CU T1         | .07*| .02| -.07*| -.11**| .18**| -.18**| .11**| .27**| .26**| .27**| .30**| .21**| .25**| --  |     |     |     |     |     |
| 15. CU T2         | .07*| .03| -.02| -.11**| .09**| -.17**| .11**| .24**| .19**| .22**| .33**| .29**| .26**| .51**| --  |     |     |     |     |
| 16. CU T3         | .004| .05| .000| -.05| .05| -.18**| .07*| .21**| .25**| .23**| .28**| .32**| .29**| .47**| .57**| --  |     |     |     |
| 17. CU T4         | .04  | .03| .03| -.07*| .09**| -.20**| .06*| .21**| .23**| .21**| .22**| .27**| .30**| .46**| .51**| .58**| --  |     |     |
| 18. Detain        | .05  | -.10**| .03| .10*| .026| -.19**| .11**| .20**| .06| .03| .06| .03| .01| .02| .02| .02| -.04| --  |     |

Note. * p < .05, ** p < .01
Table 4
Frequencies for Dichotomous and Categorical Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Male</td>
<td>1,170</td>
<td>86.4</td>
</tr>
<tr>
<td>Site Philadelphia</td>
<td>700</td>
<td>51.7</td>
</tr>
<tr>
<td>Bio Parent Arrest- None</td>
<td>764</td>
<td>56.4</td>
</tr>
<tr>
<td>Bio Parent Arrest- 1 Parent</td>
<td>463</td>
<td>34.2</td>
</tr>
<tr>
<td>Bio Parent Arrest- Both Parents</td>
<td>127</td>
<td>9.4</td>
</tr>
<tr>
<td>Bio Parent at Home- None</td>
<td>243</td>
<td>17.9</td>
</tr>
<tr>
<td>Bio Parent at Home- 1 Parent</td>
<td>912</td>
<td>67.4</td>
</tr>
<tr>
<td>Bio Parent at Home- Both Parents</td>
<td>199</td>
<td>14.7</td>
</tr>
<tr>
<td>Ethnicity White</td>
<td>274</td>
<td>20.2</td>
</tr>
<tr>
<td>Ethnicity Black</td>
<td>561</td>
<td>41.4</td>
</tr>
<tr>
<td>Ethnicity Hispanic</td>
<td>454</td>
<td>33.5</td>
</tr>
<tr>
<td>Ethnicity Other</td>
<td>65</td>
<td>4.8</td>
</tr>
</tbody>
</table>

A confirmatory factor analysis (CFA) was conducted to examine whether the observed CP and CU variables loaded onto the latent CP/CU constructs. For CP, all included items loaded above 0.60 and were significant (Table 5). The chi-square statistic was significant and model fit was adequate ($\chi^2 (df = 5) = 46.233$, $p < .001$; RMSEA = 0.078; SRMR = 0.026; CFI = 0.962). For CU, all included items loaded above 0.60 and were significant (Table 6). The chi-square statistic was significant and model fit was adequate ($\chi^2 (df = 2) = 13.976$, $p < .01$; RMSEA = 0.067; SRMR = 0.015; CFI = 0.992).

Table 5
Standardized Loadings for Latent CP Variable

<table>
<thead>
<tr>
<th>Item</th>
<th>Conduct Problems</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\lambda$</td>
<td>Std. Error</td>
<td>P</td>
</tr>
<tr>
<td>CP Time 1</td>
<td>.60</td>
<td>(.004)</td>
<td>***</td>
</tr>
<tr>
<td>CP Time 2</td>
<td>.69</td>
<td>(.004)</td>
<td>***</td>
</tr>
<tr>
<td>CP Time 3</td>
<td>.69</td>
<td>(.003)</td>
<td>***</td>
</tr>
<tr>
<td>CP Time 4</td>
<td>.66</td>
<td>(.003)</td>
<td>***</td>
</tr>
</tbody>
</table>

Note. ***$p<.001$, **$p<.01$, *$p<.05$
Table 6

Standardized Loadings for Latent CU Variable

<table>
<thead>
<tr>
<th>Item</th>
<th>Callous-Unemotional</th>
<th>Std. Error</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU Time 1</td>
<td>.63 (.20)</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>CU Time 2</td>
<td>.74 (.18)</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>CU Time 3</td>
<td>.78 (.19)</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>CU Time 4</td>
<td>.72 (.19)</td>
<td>***</td>
<td></td>
</tr>
</tbody>
</table>

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

Unconditional Growth Curves

Structural equation modeling was utilized using the statistical package lavaan in R (Rosseel, 2012) to examine two models that test the thirteen hypotheses and three research questions of the present study. As a preliminary step to assess the proposed measurement model, unconditional linear growth curve models for CP and CU across the four included time points were computed. These models produced two growth factors for each outcome variable: an intercept (i.e., initial status; in this case, CP/CU at time 1) and a linear slope indicating acceleration or deceleration in growth. For each factor, the mean describes the average initial score (intercept) or change over time (slopes), and the variance specifies whether there is significant variability across individuals in the parameter.

The unconditional model showed significant means and variances for the CP intercept ($M = 0.08, p < .001$; variance = $0.008, p < .001$) and linear CP slope ($M = -0.009, p < .001$; variance = $0.001, p < .001$). The fit indices for the CP model were as follows: $\chi^2 (df = 5) = 14.726, p = .012$; comparative fit index (CFI) = .990; root-mean-square error of approximation (RMSEA) = .042; standardized root-mean-square residual (SRMR) = .025. Interpretation of
these findings suggests that, on average, CP within the sample decreased over time. Additionally, the significant variance value indicates individual variability in CP. The CU model also produced significant means and variances for the CU intercept ($M = 33.074, p < .001$; variance = 25.153, $p < .001$) and linear CU slope ($M = -0.296, p < .001$; variance = 1.192, $p = .001$). The fit indices for the CU model were as follows: $\chi^2 (df = 5) = 24.562, p < .001$; comparative fit index (CFI) = .984; root-mean-square error of approximation (RMSEA) = .064; standardized root-mean-square residual (SRMR) = .032. Similar to CP, CU generally decreased over time within the sample with further evidence of individual variability in CU across time.

Unconditional quadratic growth curves for CP and CU across the four included time points were also assessed and compared to linear growth models to determine which approach demonstrated better fit to the data. In addition to allowing for interpretation of linear slope, the inclusion of a quadratic factor provides additional insight regarding the upturn or downturn of growth over time, beyond what is predicted by the linear factor. The unconditional model showed significant means and variances for the CP intercept ($M = 0.08, p < .001$; variance = 0.01, $p < .001$) and linear CP slope ($M = -0.01, p = .001$; variance = 0.01, $p = .001$), but nonsignificant means for the quadratic CP slope ($M = 0.001, p = .219$; variance = 0.001, $p = .030$). As such, no support was indicated for including the quadratic growth term. The CU model, however, produced a significant mean and variance for the CU intercept ($M = 33.331, p < .001$; variance = 19.582, $p < .001$), a significant mean and trend-level variance for the linear slope ($M = -1.135, p < .001$; variance = 2.320, $p = .060$), and a significant mean and variance for the quadratic slope ($M = 0.283, p < .001$; variance = .682, $p = .048$). The fit indices for the CU model were as follows: $\chi^2 (df = 6) = 10.855, p = .093$; comparative fit index (CFI) = .997; root-mean-square error of approximation (RMSEA) = .024; standardized root-mean-square residual
(SRMR) = .014. The overall pattern indicates meaningful CU development at the mean level with low individual variability (i.e., a similar growth rate across individuals), such that CU generally decreased over time, with a positive quadratic mean slope value suggesting acceleration at later time points (i.e., a decelerated decline over time). Figures 1 and 2 visualize mean growth across time points for CP and CU, respectively.

Figure 1: Mean values of full sample conduct problems across time.

Figure 2: Mean values of full sample CU across time.
Described findings from unconditional CU growth models included in present analyses indicate the quadratic, as opposed to linear, CU growth model as demonstrating better fit. Aligning with previous research supporting the appropriateness of interpreting quadratic versus linear latent growth when both models demonstrate acceptable fit (Valdez et al., 2014), subsequent analyses evaluate CU growth with the inclusion of a quadratic factor.

Primary Analyses

Model 1

The first latent growth model examined direct effects of each parenting construct (i.e., warmth, harshness, knowledge) on CP intercept and slope as well as CU intercept and slope. As findings from unconditional growth models supported modeling quadratic, as opposed to linear, CU growth, direct effects of each parenting construct on CU growth were modeled with the inclusion of a quadratic CU growth term (Model 1). The model demonstrated adequate fit: $\chi^2 (df = 55) = 80.61, p = .014$, RMSEA = .019, CFI = .992, TLI = .980, and SRMR = .011. Significant pathways between all primary variables and corresponding standardized path coefficients in Model 1 are depicted in Figure 3. Covariate regression pathways for Model 1 are listed in Table 7.
Figure 3: Significant pathways between primary variables in Model 1.

Table 7
Regression Table Displaying Covariates for Model 1

<table>
<thead>
<tr>
<th></th>
<th>CP intercept</th>
<th>CP slope</th>
<th>CU intercept</th>
<th>CU linear slope</th>
<th>CU quad. slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detained placement</td>
<td>.026</td>
<td>-.091</td>
<td>-.018</td>
<td>.009</td>
<td>-.051</td>
</tr>
<tr>
<td>Bio parents living in the home</td>
<td>.056</td>
<td>-.042</td>
<td>.091</td>
<td>-.030</td>
<td>-.068</td>
</tr>
<tr>
<td>Bio parents arrested</td>
<td>.104</td>
<td>.064</td>
<td>.156**</td>
<td>-.088</td>
<td>-.082</td>
</tr>
<tr>
<td>Index of Social Position (ISP)</td>
<td>.002</td>
<td>-.007</td>
<td>-.006*</td>
<td>.013*</td>
<td>-.004</td>
</tr>
<tr>
<td>Youth sex</td>
<td>-.331***</td>
<td>-.002</td>
<td>-.615***</td>
<td>-.266</td>
<td>.223</td>
</tr>
<tr>
<td>Youth age</td>
<td>-.043</td>
<td>.024</td>
<td>.041</td>
<td>-.070</td>
<td>.014</td>
</tr>
<tr>
<td>Site Philadelphia</td>
<td>-.385***</td>
<td>.289**</td>
<td>-.032</td>
<td>-.337*</td>
<td>.009</td>
</tr>
<tr>
<td>Early onset CP</td>
<td>.173***</td>
<td>.002</td>
<td>.173***</td>
<td>.004</td>
<td>.024</td>
</tr>
<tr>
<td>Race- Hispanic</td>
<td>.201*</td>
<td>-.259*</td>
<td>-.028</td>
<td>-.141</td>
<td>.165</td>
</tr>
<tr>
<td>Race- White</td>
<td>.188</td>
<td>-.175</td>
<td>-.244*</td>
<td>.266</td>
<td>-.206</td>
</tr>
<tr>
<td>Race- Other</td>
<td>.126</td>
<td>.082</td>
<td>.034</td>
<td>.264</td>
<td>-.350</td>
</tr>
</tbody>
</table>

*Note: ***p<.001, **p<.01, *p<.05*
Model 1 assessed whether higher levels of harsh parenting were associated with higher CP, both in terms of the intercept and growth over time (hypothesis 1). In partial support of hypothesis 1, analyses revealed a positive association between harsh parenting at baseline and CP intercept ($b = .417$, se = .009, $p < .001$). However, higher harsh parenting was also found to be associated with a steeper decline in CP over time ($b = -.258$, se = .003, $p = .043$). Model 1 further examined whether higher levels of positive parenting were associated with lower CP, both in terms of the intercept and growth over time (hypothesis 2). This hypothesis was unsupported, as no significant associations were observed between positive parenting and CP intercept ($b = -.029$, se = .005, $p = .608$) or slope ($b = .102$, se = .002, $p = .102$). Regarding the hypothesis that higher parental knowledge will be associated with lower CP intercept and growth (hypothesis 3), results indicate that while higher parent knowledge was associated with a lower CP intercept ($b = -.119$, se = .003, $p < .001$), parent knowledge was not associated with CP growth over time ($b = .008$, se = .001, $p = .872$).

Model 1 additionally explored whether higher harsh parenting was associated with higher CU intercept and growth (hypothesis 4). Findings partially supported this hypothesis; higher harsh parenting at baseline was positively associated with a higher CU intercept ($b = .348$, se = .502, $p < .001$). Regarding linear CU slope, analyses revealed that higher harsh parenting was associated with a steeper decline in CU over time ($b = -.633$, se = .616, $p = .001$), as well as an acceleration (i.e., upturn) in CU at later time points ($b = .563$, se = .195, $p = .002$). Considering the association between positive parenting and CU intercept (hypothesis 5), analyses failed to support a significant relationship, such that higher positive parenting was not associated with CU intercept ($b = -.105$, se = .324, $p = .096$), linear growth ($b = -.038$, se = .394, $p = .743$), or quadratic growth ($b = .076$, se = .121, $p = .514$). Finally, Model 1 assessed whether higher
parent knowledge was associated with lower CU intercept and growth (hypothesis 6). This hypothesis was partially supported; higher baseline parent knowledge was associated with a lower CU intercept (b = -.111, se = .165, p = .001) but had no significant impact on linear (b = -.008, se = .206, p = .893) or quadratic (b = -.036, se = .063, p = .554) CU growth.

Model 2

The second latent growth model examined the effects of interactions between each community risk variable (i.e., neighborhood disorder, exposure to community violence) and each parenting construct (i.e., warmth, harshness, knowledge) on CP intercept and slope as well as CU intercept and slope. The model demonstrated adequate fit: $\chi^2 (df = 79) = 107.14, p = .019$, RMSEA = .017, CFI = .992, TLI = .979, and SRMR = .009. Covariate regression pathways for Model 2 are listed in Table 8. Although not included in primary hypotheses, pathways between CU/CP outcome variables within Model 2 are listed in Table 9. Table 10 lists main effects of ND/CVE on CU/CP outcomes. CVE demonstrated associations with a higher CU and CP intercept, as well as a lower CP linear slope. ND was not significantly related to CU/CP outcomes.
### Table 8

Regression Table Displaying Covariates for Model 2

<table>
<thead>
<tr>
<th></th>
<th>CP intercept</th>
<th>CP slope</th>
<th>CU intercept</th>
<th>CU linear slope</th>
<th>CU quad. slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detained placement</td>
<td>-.009</td>
<td>-.076</td>
<td>-.041</td>
<td>.020</td>
<td>-.065</td>
</tr>
<tr>
<td>Bio parents living in the home</td>
<td>.086</td>
<td>-.069</td>
<td>.094</td>
<td>-.030</td>
<td>-.075</td>
</tr>
<tr>
<td>Bio parents arrested</td>
<td>.043</td>
<td>.091</td>
<td>.112*</td>
<td>-.054</td>
<td>-.072</td>
</tr>
<tr>
<td>Index of Social Position (ISP)</td>
<td>.001</td>
<td>-.008</td>
<td>-.008*</td>
<td>.014**</td>
<td>-.002</td>
</tr>
<tr>
<td>Youth sex</td>
<td>-.236**</td>
<td>-.067</td>
<td>-.586***</td>
<td>-.266</td>
<td>.232</td>
</tr>
<tr>
<td>Youth age</td>
<td>-.083**</td>
<td>.050</td>
<td>.022</td>
<td>-.068</td>
<td>.011</td>
</tr>
<tr>
<td>Site Philadelphia</td>
<td>-.454***</td>
<td>.234*</td>
<td>-.146</td>
<td>-.261</td>
<td>.085</td>
</tr>
<tr>
<td>Early onset CP</td>
<td>.106**</td>
<td>.027</td>
<td>.129***</td>
<td>.026</td>
<td>.039</td>
</tr>
<tr>
<td>Race- Hispanic</td>
<td>.137</td>
<td>-.238</td>
<td>-.069</td>
<td>-.154</td>
<td>.179</td>
</tr>
<tr>
<td>Race- White</td>
<td>.230*</td>
<td>-.177</td>
<td>-.226*</td>
<td>.290</td>
<td>-.220</td>
</tr>
<tr>
<td>Race- Other</td>
<td>.146</td>
<td>.070</td>
<td>.031</td>
<td>.293</td>
<td>-.366</td>
</tr>
</tbody>
</table>

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

### Table 9

Regression Table Displaying Model 2 Pathways between CU/CP

<table>
<thead>
<tr>
<th></th>
<th>CP intercept</th>
<th>CP linear slope</th>
<th>CU intercept</th>
<th>CU linear slope</th>
<th>CU quad. slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP Intercept</td>
<td>-.417**</td>
<td>.393***</td>
<td>.035</td>
<td>-.150</td>
<td></td>
</tr>
<tr>
<td>CP Linear Slope</td>
<td>-.157</td>
<td>.226</td>
<td>-.095</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU Intercept</td>
<td>-.130</td>
<td>-.130</td>
<td>-.920</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU Linear Slope</td>
<td>-.157</td>
<td>.226</td>
<td>-.095</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU Quadratic Slope</td>
<td>-.130</td>
<td>-.130</td>
<td>-.920</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### Table 10

Regression Table Displaying Associations between ND/CVE and CU/CP

<table>
<thead>
<tr>
<th></th>
<th>CP intercept</th>
<th>CP linear slope</th>
<th>CU intercept</th>
<th>CU linear slope</th>
<th>CU quad. slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood Disorder</td>
<td>.022</td>
<td>.152</td>
<td>.085</td>
<td>.097</td>
<td>-.126</td>
</tr>
<tr>
<td>Community Violence Exposure</td>
<td>.127***</td>
<td>-.058**</td>
<td>.063***</td>
<td>-.005</td>
<td>.014</td>
</tr>
</tbody>
</table>

*Note.* ***p<.001, **p<.01, *p<.05
Model 2 assessed whether positive parenting moderates the association between ND and growth in CP, such that the link between ND and CP (intercept and slope) is weaker for those who experience greater positive parenting (hypothesis 7). Results did not support an interaction effect between ND and positive parenting on CP intercept \( (b = -0.081, \text{se} = 0.006, p = .258) \) or CP growth \( (b = -0.051, \text{se} = 0.003, p = .643) \). Model 2 further examined whether parent knowledge moderates the association between ND and CP, such that the link between ND and CP (intercept and slope) is weaker for those who report higher levels of parent knowledge (hypothesis 8). Results failed to indicate an interaction effect between ND and parent knowledge on CP intercept \( (b = 0.042, \text{se} = 0.003, p = .261) \) or CP growth \( (b = -0.032, \text{se} = 0.002, p = .609) \).

Regarding CVE, Model 2 evaluated whether harsh parenting moderated the association between CVE and CP, such that the link between CVE and CP (intercept and slope) is stronger for those who experience greater harsh parenting (hypothesis 9). Analyses did not support an interaction effect between CVE and harsh parenting on CP intercept \( (b = 0.032, \text{se} = 0.003, p = .328) \) or CP growth \( (b = -0.037, \text{se} = 0.001, p = .436) \). A moderating effect of positive parenting on the association between CVE and CP (hypothesis 10) was also unsupported for CP intercept \( (b = -0.012, \text{se} = 0.002, p = .540) \) and slope \( (b = 0.022, \text{se} = 0.001, p = .449) \). Results indicated no interaction effect between CVE and parent knowledge (hypothesis 11) on CP intercept \( (b = -0.009, \text{se} = 0.001, p = .371) \) or growth \( (b = 0.012, \text{se} = 0.001, p = .433) \).

Model 2 also evaluated interaction effects between parenting constructs (i.e., positive, harsh, knowledge) and community risk (i.e., ND and CVE) on quadratic CU growth. First, it was assessed whether harsh parenting moderates the association between CVE and growth in CU, such that the link between CVE and growth in CU is stronger for those who experience greater harsh parenting (hypothesis 12). Findings indicated no interaction between CVE and harsh
parenting on CU intercept (b = -.042, se = .186, p = .256), linear slope (b = -.009, se = .222, p = .899), or quadratic slope (b = .057, se = .069, p = .401). Results similarly suggested no interaction effect between CVE and parent knowledge (hypothesis 13) on CU intercept (b = -.005, se = .056, p = .655), linear growth (b = .015, se = .072, p = .490), or quadratic growth (b = -.015, se = .022, p = .496).

Three research questions involving interactions between ND and parenting on CU outcomes were also assessed within Model 2. Analyses revealed no interaction effects between ND and harsh parenting on CU intercept (b = .012, se = .744, p = .933), linear slope (b = -.158, se = .874, p = .560), or quadratic slope (b = .097, se = .272, p = .716; RQ1). Positive parenting was also found not to moderate the association between ND and CU intercept (b = -.048, se = .450, p = .591), linear slope (b = -.130, se = .576, p = .467), or quadratic slope (b = .133, se = .179, p = .449; RQ2). A similar pattern was observed for parent knowledge, such that there was no interaction between ND and parent knowledge on CU intercept (b = .012, se = .210, p = .777), linear slope (b = -.006, se = .277, p = .930), or quadratic slope (b = .038, se = .083, p = .642; RQ3).

Model 3

A final model (Model 3) was run that only included significant main effects. No interaction terms were included due to nonsignificant associations with outcome variables, as determined in Model 2. Model 3 demonstrated adequate fit: $\chi^2 (df = 55) = 82.101, p = .010$, RMSEA = .020, CFI = .992, TLI = .980, and SRMR = .012. Significant pathways between all primary variables and corresponding standardized path coefficients in Model 3 are depicted in Figure 4.
Findings from Model 3 indicated an association between higher harsh parenting and a higher CP intercept \((b = .444, \text{ se } = .008, p < .001)\), but a steeper decline in CP over time \((b = -.404, \text{ se } = .003, p = .003)\). Higher parent knowledge was associated with a lower CP intercept \((b = -.104, \text{ se } = .002, p < .001)\). Regarding CU outcomes, higher levels of parent knowledge \((b = -.144, \text{ se } = .128, p < .001)\) were also associated with a lower CU intercept. Further, higher harsh parenting was found to be associated with a higher CU intercept \((b = .392, \text{ se } = .464, p < .001)\) a steeper decline in CU over time \((b = -.579, \text{ se } = .548, p < .001)\), and an acceleration (i.e., upturn) in CU at later time points \((b = .460, \text{ se } = .171, p = .005)\). Findings from Model 3 are consistent with Model 1 results.
The present study examined the influence of distinct parenting behaviors (i.e., positive parenting, harsh parenting, parental knowledge) on CP and CU intercept and growth within a sample of high-risk adolescents, and further aimed to determine if the contextual risk factors of ND and CVE interact with parenting to differentially influence CP and CU outcomes. Examination of unconditional CU/CP growth models indicated linear growth for CP and quadratic growth for CU. Findings indicated that youth exposed to higher levels of harsh parenting were more likely to demonstrate higher CP and CU at time 1. Higher harsh parenting was further associated with a steeper decline in both CP and CU over time, and with an acceleration of CU at later time points. Adolescents who received higher positive parenting demonstrated lower CU at time 1. Higher parent knowledge was also found to be associated with lower time 1 CP and CU. In exploring interactions between parenting behaviors and community risk factors of CVE and ND on youth CP/CU outcomes, findings failed to support the hypothesized interaction effects.

Both CP and CU evidenced mean-level decline across time points. Consistent with present findings of a small but statistically significant decline in CU/CP within a higher risk (i.e., juvenile justice involved) sample, previous investigations of mean-level stability in CP and CU within community samples have reported high stability over time with small to moderate decreases in CU (Loney et al., 2007) and CP (Pingault et al., 2015) from early to late adolescence. Additional studies estimating CU stability in both “low risk” and “high risk” youth
(i.e., youth identified as having higher baseline CP) within the same model have suggested similar patterns of CU growth between risk groups across adolescence (Lynam et al., 2009).

Associations Between Parenting and CP/CU Intercept

Analyses revealed that youth exposed to higher levels of harsh parenting demonstrated higher initial levels of both CP and CU at time 1. These findings are consistent with previous meta-analyses identifying harsh parenting as a strong predictor of childhood (Campbell et al., 2000) and adolescent (Pinquart, 2017) CP, and align with developmental theory suggesting that increasing aggression and hostility between parents and children contribute to coercive and mutually reinforcing cycles of conflict that ultimately exacerbate child behavior problems. Regarding CU, the present study replicated past findings indicating exposure to harsh parenting as a risk factor for higher CU in children and adolescents (Barker et al., 2011; Fontaine et al., 2011; Pardini et al., 2007; Waller et al., 2013). Previous attempts to explore causal mechanisms of this relationship have suggested that youth exposed to harsh parenting experience reduced guilt and empathy for others, and therefore have increased difficulty inhibiting antisocial impulses.

Results also indicated parent knowledge as a meaningful contributor to adolescent CP/CU development, such that youth who reported higher levels of parent knowledge demonstrated lower initial levels of CP/CU at time 1. These findings align with existing research demonstrating an inverse association between parental knowledge and adolescent CP (Lahey et al., 2008; Parker & Benson, 2004; Walters et al., 2018), and provide support for continued utilization of comprehensive CP treatment models (e.g., MST) focused on understanding and reducing adolescents’ engagement in antisocial activities across social contexts that expand
beyond the home. In considering the significant relationship between higher parent knowledge and lower time 1 CU, findings are consistent with prior investigations using the Pathways data suggesting that youth characterized as having a high/stable CU trajectory are most likely to report the lowest levels of parent knowledge while controlling for alternative individual, familial, and contextual risk factors (Waller et al., 2018). However, it is necessary to acknowledge that child-driven effects of youth CU/CP on parent knowledge have also been suggested, such that youth with lower CU/CP are more likely to disclose information to parents, in turn increasing parent knowledge (Kerr & Stattin et al., 2000; Kerr et al., 2010). Cautions regarding directionality should therefore be considered in interpretation of findings, and further exploration of reciprocal parent-child influences involving CU and parent knowledge represents a potential direction for future research. Should parent knowledge consistently emerge as a meaningful protective factor against CU development, comprehensive treatment models requiring knowledge of youth behavior across contexts (e.g., MST) commonly used to address CP may be similarly effective for youth demonstrating CU.

Associations Between Parenting and CP/CU Linear Growth

As noted above, analyses revealed an expected positive association between higher harsh parenting and a higher CP and CU intercept. However, inconsistent with study hypotheses, youth who received a higher level of harsh parenting at baseline also demonstrated a steeper decline in CP and CU over time. This finding is inconsistent with past research reporting an increase in CP (Wang & Kenny, 2014) and CU (Fontaine et al., 2011) on account of harsh parenting. Considering possible explanations for this unexpected association, it is important to acknowledge potential child-driven effects on parenting, such that parents of youth with high CU/CP may
become less involved with their children (i.e., “give up” on attempts to correct/manage behavior) subsequently reducing the frequency of harsh parenting displays. In this case, the association between higher harsh parenting and a steeper decline in CP/CU could represent benefits of ongoing efforts from parents to address challenging behavior despite a harsh quality to the parenting. Future studies may consider including concurrent trajectories of parenting across time to account for bidirectional influences.

Discrepant findings may also be attributed to methodological differences; Wang and Kenny (2014) conceptualized harsh parenting as “harsh verbal discipline”, excluding physical harshness that was included in the present study. Associations between parenting and adolescent CP outcomes were also measured over a briefer, 1-year follow-up period. Fontaine et al. (2011) utilized a measure of harsh parenting conceptually similar to the present investigation, however, their sample was somewhat younger than Pathways participants (i.e., outcomes at 12 years old) and harsh parenting was self-reported retrospectively by parents regarding their parenting behaviors when youths were aged 4. It should be acknowledged that Pathways participants are somewhat older than many alternative adolescent samples. As enrollment took place when youth were between the ages of 14 and 17, data included in the present study extends into early adulthood for some participants. Potential discrepancies due to the developmental window assessed (i.e., early vs. late adolescence) should be considered when comparing present findings to existing research with younger samples. Ongoing research aimed at clarifying methodological and developmental contributors to inconsistent findings will therefore be important moving forward.

In considering the nature of the Pathways sample in addition to the finding that harsh parenting was associated with a higher CP intercept, it is possible that the unexpected findings
involving CP growth represent differences in youth exposure to parenting behaviors and opportunity to demonstrate antisocial behavior at later time points based on their incarceration status. In other words, youth who received higher harsh parenting and exhibited higher CP at intercept may have been at a higher risk for incarceration and/or residential placement within the data collection period. In this case, youth would have received reduced access to harsh parenting as well as reduced opportunity to demonstrate CP at later time points. The role of participant placement in impacting CP outcomes may be particularly relevant to the present study due to the CP measure utilized (i.e., the SRO). The SRO captures antisocial behaviors with significant legal implications, including arson, selling drugs, theft, and serious physical assault. Considering the nature and structure of a detention setting, it is likely that detained youth had reduced opportunity to engage in CP assessed by the SRO.

Post-hoc correlational analyses provide support for this pattern regarding CP; higher CP at time 1 was positively associated with youth being located in a detention center at time 2, $r(1217) = .16, p < .001$. At time 2, 58.6% of participants were located at home (N=664) and 41.4% were located in detention facilities (N=469). An independent samples t-test evaluating mean level differences in time 1 CP based on participant interview location at time 2 (i.e., home or detention facility) similarly suggests that youth located in detention facilities at time 2 had significantly higher mean CP scores at time 1 (M= .10, SD= .14) when compared to youth located at home during time 2 data collection (M= .07, SD= .11); t(1094)= -4.30, p <.001. As such, the association between higher harsh parenting and a steeper decline in CP over time may be to some extent spurious and better explained by the fact that youth exposed to higher harsh parenting at baseline were more likely to demonstrate higher CP and subsequently be placed in
detention; thus, being in detention may better explain the decline in CP, as detention would have likely limited their ability to participate in some of the activities measured through the SRO.

Pathways data provides some insight regarding youth incarceration status at each time point by reporting the location of the data collection interview (e.g., at home, in a residential facility), however this information fails to capture participants living environment across the time period. As such, future research should attempt to explore whether present findings replicate within alternative samples where participants have equal exposure to parenting risk factors, and further assess harsh parenting levels across multiple time points rather than one baseline time point to provide a clearer picture of influence on CU/CP growth.

Although CP and CU represent distinct constructs, findings regarding the influence of parenting behavior revealed similar patterns across the two outcomes (i.e., positive association between harsh parenting and intercepts, negative association between harsh parenting and linear slopes, negative association between parent knowledge and intercepts). While these findings were consistent with hypotheses, the link between parent knowledge and CU is notable in that it offers implications for extending treatment models traditionally designed to address CP alone, as described above. In examining effect sizes of associations between parental harshness/knowledge and CP as compared to CU, analyses indicate comparable small effect sizes of parental knowledge on both CP and CU intercept. Harsh parenting similarly evidenced small effects in relation to CP intercept and linear slope, CU intercept, and CU quadratic slope. One distinction (i.e., a medium effect size) was observed in the link between harsh parenting and CU linear slope.
Modeling Quadratic CP/CU Growth

As an extension of past research estimating linear growth in adolescent CP and CU, the present study explored whether data exhibited nonlinear (i.e., quadratic) change. It has been suggested that many developmental investigations assert and model linear change because of its simplicity and straight-forward interpretability (Grimm et al., 2011), with failure to consider nonlinear change often resulting in erroneous interpretation of findings (Rasoolimanesh et al., 2018). Nonlinear growth is outlined in many developmental theories describing how individuals change over time (Sterba, 2014; Bronfenbrenner, 1989), and when appropriate, nonlinear models are able to provide more accurate, comprehensive, and interpretable representations of change when compared to linear estimates (Grimm & Ram, 2009).

Considering the influence of predictors on nonlinear CU/CP change within the present investigation, it was found that harsh parenting was not only associated with a higher CU intercept and steeper decline in CU over time, but also with an acceleration in CU at later time points. This suggests that the steepness of the decline in CU associated with harsh parenting did not consistently maintain across time points, with harsh parenting being associated with a more gradual decline during late adolescence/early adulthood. This finding offers a more comprehensive picture of CU development in response to parent harshness as compared to linear models as it highlights the time-limited nature of linear findings suggesting a steeper decline in CU in response to harsh parenting. Future studies may consider extending the developmental window targeted in the present investigation to explore whether observed nonlinear CU growth patterns in response to parenting maintain across adulthood (i.e., whether the leveling-off of CU
decline persists) when parenting is thought to have significantly less influence on behavior and development.

Interactions Between Parenting and Community Risk on CP/CU

Primary hypotheses of the study involved evaluating whether community-level risk factors (i.e., community violence exposure, neighborhood disorder) moderated associations between parenting behaviors and adolescent CP/CU outcomes. Contrary to expectations, the impact of parenting on youth behavior did not differ based on youth exposure to either community risk factor, as none of the identified interaction terms had a significant impact on initial levels or growth in CP and CU. Positively, this suggests that identified promotive effects of parenting (e.g., higher parent knowledge associated with lower CP/CU) can have a meaningful influence on youth development despite potential community risk exposure.

As previously described, in examining the direct effects of ND/CVE on CP/CU outcomes, higher CVE was associated with higher CP and CU intercepts but lower CP growth over time. As was suggested regarding the unexpected finding of higher harsh parenting being associated with higher CP intercept but lower growth in CP over time, it is possible that youth with higher CVE and higher CP intercept were more likely to be detained over the data collection period with reduced opportunity to engage in CP as assessed by the SRO. In an effort to assess whether participant placement (i.e., home vs. detention) may have impacted unexpected growth findings, an independent samples t-test was conducted examining mean level differences in baseline CVE between groups of participants based on their time 2 placement. Findings indicate that youth located in detention facilities at time 2 reported significantly higher mean CVE (M= .70, SD= 3.00) as compared to those located at home (M= -.70, SD= 2.83); t(1272)= -
8.50, p < .001. As such, the observed association between higher CVE and lower CP growth may be spurious; youth with higher exposure to community violence and higher initial CP were more likely to be detained within the study period, in turn likely limiting their ability to engage in CP at later time points. ND, alternatively, was not found to be directly linked with CU/CP outcomes.

The lack of support for hypothesized interaction effects within the present investigation is consistent with a number of previous studies; Kliewer et al. (2004) determined that while observations of higher parent-child relationship quality was associated with lower externalizing symptoms, relationship quality did not interact with youth violence exposure in predicting externalizing outcomes. In a study by Pearce et al. (2003), community violence exposure presented as a risk factor for increases in CP over a 1-year period, while high parental involvement (e.g., the degree to which parents were involved and interested in their child’s life) was associated with a decrease in CP over the same period. However, there was no evidence of meaningful interaction effects between the two predictors on CP outcomes. Considering CU, Davis et al. (2015) found that community violence exposure was longitudinally associated with higher adolescent CU 4 years later. Having a supportive caregiver relationship was negatively associated with CU over the same period but did not interact with violence exposure, leading researchers to conclude that supportive parental relationships act as a promotive, but not protective, factor for adolescent CU in the context of violence exposure.

Taken together, the current literature offers ample support for main effects of parenting on the development of youth CP/CU, but provides much less clarity regarding how and whether parenting influences may vary based on competing community influences such as violence exposure and neighborhood disorder. To further enhance our understanding of the interplay between salient environmental predictors of youth CP/CU, subsequent studies may consider
exploring how parenting interacts with alternative environmental influences known to be associated with CU/CP outcomes in adolescence (e.g., peer, home environment, school factors). It will also be important for future research to assess how relationships modeled in present analyses may differ with the inclusion of parenting measures across time points, as parenting in the present study was only captured at baseline. Further, within the present study, CVE and ND were only assessed at one time point. As levels of exposure to these risks may vary across time, especially as adolescents age and spend more time outside of the home, it would be beneficial for future research to evaluate interaction effects of CVE and ND with parenting behaviors on CP/CU outcomes at multiple distinct time points across adolescence.

Limitations and Future Research

The present study demonstrates a number of strengths, including use of a longitudinal design within a large sample of high-risk youth. Methodologically, the study extends on past research examining CP/CU outcomes in response to parent or community-level predictors at a single timepoint by offering insight regarding the effect of predictors on both intercept levels and trajectory of youth behavior outcomes across time. Considering limitations of the present study, Pathways to Desistance researchers acknowledge cautions with generalizability of Pathways findings to nonclinical or alternative juvenile justice samples, such that inclusion in the study was restricted to the “deeper” end of the youth justice system (Mulvey & Schubert, 2012). They note that adolescents in the sample demonstrate more limited variability in regards to background characteristics, neighborhood, and other aspects of experience than alternative (e.g., community, low-risk juvenile justice) populations. As such, future research should consider
exploring how patterns identified in the present study may impact a broader range of youth within the developmental period of mid-late adolescence.

As previously described, an additional limitation of the study was heavy reliance on adolescent self-reports across variables of interest. Adolescent self-report has been found to be reasonably reliable in assessing delinquent behavior, and Pathways data evidenced stable/high agreement with arrest records across waves of data collection (Piquero et al., 2014). However, it is also important to note the potential for adolescent offenders to underreport engagement in illegal activity to appear more socially desirable (Mills et al., 2003), highlighting the benefit of utilizing multiple reporters and/or data sources (e.g., objective reports). Inclusion of data from multiple reporters should be considered for future studies to increase reliability of findings and reduce shared method bias. As noted above, another notable limitation includes the fact that measure of CP for the current study, the SRO, captures antisocial behaviors with significant legal implications, including arson, selling drugs, theft, and serious physical assault. Considering the nature and structure of a detention setting, it is likely that detained youth had reduced opportunity to engage in CP assessed by the SRO. As such, the difference in whether youth were detained versus residing within the home also likely affected measurement of CP. Future studies should therefore take setting into account when interpreting findings and perhaps consider assessment post-detention.

A final limitation of the study was inability to control for well-established genetic heritability of CP and CU. In an attempt to account for genetic influence, parent arrest history was controlled for in present analyses. However, subsequent investigations could more reliably estimate heritability effects when examining the influence of environmental predictors on CP/CU development by including a specific measure of parent antisocial pathology.
In considering generalizability of study findings to present day developmental processes, it is necessary to acknowledge the historical context within which data were collected. The Pathways study included U.S. adolescents who were enrolled between November, 2000 and January, 2003. A majority of data collection therefore occurred in the shadow of the 2001 9/11 terrorist attacks, one of the most prominent and distressing sociohistorical events in recent decades. The residual effects of 9/11 on individual and societal functioning may have been especially present for participants enrolled through the Philadelphia County data collection site given its geographic proximity to the location of the attacks. Meta-analytic research examining the impact of 9/11 on youth psychological adjustment within national samples has suggested initial increases in both adolescent and parent pathology (e.g., anxiety, posttraumatic stress symptoms); however, the impact on emotional and behavioral functioning for those who did not directly witness or suffer loss from the attacks was comparatively minimal and generally diminished over time (Eisenberg & Silver, 2011).

Conclusions and Implications

The present study expands upon current literature examining environmental predictors of adolescent CP and CU development by exploring the influence of unique parenting behaviors on CP/CU level and change over time within a latent growth modeling framework. Methodologically, trajectories of CP/CU estimated in present analyses highlight the importance of assessing for nonlinear growth when examining developmental processes to allow for more accurate and comprehensive interpretation. Findings indicating that youth who receive higher harsh parenting are more likely to demonstrate higher initial levels of CU/CP during adolescence align with existing empirical support for interventions aimed at promoting positive parenting
approaches and reducing harsh parenting behaviors. The observed association between higher positive parenting and lower CU offers similar clinical implications regarding the benefit of positive parenting intervention efforts, and highlights the potential for previously contested behavioral malleability in youth demonstrating CU. Higher parent knowledge also emerged as a meaningful predictor of both lower CP and lower CU, offering support for the utilization of intensive family and community-based intervention programs aimed at understanding and addressing a comprehensive range of risk factors across social contexts extending beyond the home.

While hypothesized interaction effects between parenting and community variables were not found to have meaningful influence on youth outcomes, main effects models supported in analyses offer important insight to factors promoting developmental resilience among high-risk adolescents. As described by Luthar et al. (2000) and Davis et al. (2015), when considering populations of youth facing varying degrees and sources of disadvantage, main effects models of development are necessary to understand how children and adolescents impacted by adversity can adapt and thrive through exposure to positive promotive factors. In this way, while it is often not feasible to alleviate the impact of certain environmental risks, knowledge and enhancement of promotive factors can improve outcomes for youth in even the most disadvantaged of circumstances (Stouthamer-Loeber et al., 2002).
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