Developmental Precursors of Moral Disengagement and a Mediator of Early Risk

for Antisocial Behavior

by

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The purpose of the study was to advance our understanding of the developmental precursors of Moral Disengagement (MD) and the role of MD in mediating the link between early risk and later antisocial behavior among an ethnically diverse sample of 189 low-income boys followed prospectively from ages 1.5 to 16. The results indicated that in univariate analyses measures of parenting, neighborhood impoverishment, and child empathy were all related to later MD. In multivariate analyses, neighborhood impoverishment and child empathy continued to contribute unique variance to the predication of MD, and MD was found to mediate the relationship between these two constructs and later antisocial behavior. A cumulative index of several risk factors also was related to later MD and MD mediated the relationship between cumulative risk and later antisocial behavior. Results were partially consistent with the notion that adolescent MD was predicted by a combination of early family, neighborhood, and child risk factors, and that MD may be a mechanism underlying at least some boy's risk of antisocial behavior.

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PREFACE

1.0   INTRODUCTION

Psychological theories of moral agency have focused primarily on moral thought rather than moral conduct (Bandura, Capara, Barbaranelli, & Pastorelli, 1996). In response to the neglect of moral conduct, Bandura and colleagues (1996) developed a theory of Moral Disengagement (MD) to explain ways in which people justify their actions and commit immoral behaviors. In both adult and child populations, MD has been strongly linked to criminal and antisocial outcomes. However, while MD is a consistent correlate and predictor of antisocial behavior (AB), little is known about its structure and components, and even less about its developmental precursors. Beyond understanding the link between MD and AB, understanding the genesis of MD has the potential to advance our understanding of how adolescents become disengaged and disenfranchised from societal values. As MD involves beliefs and attitudes that justify illegal conduct and harmful acts toward others, it is important to understand how adolescents develop internal schemas that disregard societal values and show little concern for others.

As the construct of MD has the potential to expand our understanding of adolescents' lack of adherence to societal values, it would behoove researchers to explore its developmental precursors. However, few studies have examined either correlates or antecedents of MD (Bandura et al., 1996; Bandura, Capara, Barbaranelli, Pastorelli, & Regalia, 2001; Pelton, Ground, Forehand, & Brody, 2004), particularly using a prospective, longitudinal design. Theoretically, experiences within the family and neighborhood could promote a child to develop

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an uncaring and rejecting attitude towards societal values. In addition, child attributes identifiable in the school-age period that reflect biases in social information processing or propensities to show little concern for other's welfare (e.g., callousness) could serve as precursors of moral disengagement during adolescence.

MD may also represent a cognitive mediator between early risk and adolescents' AB. Despite a plethora of research on social and behavioral processes linking the development of early conduct problems to later AB in adolescence, with the exception of Dodge's seminal work on social information processing (Dodge & Somberg, 1987; Dodge & Schwartz, 1997), few cognitive models have been developed to account for how the connection between early risk factors and later AB might be mediated by intrapsychic processes. MD has the potential to serve as a cognitive mediator between exposure to early family and neighborhood risk, early markers of biased social information processing or disregard for others, and antisocial outcomes during adolescence.

The present study aims to expand the limited research on cognitive aspects of antisocial children by investigating the developmental precursors of MD and its potential mediating role in the link between early risk and later antisocial outcomes in an ethnically diverse sample of 310 low-income boys followed prospectively from infancy to adolescence. Precursors from several domains were examined, including rejecting parenting, aggressive parental conflict, neighborhood risk, and child hostile attributional bias and callousness. It was hypothesized that factors from each domain would contribute independent variance to the development of MD, cumulatively these risk factors would be associated with higher levels of MD, and that MD would mediate paths between individual risk factors and later antisocial outcomes.

2.0   LITERATURE REVIEW

2.1   RESEARCH ON ANTISOCIAL BEHAVIOR AND MORAL DEVELOPMENT

Several different theories of AB have emerged over the last decades, including those that emphasize biological (Moffit, 1993a), sociological (Hirshi, 1969), or social-learning (Patterson, Reid, & Dishion, 1992) mechanisms. Moreover, robust links have been established between early risk factors and later outcomes that are often consistent with one or more of these theories (Aguilar, Sroufe, Egeland, & Carlson, 2000; Dishion, Patterson, Stoolmiller, & Skinner, 1991). However, despite a plethora of research on social and behavioral processes linking the development of early conduct problems to later AB in adolescence, with the notable exception of Dodge's social information processing model (Dodge & Somberg, 1987; Dodge & Schwartz, 1997), few cognitively-based theories have been developed to account for how the connection between early risk factors and later AB might be mediated by intrapsychic processes.

At a broad level, developmentally-oriented models have been proposed, and in some cases validated, to explain how children internalize moral behavior, but these studies have tended to focus on early childhood. For example, Kohlberg (1969) proposed a theory describing stages of moral development, and Kochanska (Aksan, & Kochanska, 2005; Kochanska, 2002a; Kochanska, 2002b; Kochanska, 1997) has carried out programmatic research on the internalization of standards and the development of the conscience in young children. However,

most of this research has focused on low-risk samples of young children (ages 0-5) who have not engaged in, nor are likely to later engage in, serious antisocial activities. While these theories and research on young children shed light on the early development and internalization of standards, few cognitively-oriented models have been developed or tested on older children and adolescents, who are more likely to engage in serious AB.

The main exception to this dearth of research on cognition and AB in older children is Dodge's seminal work on Social Information Processing (SIP) (Dodge & Somberg, 1987; Dodge and Schwartz, 1997). Dodge postulates that children go through a chain of six steps between encoding information and acting in an antisocial manner, relying on their history of experiences in similar situations to determine their ultimate behavioral response. These mental processes (e.g., interpretation of social cues, response evaluation) are presumed to be proximal mechanisms that underlie children's social behavior generally and aggression specifically. Consistent, albeit modest, associations have been shown between each step in Dodge's model of SIP and children's antisocial tendencies (Dodge, Bates, & Pettit, 1990; Dodge & Schwartz, 1997). In particular, the link between hostile attribution biases and generation of hostile responses has been extensively validated (Dodge, Murphy, & Buchsbaum, 1984; Dodge & Schwartz, 1997; Dodge & Somberg, 1987; Schultz & Shaw, 2003).

More recently, Bandura and colleagues (1996) also proposed a theory to account for AB that draws heavily upon social information processing called Moral Disengagement. Within Bandura's social-cognitive theory, individuals are thought to refrain from immoral behavior in general and antisocial activities in particular because it will cause them to sanction themselves for acting against their beliefs (i.e., feeling bad about themselves for committing an immoral act). Accordingly, when one's moral beliefs and values justify AB, there is less dissonance or

inhibition from engaging in antisocial actions, as such acts are deemed acceptable. For example, a religion may hold murder as morally wrong, but may condone it in certain contexts (e.g., against non-believers in the crusades) and actually encourage and reward individuals for carrying out such acts. In more modern contexts, urban youth living in impoverished homes and neighborhoods that offer them little hope or opportunity for socially acceptable pathways to success may develop a moral code of behavior that is not bound by mainstream prohibitions against committing antisocial actions, particularly when such actions are associated with the means to obtain financial success (e.g., dealing illicit drugs) or ensuring safety (e.g., joining a gang). In other words, under these circumstances, youth may develop ways of justifying their behavior as not being against their moral code because of their environmental circumstances. Thus, from the perspective of MD, it is important to know what moral filter individuals are using to process social information, and how such processing may lead to the justification of AB.

Bandura cites a wealth of literature that validates associations between MD and older children's, adolescents', and adults' AB. Using Bandura and colleagues' (1996) MD scale, several studies have shown strong links with aggression and other antisocial outcomes. For example, in adults, associations have been demonstrated between MD and gambling (Barnes, Welte, Hoffman, & Dintcheff, 2005), violence towards animals (Vollum, Buffinton-Vollun, & Longmire, 2004), criminal computer behavior (Rogers, 2001), and attitudes about execution (Osofsky, Bandura, & Zimbardo, 2005). Additionally, parents' MD has been related to their children's maladaptive anger (Cox, Lopez, & Schneider, 2003). Several studies have also established a link between MD and AB for older school-age children and adolescents. For example, a clear link has been established between MD and AB in a large normative sample of Italian boys and girls age 10-15 (Bandura et al., 1996; Bandura et al., 2001), in an American

sample of African-American boys and girls age 9-14 (Pelton et al., 2004), and in an American sample of male juvenile offenders age 13-18 (Mulford, 2004).

While Bandura's work on MD is relatively novel in relation to other models proposed in developmental and social psychology, his work is consistent with several theories in sociology and criminology. First, MD is theoretically similar to Hirschi's (1969) control theory of societal attachment. In Hirschi's initial model (1969), individuals were seen as adhering to society's rules based on their socialization experiences with primary caregivers, with families viewed as the primary agents of socialization. In a later modification of the model, Gottfredson and Hirschi (1990) suggested that individual traits may interact with the socialization process to influence their trajectory towards AB. Second, Sutherland's (1939) theory of Differential Association posits that the "self" is a social construct that is continuously being reconstructed through associations with and reinforcements from others. In the case of AB, association with others influences the values and perceptions of what behavior is "wrong". Third, in a related theory, Elijah Anderson's (1999) work on the "code of the streets" posits that alienation from mainstream society and its institutions due to life in impoverished neighborhoods is a key factor in the development of a code in which interpersonal violence is not only condoned, but encouraged as a means of survival. Fourth, Tyler's work on Legal Socialization (Fagan & Tyler, 2005) suggests that children's and adolescents' perceptions of legitimacy of law and legal authorities shape their compliance to law and that these effects covary with social contexts including the neighborhood. In sum then, these theories suggest that key risk factors such as interactions with caregivers, neighborhood conditions, and individual traits may all contribute to different attitudes and beliefs about adherence to mainstream societal values, and that these attitudes and internal schemas may then influence risk for AB.

2.2   POTENTIAL PRECURSORS OF MORAL DISENGAGEMENT

Based on emerging findings showing links between MD and AB and a long history of research studying similar issues in criminology, understanding the developmental precursors of MD has the potential to advance our understanding of cognitive mechanisms that account for how some adolescents become detached and disengaged from mainstream societal values. Moreover, if these developmental precursors of MD are also linked with later AB (i.e., there is a body of evidence suggesting associations between these risk factors and AB), MD may be examined as a cognitive mediator between early risk and later AB.

Bandura's theory of MD is generally adevelopmental; however, it is part of a larger social cognitive model that emphasizes a social learning perspective. According to Bandura and colleagues (2001), moral reasoning is translated into actions through self-regulatory mechanisms. In the course of socialization, moral standards are constructed from information conveyed by direct tuition, evaluative social reactions to one's conduct, and exposure to the self-evaluative standards modeled by others. Once formed, such standards serve as guides and deterrents for action (Bandura, et al., 1996). Theoretically, potential precursors of MD should be experiences that directly model or at least expose children to attitudes and beliefs condoning the use of AB, particularly in ways that violate mainstream social mores (e.g., distribution and selling of illegal drugs, use of violence as a primary conflict resolution strategy). Repeated exposure to such behavior and attitudes across contexts should eventually lead children to become morally disengaged from mainstream values and more likely to engage in antisocial activities.

Based on these criteria and following the tenets of social learning theory, a developmentally-guided model of MD is proposed that emphasizes exposure and modeling across several contexts leading to the adoption of attitudes and beliefs consistent with MD (see

Figure 1 – Hypothesis 1A). Note that it would also be possible to become morally disengaged based on experiences that lead one to believe that the world is a harsh and rejecting environment, rather than necessarily, because of exposure to a deviant subculture. Thus, variables will be included that emphasize exposure to harsh treatment from primary caregivers and neighborhood cultures that may value antisocial attitudes.

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┌─────────────────────────────────┐
│        Child Variables          │
│     Information Processing       │
│           Empathy                │
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                                    \
                                     \
                                      \
┌────────────────────────┐            ┌────────────────────────┐
│    Early Parenting      │ ────────▶ │  Moral Disengagement   │
│   Rejecting Parenting   │           └────────────────────────┘
│ Inter-parental aggression│                  ↗
└────────────────────────┘                 /
        ┌────────────────────────────┐   /
        │ Neighborhood Impoverishment │ /
        └────────────────────────────┘

─────────────────────────────────────────▶

 Infancy   Early childhood  Middle and late childhood   Adolescence

              Developmental Timeline
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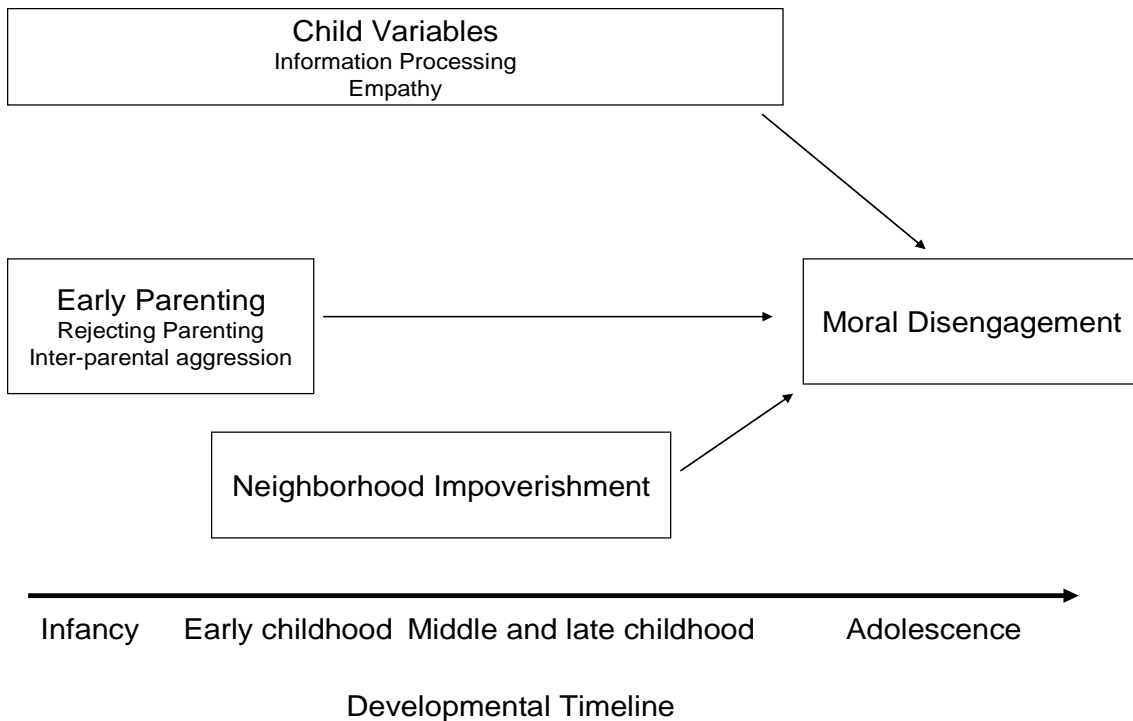
Figure 1 - An Additive Model of the Development of Moral Disengagment

In the case of the pathway emphasizing learning that the world is a harsh, uncaring place, it is hypothesized that children will first learn this lesson in the home through early experience with parents, via harsh and rejecting care giving, and by witnessing the way parents treat each other (i.e., inter-parental aggression). These early familial environments may be learning opportunities

for the child and have already been linked to later outcomes. Parental behavior has been shown in many facets to be associated with AB (Criss & Shaw, 2003; Owens & Shaw, 2003; Shaw, Keenan, & Vondra, 1994), and more specifically, rejecting parenting has shown a strong connection to later conduct problems (Shaw, Criss, Schonberg, & Beck, 2004). Children's exposure to inter-parental violence has also been linked to multiple types of child adjustment problems, most notably externalizing symptoms (Cummings, Pelligrini, Notarius, & Cummings, 1989; Fantuzzo, et al., 1991; Patterson, Reid, & Dishion, 1992; Shaw & Emery, 1987, 1988).

Second, as the child matures and spends more time outside of the home in the neighborhood (i.e., at school age) and encounters peers and adults who also demonstrate hostile and aggressive attitudes and behaviors, the child's emerging view of the world as a dangerous and uncaring place would be expected to be corroborated and further reinforced. Neighborhood environments characterized by high levels of crime and exposure to deviant peers and adults have been repeatedly shown to be related to AB and may be powerful learning environments during childhood. For example, exposure to community violence has been linked in many studies to later AB among school-age children and adolescents (McCabe, Lucchini, Hough, Yeh, & Hazen, 2005; Ng-Mak, Salzinger, Feldman, & Stueve, 2004; Pearce, Jones, Schwab-Stone, & Ruchkin, 2003; Rosario, Salzinger, Feldman, & Ng-Mak, 2003). Moreover, the association between exposure to community violence and antisocial outcomes remains after accounting for the effects of other confounding variables such as child maltreatment, SES, and intimate partner violence (McCabe et al., 2005).

While exposure to these harsh and unforgiving contexts is viewed as an important precursor to MD, it is also hypothesized that by the late school-age period, children would come to internalize attributions and attitudes consistent with MD, taking the form of hostile

attributional biases and high callousness and low empathy toward others. Hostile attribution biases have been linked in many studies to antisocial outcomes (Dodge & Schwartz, 1997; Dodge & Somberg, 1987; Dodge, et al., 1984; Schultz & Shaw, 2003), as have callous and unemotional attributes and lack of empathy (Frick, Bodin, & Barry, 2000; Frick, et al., 2003; Waldman et al., in press). As these child attributes have been shown to be related to current and future antisocial activities, they may also represent precursors of MD. While callousness and low levels of empathy are presumed to be influenced by biological mechanisms (e.g., Lorenz & Newman, 2002; Wallace, Vitale, & Newman, 1999), there is some evidence that both attributes are also influenced by environmental forces (Waldman et al., in press).

Therefore, as shown in Figure 1, it is expected that risk factors from family, neighborhood, and child domains will independently contribute to the development of MD at age 15, but as no extant research has examined this question, we examined multiple pathways through which associations between risk factors and MD may be evident. First, we examined independent and direct associations where each risk factor was posited to contribute independent variance to the prediction of MD. Second, an interaction model is proposed where the combination of two risk factors across domains (i.e., parenting and neighborhood risk) was expected to be associated with MD after accounting for the direct effects of each risk factor (Figure 2 – Hypothesis 1C). Third, we tested a cumulative risk model, whereby MD was predicted by exposure to the sum of multiple risk factors in a nonspecific manner (e.g., high levels of 3 or more of the 5 risk factors, Figure 3). This cumulative risk model posits that each factor in and of itself may not be as powerful in predicting later outcomes as the accumulation of multiple risks.

Child Variables
Information Processing
Empathy

Early Parenting
Rejecting Parenting
Inter-parental aggression

Moral Disengagement

Neighborhood Impoverishment

Infancy   Early childhood Middle and late childhood   Adolescence

Developmental Timeline
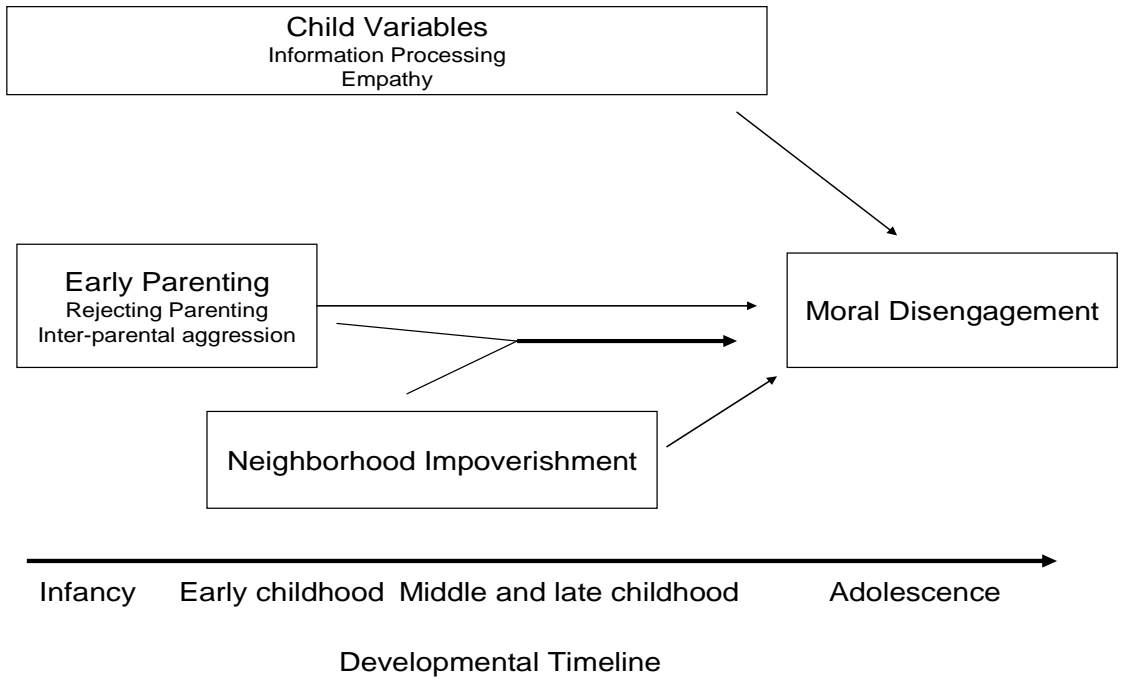
Figure 2 - An Interactive Model of the Development of Moral Disengagement

Moral Disengagement

0   5

# of Risk Factors

Early Parenting
Rejecting Parenting
Inter-parental aggression

Neighborhood Impoverishment

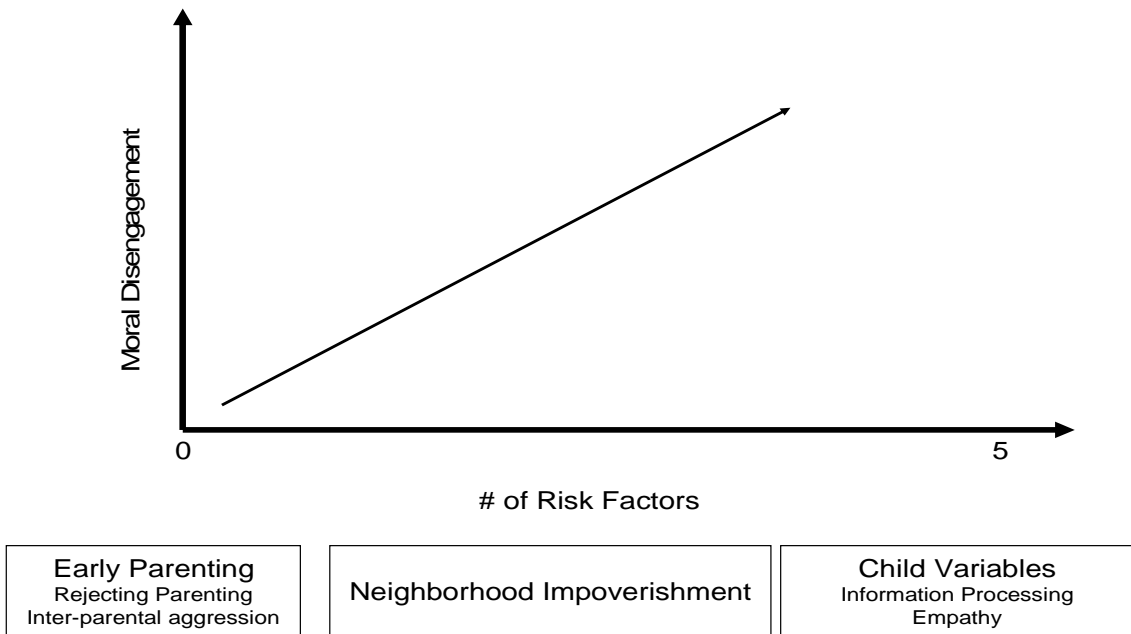Child Variables
Information Processing
Empathy

Figure 3 - A Cumulative Risk Model of the Development of Moral Disengagement

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2.3   MORAL DISENGAGEMENT AS A MEDIATOR BETWEEN EARLY RISK FACTORS AND ANTISOCIAL BEHAVIOR

Based on findings that have linked these early risk factors (e.g., parenting, neighborhood adversity) with later antisocial outcomes, and the potential that they may also be correlated with MD in adolescence, it is logical to expect that MD may be a cognitive mediator between these early risk factors and later youth AB. In some cases, other facets of SIP (e.g., hostile attributional bias) have been shown to mediate, or at least partially mediate, associations between early risk factors and later conduct problems among school-age children (Dodge, Pettit, Bates, & Valente, 1995; Shultz & Shaw, 2003). In the one study examining mediational processes in reference to MD, MD was shown to partially mediate the relationship between positive parenting, assessed during late childhood, and aggressive and delinquent behavior fifteen months later among boys from a sample of low income, African-American, single-parent families (Pelton et al., 2004). However, this study only addressed how MD might mediate associations between earlier parenting (but not other risk factors) and later AB. Furthermore, parenting was assessed in middle versus early childhood and the measures of MD and AB were concurrent. Thus, there are both theoretical and empirical bases for conducting further research on whether MD might serve as a cognitive mediator of early parenting and other contextual and child risk factors. This knowledge has the potential to increase our understanding of how early risk may affect child cognitive processing and subsequent proclivity for adolescent boys to engage in AB. A series of mediation models were tested (as displayed in Figure 4) to explore the possibility that MD may mediate individual associations between individual risk factors and adolescent AB.

Child Variables
Information Processing
Empathy

Early Parenting
Rejecting Parenting
Inter-parental aggression

Moral
Disengagement

Antisocial
Behaviors

Neighborhood Impoverishment

Infancy   Early childhood Middle and late childhood   Adolescence

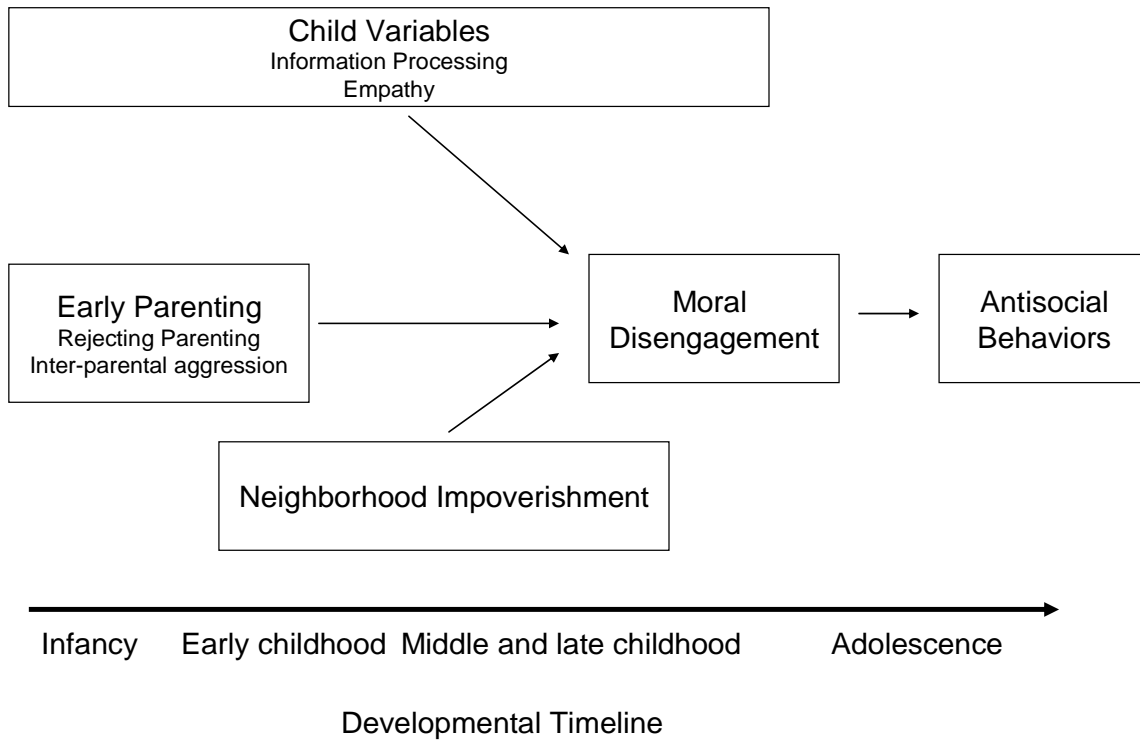Developmental Timeline

Figure 4 - A Mediation Model of Early Risk, MD, and Antisocial Behaviors

3.0   STATEMENT OF PURPOSE

The study of MD has the potential to expand our knowledge of adolescent attitudes, their genesis, and the potential for these cognitions to mediate the path between early risk and later antisocial outcomes. Specifically, understanding more about cognitive mechanisms in antisocial youth may guide our understanding of how risk factors from earlier developmental periods and diverse domains are translated into serious forms of AB. Despite the importance of understanding internal cognitions, relatively little research has been undertaken to uncover the antecedents of social information processing that leads adolescent males to demonstrate low levels of cognitive or moral dissonance when engaging in antisocial activities. Despite a number of studies indicating consistent and robust associations between MD and AB among school-age children, adolescents, and adults, little research has been conducted to elucidate the development of these attitudes.

More specifically, the current study aims to increase our understanding of MD by using a prospective, longitudinal design to examine associations between early family, neighborhood, and child risk factors and adolescent AB. Methodological strengths of the study include the use of multiple methods (i.e., observation, questionnaires, vignettes, and census data) and informants (i.e., parents, youth), the measurement of developmentally-salient risk factors spanning from early childhood to early adolescence, and the use of a sample of low-income male youth at high risk for demonstrating serious AB. It was hypothesized that early risk factors across multiple

domains would be associated with higher rates of MD via direct, interactive, and cumulative pathways, and that MD would mediate relationships between individual risk factors and antisocial outcomes.

4.0   HYPOTHESES

Based on previous finding and theories, the following hypotheses were tested.

1a. Direct effects of early risk factors on adolescent MD

It was hypothesized that rejecting parenting and inter-parental aggression in early childhood, neighborhood risk in middle childhood, and hostile SIP and low empathy in early adolescence would be directly associated with MD in later adolescence. This hypothesis was tested using both a variable-oriented approach (i.e., correlations) and a person-oriented approach (i.e., creating high, medium, and low MD groups) (see Hypothesis 1d).

1b. Independent effects of early risk factors on adolescent MD

Within a multivariate framework, it was hypothesized that rejecting parenting, inter-parental aggression, neighborhood risk, and hostile SIP and low empathy would each contribute unique variance in the prediction of adolescent MD.

1c. Interactive effects of early risk factors on adolescent MD

Based on previous research suggesting that risk factors across multiple domains increase the probability of antisocial outcomes (e.g., Beck & Shaw, 2005; Deater-Deckard, Dodge, Bates, & Pettit, 1998; Garcia, Shaw, Winslow, & Yaggi, 2000) above and beyond the contribution of direct and independent effects of risk, it was hypothesized that specific combinations of cross-domain factors would be associated with increased risk of MD after accounting for the direct and independent contribution of each risk factor.   Specifically, it was hypothesized that the

interaction between rejecting parenting in early childhood and neighborhood risk in middle childhood would be associated with higher levels of MD than only one of these factors in isolation because exposure to these risk factors across contexts may serve to foster and reinforce distrust towards peers and adults outside the family, and subsequent disrespect for adopting mainstream values that respect the rights of other individuals and their property.

1d. Person-centered approach to the development of MD

It was hypothesized that youth with higher MD would demonstrate higher rates of earlier risk using person- versus variable-centered perspective. Specifically, youth with higher scores of MD at age 15 (when grouped into high, medium and low MD groups) would also have higher mean scores on each risk variable (*i.e.* rejecting parenting, empathy) when comparing youth by MD group.

2a. Cumulative effects of early risk factors on adolescent MD

In contrast to models that emphasize the specific influence of individual risk factors on child adaptation, several researchers have posited and found associations between the nonspecific accumulation of risk factors and child adjustment (Ackerman, Izard, Schoff, Youngstrom, & Kogos, 1999; Rutter, 1979). Thus, as a complement to examining specific associations between individual risk factors and MD, we proposed that the accumulation of risk factors across domains and across development would increase the probability of becoming morally disengaged during adolescence. Specifically, it was expected that youth with higher rates of any combination of the following risk factors would be associated with higher levels of MD during adolescence: rejecting parenting, inter-parental aggression, neighborhood risk, hostile SIP, and low empathy.

2b. Specific patterns of early cumulative risk on MD

Beyond a cumulative risk model in which each risk is equal, the chaining of risks together informed by developmental theory represents an alternative method for predicting individual differences in MD during adolescence. Accordingly, it was expected that the presence of specific sequences of risk would be associated with higher levels of MD compared to children who experience fewer risk factors and a comparable number but a nonspecific combination of risk factors. For example, children high on rejecting parenting during early childhood and neighborhood risk during middle childhood were expected to have higher levels of MD than those with only neighborhood risk during middle childhood or neighborhood risk and biases in SIP during middle childhood.

3. MD as a mediator of early risk and adolescent AB

Based on previous findings showing that components of social information processing have partially mediated associations between early risk factors and antisocial outcome (Dodge et al., 1995; Shultz & Shaw, 2003), including MD (Pelton et al., 2004), MD was expected to mediate the relationship between individual risk factors assessed in early and middle childhood and adolescent ABs.

5.0   METHOD

5.1   PARTICIPANTS

Participants in this study are part of the Pitt Mother and Child Project (PMCP), an ongoing longitudinal study of child vulnerability and resiliency in low-income families. In 1991 and 1992, 310 infant boys and their mothers were recruited from Allegheny County Women, Infant, and Children (WIC) Nutrition Supplement Clinics when the boys were between 6 and 17 months old. At the time of recruitment, 53% of the target children in the sample were European-American, 36% were African-American, 5% were biracial, and 6% were of other races (e.g., Hispanic-American or Asian-American). Two-thirds of mothers in the sample had 12 years of education or less. The mean per capita income was $241 per month ($2,892 per year), and the mean Hollingshead SES score was 24.5, indicative of a working class sample. Thus, a large proportion of the boys in this study could be considered at high risk for antisocial outcomes because of their socioeconomic standing.

Retention rates have generally been high at each of twelve time points from age 1.5- to 12-years old, with 90-94% of the initial 310 participants completing visits at ages 5 and 6, and some data are available on 89% or 275 participants at ages 10, 11, or 12. When compared with those who dropped out at earlier time points, participants who remained in the study at ages 11 and 12 showed no difference on the CBCL Externalizing factor at ages 2, 3.5, or 5 (all p values >

.50).   At ages 15 and 16, some data were available from 248 children, a retention rate of approximately 81% over 15 years.

5.2   PROCEDURES

Target children and their mothers were seen for two- to three-hour visits at ages 1.5, 2, 3.5, 5, 5.5, 6, 8, 10, 11, 12, and 15 years old. Data were collected in the laboratory (ages 1.5, 2, 3.5, 6, 11) and/or at home (ages 2, 5, 5.5, 8, 10, 12, 15). The adolescents were interviewed over the phone for the age-16 assessment. During home and lab assessments, parents completed questionnaires regarding sociodemographic characteristics, family issues (e.g., parenting, family member's relationship quality, maternal well-being), and child behavior. In addition, parents, other family members (siblings, alternative caregivers), and friends of the target child were videotaped interacting with each other and/or the target child in age-appropriate tasks, including mother-son clean-up tasks in early childhood, sibling play or discussion tasks during preschool and school-age periods, and peer discussion of problematic topics at age 15. Participants were reimbursed for their time at the end of each assessment.

5.3   MEASURES

Measures to be used in the current study are described below. They were selected based on their developmental appropriateness to constructs hypothesized to be associated with MD.   All measures are summarized in Table 1.

Table 1. Summary of Measures Used

Domain	Measure	Age collected	Respondent
Early Parenting	Rejecting Parenting (Shaw et al, 2004)	Age 1.5 and 2	Composite of observational measures
Inter-parental Aggression	Conflict Tactics Scale (CTS) (Strauss, 1979)	Age 3.5 and 6	Mother
Community Risk	Neighborhood Impoverishment (Vanderbilt & Shaw, 2006)	Ages 6-10	Census data
Child Information Processing	Hostile Attribution Bias and Response Generation (Dodge & Somberg, 1987)	Age 10 and 11	Child's response to vignettes
Callous/Unemotional Disposition	Child and Adolescent Disposition Scale – CADS (Waldman, in press)	Age 12	Parent and Youth
Moral Disengagement	MD Scale (Bandura et al., 1996)	Age 15	Youth
Antisocial Behavior	Self-report of Delinquency (SRD) (Elliot et al., 1985)	Age 16	Youth

5.3.1 Rejecting Parenting.

Rejecting parenting was assessed when the boys were 1.5 and 2 years of age based on observations of parent-child interaction in multiple tasks (i.e., clean-up, nonstructured play) and settings (i.e., lab, home) as described in Shaw and colleagues (2004). Structured tasks included a clean-up task administered when boys were 1.5 and 2 year old that was subsequently coded from videotapes using the Early Parenting Coding System (EPCS; Winslow & Shaw, 1995). The EPCS measure of rejecting parenting includes two molecular ratings—verbal/physical approval

and critical statement, and three global ratings—hostility, warmth, and punitiveness. Trained coders attained adequate reliability on each of these items (i.e., kappa coefficients ranged from .79 to .83; Shaw et al., 2004), and subsequently all five molecular and global ratings were composited to generate a factor of rejecting parenting (α = .61 at 18 months and α = .71 at 24 months). Data from nonstructured tasks were gathered at the age-2 home assessment using the Home Observation for Measurement of the Environment (HOME) Inventory, which is based on examiner observations and interviews conducted with the primary caregiver (HOME; Caldwell & Bradley, 1984). The HOME includes 36 items that assess the quality and quantity of support and stimulation in the home environment. Because of our interest in maternal behavior that might be considered unresponsive and rejecting, we focused on the 8-item Acceptance factor for purposes of the present study, which describes parent's responsiveness to the child's behavior or distress. The HOME has shown good reliability and validity properties (Caldwell & Bradley, 1984), and in the current sample the internal consistency of the Acceptance factor was satisfactory (α = .70). To create a composite of rejecting parenting, HOME acceptance standard scores were reverse scored and added to standard scores derived from the EPCS rejecting composite at ages 1.5 and 2 (r = .29, p < .001) (Shaw, et al., 2004).

5.3.2 Inter-parental Aggression.

The Conflict Tactics Scales (CTS-Form N, Straus, 1979) was used to assess verbal reasoning, verbal aggression, and violence between adult partners and was administered to mothers when the children were 3.5 and 6 years old. The CTS consists of 26 items which measure the frequency of conflict resolution tactics used by partners over the past year. For purposes of the present study, we chose to composite two factors at each time point: Frequency of Verbal and

Physical Aggression, as both inter-parental verbal and physical aggression were hypothesized to be relevant to the development of MD. The CTS is widely used, has been demonstrated to have adequate reliability and validity, and has been shown to be associated with both child behavior problems (Fantuzzo et al., 1991) and child responses to conflict (Cummings, et al., 1989). In large nationally representative samples, internal consistencies for the Verbal and Physical Aggression subscales have been high (α = .77 - .88; Straus, 1979; Straus, 1991), as they were in the present study (α = .83 - .93 for Verbal and Physical aggression at ages 3.5 and 6).

5.3.3   Neighborhood Risk.

 Neighborhood risk was ascertained by geocoding addresses using census data when children were ages 6, 8, and 10 years old. Data were coded at the block group level, the smallest unit for which all census data are available (Vanderbilt & Shaw, 2006). As all data were collected between 1995 and 2003, 2000 census data (rather than 1990 census data) were used. Based on methods devised by Wikström and Loeber (2000) and adapted by Winslow (2001) and Schonberg, et al., (2005), a factor of neighborhood poverty was generated using the following census block group level variables: 1) median family income, 2) percent families below poverty level, 3) percent on public assistance, 4) percent unemployed, 5) percent single-mother households, 6) percent African-American, 7) percent Bachelor's degree and higher. Using all census block groups in Allegheny County, these individual variables were standardized, summed, and then averaged (after reverse scoring median family income and percent Bachelor's degree) to create an overall neighborhood risk factor score for each block group. Past research demonstrates that these variables correlate highly and are supported by factor analyses (Ingoldsby, Shaw, Schonberg, & Flanagan, 2003; Wikström & Loeber, 2000). The score for the

block group in which the child lived at each age was then averaged across all time points to yield a summary of the child's exposure to community risk from ages 6 to 10. Children's neighborhood risk score was very stable across time (correlation between years: $r = .72 - .83$).

5.3.4 Social Information Processing.

Hostile Attribution Bias and Maladaptive Response Generation was assessed using a vignette procedure developed by Dodge (Dodge & Somberg, 1987), which was administered when boys were ages 10 and 11. Interviewers orally presented the target child with 8 social vignettes and accompanying pictures. In each vignette, the behavior of another boy leads to a negative outcome for the target child (such as being bumped), with the intentions of the other boy left ambiguous. Following each vignette, the interviewer asks the target child to assess the child's *attribution* of intent of the 'other boy' (did the other boy hurt the target child on purpose) and asks the child how they would *respond* in the situation (i.e. would they tell a teacher, yell at the boy, hit the boy, etc). The *attributions* are coded "hostile" if the target child responds that the boy in the vignette performed the action on purpose. The *response* to the situation was coded as retaliatory and therefore hostile (i.e., acts or threats of physical or verbal aggression), verbally engaging (non-hostile), or ambiguous in their adaptive value (non-hostile) (e.g., doing nothing, making commands, telling the teacher). In past research with this sample, inter-rater agreement was high for both variables in this construct ($\kappa = .92$ for both). The sum of the number of hostile responses within each factor ($\alpha = .60 - .74$) was averaged across the ages, and then the two factors ($r = .72$) were summed to generate a composite of hostile SIP that includes both hostile attribution bias and response generation.

5.3.5   Callous and Unemotional Traits.

To assess callous and unemotional traits or lack of empathy (lack of prosocial traits), the Child and Adolescent Disposition Scale (CADS, Waldman et al., in press) was administered to mothers and youth at the age-12 assessment. Participants were asked to rate each of 48 items by thinking about how well the item describes an emotion or behavior of the youth and how often it occurred during the last 12 months based on a four-point Likert scale. In a previous study (Waldman et al., in press), three factors were identified: prosocial/empathetic attitude, negative emotionality, and sensation seeking. Within the present sample, the same three factors were found. Given our interest in empathy, the prosocial/empathy scale was used to assess empathy (or lack thereof). The scale contains 12 items (e.g., 'Would he feel guilty if he broke the law?,' 'Does he feel badly for other children his age when they get hurt?'), and has shown good internal consistency in this sample ($\alpha = .86$ for parent report and $\alpha = .84$ for youth report). A sum of the prosocial scale from both parent and youth report ($r = .31$, $p < .001$) was averaged to create a composite of empathy. However, as parent and youth reports were only modestly correlated, scores from each informant were also reported separately.

5.3.6   Moral Disengagement

To assess moral disengagement, youth were administered the Mechanisms of Moral Disengagement scale (MDS, Bandura, et al., 1996) at the age-15 home assessment. For each of 32 statements, respondents were asked to state whether they disagree, neither agree nor disagree, or agree with its meaning. Sample items include 'it is alright to beat someone who bad mouths your family,' 'if people are careless where they leave their things it is their own fault if things get

stolen,' and 'it is alright to lie to keep your friends out of trouble.' Past research suggests a one factor solution ($\alpha = .82$) of MD, derived by summing scores from all 32 items (Bandura et al., 1996; Pelton et al., 2004). In an analysis of the current sample at age 15 ($n = 248$), internal consistency was found to be satisfactory ($\alpha = .84$).

5.3.7   Antisocial Behavior.

Youth AB was assessed based on boys' reports at age 16 during a phone interview using the Self-report of Delinquency Questionnaire (SRD; Elliot, Huizinga, & Ageton, 1985). The SRD is a semi-structured interview that contains 62 items which asses the frequency with which an individual has engaged in aggressive and delinquent behavior, alcohol and drug use, and related offenses. Using a 3-point rating scale (1 = never, 2 = once/twice, 3 = more often), children rate the extent to which they engaged in different types of antisocial activities (e.g., stealing, throwing rocks at people, drug use). Analyses utilizing all cases currently available from the sample ($n = 207$) at age 16 found high internal consistency ($\alpha = .92$).

Furthermore, while many researchers have commonly divided pathways to AB by age of onset (Moffitt, 1993b), an alternative approach is to generate factors of similar types of behavior. For example, some researchers (Loeber & Stouthamer-Loeber, 1998) have suggested creating factors for overt, covert, and opposition to authority behaviors. As some pathways to severe ABs may be defined by different groups of related behaviors, attitudes and beliefs may play a different role in different pathways. For example, MD may be more strongly associated with both overt and opposition to authority behaviors than covert antisocial acts as such youth that engage in these more flagrant behaviors would be expected to show a lack of concern for societies rules and values. Therefore, in addition to using the total sum of all items on the SRD

as a measure of AB, the SRD was also divided into narrow-band factors of overt (12 items, α = .766), covert (17 items, α = .775), opposition to authority (7 items, α = .737), drug and alcohol use (11 items, α = .685), and drug dealing (2 items, α = .639), for which internal consistencies are adequately high in the current sample.

5.3.8   Child IQ.

Child intellectual skills were evaluated at the age-11 laboratory assessment using two subtests from the Wechsler Intelligence Scale for Children-IV (WISC-III, Wechsler, 1991), a commonly used measure of children's cognitive abilities. The Block Design (BD) and Vocabulary (Voc) subtests were selected because of their high average correlation between the subtests and overall Verbal Scale (VIQ), Performance Scale (PIQ), and Full Scale IQs (FSIQ) (Voc and VIQ = .78, Voc and FSIQ = .74, BD and PIQ = .65, Voc and FSIQ = .66) and the high test-retest reliability and internal consistency coefficients of these subtests (.89 and .87 respectively for Voc and .77 and .87, respectively for BD; Sattler, 1990). Full Scale IQ (FSIQ) scores were derived according to prorating procedures described by Tellegen and Briggs (1967, cited in Sattler, 1990).

5.4   DATA ANALYSIS

The primary goal of the proposed study is to investigate direct and interactive associations between risk factors from various developmentally appropriate contexts (family, neighborhood, and child) and MD, and whether MD mediates associations between early risk and adolescent AB. These issues were tested statistically in the manner described below.

In addition to examining the primary study hypotheses, a few other factors were considered to either rule out 'third variable' hypotheses (e.g., for IQ) or examine potential moderators of associations between risk factors and MD (e.g., child ethnicity). First, as race and ethnicity can influence the normalcy and adoption of different values, the factor structure of MD was explored within African American (AA) and European American (EA) youth. In addition, whether or not different factor solutions were evident for AA and EA families, it is possible that ethnic differences might exist with respect to associations between risk factors and MD. Preliminary analyses investigated whether ethnicity is differentially related to MD. Second, all analyses involving antisocial outcomes (i.e., Hypothesis 3) were examined using both a composite of overall antisocial behaviors and several narrow-band factors aimed at exploring the possibility that different types of AB may vary in their association with MD, and thus differ in the degree to which associations between risk factors and AB are mediated by MD. Third, preliminary analyses investigated the possibility that IQ and MD are significantly associated.

6.0   RESULTS

Prior to presenting results for each of the study's four main hypotheses, descriptive statistics and intercorrelations are presented for the independent and dependent variables. Next, each hypothesis is examined individually. As a priori models were generated for the directionality of central risk factors (e.g., rejecting parenting, child empathy) for all major hypotheses, one-tailed tests were used to establish significance criterion for these analyses, including Pearson correlations, ANOVAs, and hierarchical regression analyses.

6.1   DESCRIPTIVE STATISTICS

Descriptive statistics for all study variables appear in Table 2. Several of the variables were created specifically for this study or have been adapted for use in this sample, making direct comparisons with other samples difficult. For example, the measure of rejecting parenting was created specifically for this study and the measure of neighborhood impoverishment, while not created for this study, was adapted and modified to meet the needs of the current study.   Hostile attribution bias and response generation have been well studied, but often in different formats (with different coding and number of vignettes) and in different contexts (such as in hostile threat contexts) (Orbio de Castro, et al., 2002), also making comparisons with prior research difficult. Moreover, the means for the CADS measure (empathy) and the MD scale have not

been reported in the literature and therefore cannot be compared to those obtained in the current sample. Norms for each factor of the CTS have been reported for a large normative sample (Strauss, 1990). For the present study, the means on the verbal aggression scale at 42 and 72 months were 10.6 and 10.0 which are both in the 75th percentile of the normative distribution. The sample means of 2.9 and 2.2 for the physical aggression scale at 42 and 72 months are in the 90th percentile indicating that for both scales, the present sample reports significantly higher rates of both types of aggression than was evident in the norming sample.

Table 2 - Descriptive Statistics and Intercorrelations for Independent and Dependent Variables

Measure	N	Mean (SD)	1	2	3	4	5	6	7	8
1. Rejecting Parenting (age 1.5 & 2)	189	-.0036 (1.65)								
2. Conflict Tactics Scale (CTS) (age 3.5 & 6)	189	13.72 (10.81)	.10[+]							
3. Neighborhood Impoverishment (ages 6-10)	189	.2017 (.8996)	.32***	.032						
4. Hostile Attribution Bias and Response Generation (age 10 & 11)	189	.8017 (.3310)	.10[+]	-.10[+]	.13*					
5. Empathy factor of CADS Composite (age 12)	189	3.034 (.3909)	-.23**	-.02	-.16*	-.09				
6. Empathy Youth Report (age 12)	186	2.976 (.5094)	-.16*	-.023	-.14*	-.15*	.84***			
7. Empathy Parent Report (age 12)	189	3.086 (.4499)	-.23**	.054	-.13*	-.003	.79***	.32***		
8. MD Scale (age 15)	189	45.74 (8.133)	.15*	-.042	.20**	.04	-.27***	-.28***	-.18**	
9. Self-report of Delinquency (SRD) (age 16)	148	7.912[1] (9.67)	.09	.08	.18*	.19*	-.145*	-.15*	-.065	.32**

*** p<.001 **p<.01, *p<.05, [+]p<.1 all tests one-tailed,

[1]The mean of the SRD presented is the mean before the transformation, but all other statistics are based on a transformed variable.

Before testing the main hypotheses, the relationship between two potential confounding factors (IQ and ethnicity) and MD was explored. As IQ was found to be modestly correlated with MD ($r = -.126$, $p < .05$, one-tailed), it was controlled for in separate regression analyses (Table 3). As ethnicity was not significantly correlated with MD when comparing Caucasian (EA) and non-Caucasian (AA) children ($r = .115$, $p > .05$, one-tailed), it was not controlled for in testing the main hypotheses. However, because MD also could be interpreted differently between youth from different ethnic backgrounds, the factor structure of MD was examined using an exploratory factor analysis (EFA) to investigate factorial variance by ethnicity. For both ethnicities, the factor structure of MD was very similar to the hypothesized factor structure laid out by Bandura (1996): for both EA and AA youth 7 factors with relatively few items (i.e., 4 items each) were evident. While the item structures for each factor were largely similar (i.e., in 6 of 7 cases) for both EA and AA youth, one factor was found for each ethnicity that was unique. For AA youth, this factor consisted of 7 items and focused on euphemistic labeling (e.g., taking someone's bicycles without their permission is just 'borrowing it'). For EA youth, the unique factor consisted of 4 items and focused on diffusion of responsibility (e.g., a kid in a gang should not be blamed for the trouble the gang causes). Each factor was subsequently correlated with hypothesized precursors of MD (e.g. neighborhood, empathy) and neither was found to be strongly related (i.e., all p values greater than .20) to any of the precursors (except the AA factor was related to SIP; $r = -.188$, $p = .05$), and this pattern of findings was similar when two factors that both ethnicities shared (a four item factor focused on displacement of responsibility) were tested in the same way (for these factors, only the factor in EAs was related to empathy; $r = -.17$, $p = .05$). Moreover, the entire scale had similar internal consistency for both EAs ($\alpha = .845$) and AAs ($\alpha = .824$). In sum, while great efforts were made to identify differences in the factor

structure of MD and associations between MD and precursors by ethnicity, there was little support of factorial variance in MD by ethnicity or that associations between precursors and MD differed by ethnicity.

Table 3 - Regression Analysis of Independent Variables When Controllling for IQ

Variable	B	SE	β
Intelligence	-.016	.035	.038
Rejecting Parenting	.181	.397	.036
Interparental Aggression	.011	.055	.015
Neighborhood Impoverishment	1.163	.747	.128
Hostile Attribution Bias and Response Generation	.263	1.852	.011
Empathy	-4.595	1.570	-.222***

6.2   HYPOTHESIS 1

6.2.1   1a. Direct effects of early risk factors on adolescent MD

To test the hypothesis that early risk factors would be associated with later MD in a univariate framework, a series of Pearson correlations were computed between each family (rejecting parenting, CTS), neighborhood (neighborhood risk), and child risk factor (SIP, Empathy factor) and MD. Intercorrelations among study variables are presented in Table 2. As hypothesized, there were significant positive correlations between rejecting parenting and MD (r = .149, p < .05), and neighborhood impoverishment and MD (r = .195, p < .01), as well as a

significant negative correlation between empathy and MD *(r = -.272, p < .001)*. However, unexpectedly neither inter-parental aggression nor hostile SIP was related to later MD.

6.2.2   1b. Independent effects of early risk factors on adolescent MD

The hypothesis that each risk factor within a multivariate framework contributes unique variance in the prediction of adolescent MD was tested using a multiple regression analysis. As displayed in Table 4, each risk factor was entered chronologically in a hierarchical multiple regression analysis, with variables assessed earlier in childhood entered before those evaluated in middle childhood and adolescence. Although rejecting parenting was significantly related to later MD initially, the magnitude of this association was progressively attenuated as other variables (especially neighborhood impoverishment and empathy) were entered in the regression model (i.e., in final model *ns*). Neighborhood impoverishment was significantly associated with later MD, albeit modestly, with all other variables in the regression equation, as was empathy.

Table 4 - Hierarchical Regression Analysis of Independent Variables Predicting MD

Model	Variable	B	SE	β	R^2 (ΔR^2)
Step 1	Rejecting Parenting	.736	.357	.149**	.022**
Step 2	Rejecting Parenting	.723	.359	.147**	
	Interparental Aggression	.021	.055	.028	.023 (.001)
Step 3	Rejecting Parenting	.452	.375	.092	
	Interparental Aggression	.021	.054	.028	
	Neighborhood Impoverishment	1.549	.693	.169**	.049 (.026**)
Step 4	Rejecting Parenting	.450	.377	.091	
	Interparental Aggression	.022	.055	.029	
	Neighborhood Impoverishment	1.542	.699	.169**	
	Hostile Attribution Bias and Response Generation	.172	1.796	.007	.049 (.000)
Step 5	Rejecting Parenting	.213	.375	.043	
	Interparental Aggression	.027	.053	-.036	
	Neighborhood Impoverishment	1.347	.683	.147*	
	Hostile Attribution Bias and Response Generation	-.173	1.752	-.007	
	Empathy	-4.980	1.509	-.239***	.102 (.053***)

***p<.01, **p<.05, *p<.10, n = 188

As empathy appeared to be the strongest predictor of MD, exploratory follow-up mediation analyses were conducted to examine whether associations between rejecting parenting and neighborhood impoverishment and later MD would be accounted for by empathy. Empathy was found to significantly mediate the relationship between parenting and MD ($z = 2.37$, $p = .018$) and the relationship between neighborhood impoverishment and MD was found to be partially mediated by empathy ($z = 1.87$, $p = .06$). Note the term "partially mediate" will be used when a statistical trend is found for mediation such as when p <.10. This term is used only to denote level of significance and does not refer to the effect size of the mediation.

6.2.3   1c. Interactive effects of early risk factors on adolescent MD

To test the hypothesis that the interaction between rejecting parenting in early childhood and neighborhood risk in middle childhood was associated with higher levels of MD, a hierarchical multiple regression was conducted in which rejecting parenting was entered first, followed by neighborhood risk and the two variables' interaction term. The interaction between these two variables was not found to contribute significance variance to MD after accounting for each variable's independent effect ($\beta = -.114$, *ns*).

6.2.4   1d. Person-centered approach to the development of MD

To test the hypothesis that youth with higher MD would demonstrate higher rates of earlier risk using a person- versus variable-centered perspective, high, medium, and low MD groups were created by dividing those adolescents who scored one standard deviation or more above the mean on MD (high MD group), within one standard of the mean (medium MD group),

and one standard deviation below the sample mean (low MD group) at age 15. These three groups were compared on rejecting parenting, inter-parental aggression, neighborhood risk, hostile SIP, and empathy using a series of ANOVAs with planned comparisons between all groups (see Table 5). Between-group differences were evident for both neighborhood risk and empathy. Using planned Tukey HSD tests, children with high MD lived in more dangerous neighborhoods and had lower empathy than children with medium or low MD. Additionally, children with medium MD exhibited less empathy than children with low MD. No group differences were found for rejecting parenting, inter-parental aggression or hostile SIP.

**Table 5 - Person Centered Analysis of MD - Means and ANOVA comparing MD groups on the Independent Variables**

Variable	Mean MD (SD)			$F (2, 186)$
	High MD group (n = 26)	Medium MD group (n = 134)	Low MD group (n = 29)	
Rejecting Parenting	.463 (1.71)	-.038 (1.48)	-.215 (2.22)	1.31
Inter-parental Aggression	13.8 (11.9)	14.0 (11.0)	12.3 (9.10)	.290
Neighborhood Impoverishment	.783 (1.01)[a]	.138 (.851)[b]	-.0028 (.761)[b]	7.10***
Hostile Attribution Bias and Response Generation	.829 (.289)	.794 (.336)	.811 (.350)	.135
Empathy	2.82 (.420)[a]	3.04 (.382)[b]	3.21 (.312)[c]	7.63***

*** $p < .01$, ** $p < .05$, *$p < .10$, means with different superscripts are significant at $p < .10$ using a Tukey HSD planned contrast

6.3   HYPOTHESIS 2

6.3.1   2a. - Cumulative effects of early risk factors on adolescent MD

To test the hypothesis that youth with higher rates of nonspecific patterns of rejecting parenting, inter-parental aggression, neighborhood risk, hostile SIP, and empathy would be more likely to show elevated rates of MD during adolescence, a risk index was created (see Shaw, Winslow, Owens, & Hood, 1998). For each risk factor, children with scores greater than or equal to one standard deviation above the sample mean (i.e., indicating higher risk) received a score of '1,' and those children with scores less than one standard deviation above the sample mean received a '0.' A risk index was generated by summing the scores on all five risk factors, with scores potentially ranging from '0' to '5.' However, as there were no youth with four or five risks and only 6 boys with 3 risk factors, the groups were aggregated in the following manner: 0 risks (51% of the sample), 1 risk (32% of the sample), and 2 or more risks (17% of the sample). Using a one-way Analysis of Variance (ANOVA) and employing Tukey's HSD for post-hoc comparisons, a significant main effect was found ($F = 7.22$, $p < .01$), for which follow-up comparisons revealed a statistically significant difference between youths with 0 and 2 or more risks, and youths with 1 and 2 or more risks present (see Figure 5).
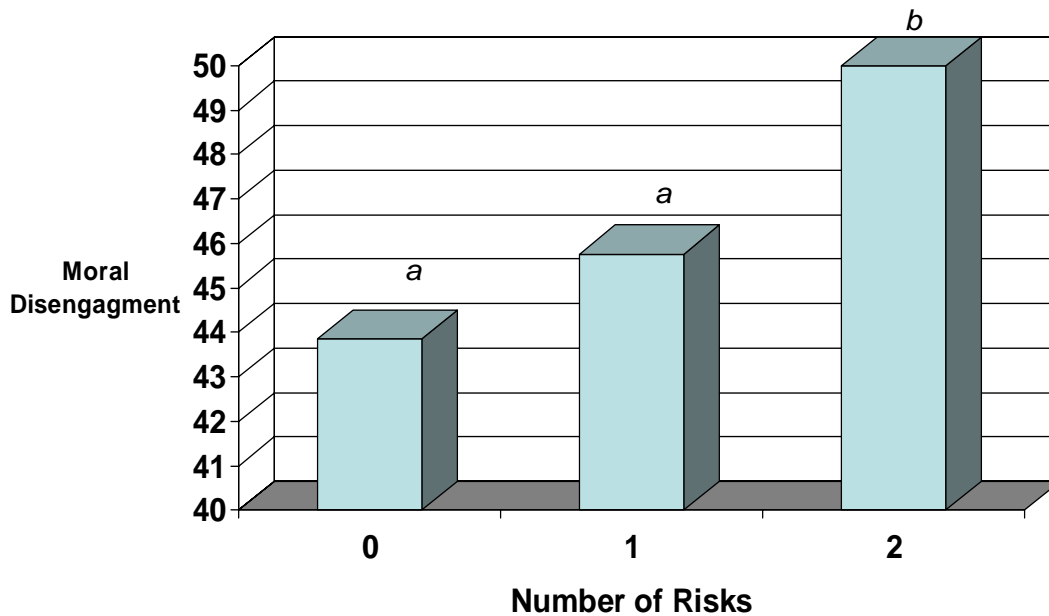
Superscripts with different letters differ at $p < .05$
Cohen's δ for pairwise comparisons: 0 risks vs. 1 risk δ = .259
       1 risks vs. 2 risk δ = .489* (p<.05)
       0 risks vs. 2 risk δ = .749*** (p<.001)

Figure 5 - Moral Disengagement as a Function of Cumulative Risk Status

As little past research has tested whether associations between cumulative risk and antisocial outcomes are mediated by cognitive mechanisms such as MD (Rutter, 1979; Ackerman et al., 1999; Loeber, et al., 2001), exploratory analyses were conducted to test whether a link between risk and AB existed, and whether such an association would be mediated by MD. In these analyses, cumulative risk was used as a continuous variable and was shown to be related to later AB (β = .253, p < .05). Further, MD was found to fully mediate the association between cumulative risk and AB (z = 2.66, p = .008) (the SRD was used as the measure of AB and was transformed, see results for Hypothesis 3).

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6.3.2   2b - Chaining pathway effects of early cumulative risk on MD

To test the hypothesis that a developmental progression of risk factors is associated with higher levels of MD, groups of children with specific constellations of risk factors were compared to those with nonspecific but similar quantities of risk and those with fewer developmentally-salient risk factors in a series of ANOVAs. As in the cumulative risk model, each child received a score of 1 or 0 for being either above or below 1 standard deviation above the mean for each risk factor. Specifically, children with rejecting parenting and neighborhood risk were to be compared to children with only one of these risk factors and those with other solitary risk factors, and to those children with two other risk factors that did not include both rejecting parenting and neighborhood risk (e.g., hostile SIP and neighborhood risk). Lastly, groups of children with rejecting parenting, neighborhood risk, and low empathy were to be compared to all other children with 3 risk factors present that included only one in the aforementioned triad (e.g., rejecting parenting, hostile SIP, inter-parental conflict) and those groups of children with two or one risk factor (i.e., 3 comparison groups). However, as only 5 children had both rejecting parenting and neighborhood risk, and no children had rejecting parenting, neighborhood risk, and low empathy, these comparisons could not be tested.

6.4   HYPOTHESIS 3

6.4.1   MD as a mediator of early risk and adolescent antisocial behavior

The hypothesis that MD would mediate the relationship between individual risk factors assessed in early and middle childhood and adolescent antisocial behaviors was tested using two methods (Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). First, the Baron and Kenny (1986) method was used in which associations need to be established between independent, mediator, and dependent variables before proceeding with mediational analyses. Consistent with this definition of mediator, we expected that a) variations in each risk factor would be associated with variations in MD, b) variations in MD would be associated with variations in AB, and c) associations between early risk factors and AB would be attenuated when controlling for pathways 'a' and 'b'. Second, the Sobel method (as described in MacKinnon et al., 2002) was used to supplement the Baron and Kenny approach because it requires less power to detect effects and can quantify the magnitude of mediation (MacKinnon, et al., 2002). For each risk factor, we expected associations with AB to be mediated by MD.

Before beginning analyses, SRD scores were transformed because distribution of scores was skewed. A natural log transformation was used ($ln(x +1)$) to create a more normal distribution of the data. Only a subset of the risk factors could be tested for mediation by MD as only some of them were related to later AB (neighborhood risk, SIP, and empathy; see Table 2 for correlations).   For these three risk factors, regression analyses were conducted on a subsample of the entire sample that had data for all risk factors, MD at age 15, and SRD scores at age 16 (n = 147). Only empathy met the requirements set forth for mediation by Baron and Kenny: empathy was related to MD (β = -.295, p < .001), MD was related to AB (β = .320, p <

.001), and empathy was related to AB ($\beta = -.150\ p < .10$), and this relationship was attenuated by the addition of MD to the model ($\beta = -.145$, $p < .04$; $\beta = -.056$, $p > .10$, respectively). Using the Sobel test, neighborhood showed a trend toward being mediated by MD ($z = 1.8104$, $p = .07$) (29% of the relationship between neighborhood and AB was through the indirect MD pathway), and the association between empathy and AB was found to be significantly mediated by MD ($z = 2.38$, $p = .017$). In this case, 61% of the relationship between empathy and AB was an indirect effect through MD. In sum, MD was found to mediate the association between empathy and later AB, and partially mediate the relationship between neighborhood and AB.

Given the broad spectrum of behaviors assessed by the SRD, the questionnaire was also examined using five narrow-band factors as described above. Each narrow-band factor was treated as the overall sum of the SRD had been. These factors were transformed using a natural log transformation and then used as dependent variables in a series of hierarchical multiple regression equations in order to test the hypothesis that MD would mediate associations between early risk and later AB. Additionally, by testing the associations necessary for mediation, these narrow-band factors were tested for their association with each risk factor and the association between MD and the narrow-band factor after accounting for early risk. In each of the five regression analyses, all five potential predictors of MD (i.e. rejecting parenting, empathy) were entered initially, followed by the addition of MD. From these hierarchical regression analyses several results emerged. First, in terms of associations between risk factors and different factors of age-16 AB, empathy was significantly related to opposition to authority ($\beta = -.185$, p< .05) but not to any other narrow band factor. SIP was also related to both drug and alcohol use ($\beta = .156$, $p < .05$) and drug dealing ($\beta = .155$, $p < .05$), and inter-parental aggression was also related to drug dealing ($\beta = .187$, $p < .05$). Second MD was significantly related to 4 of the 5 narrowband

factors of the SRD even after accounting for earlier risk: opposition to authority (β = .145, *p* < .05, one-tailed), drug and alcohol use (β = .230, *p* < .01), overt behaviors (β = .233, *p* < .01), and covert behaviors (β = .234, p<.01). In terms of MD mediating associations between risk factors and narrow-band indices of AB, only one marginal trend was found using the Sobel method; the link between empathy and opposition to authority was marginally mediated by MD (*z* = 1.85, *p* = .06).

7.0   DISCUSSION

The goals of the present study were to examine developmental precursors of MD and test whether MD mediated associations between early risk factors and adolescent antisocial behavior with a sample of low-income boys followed from infancy through adolescence. Consistent with the proposed model, in univariate models rejecting parenting, neighborhood risk, and empathy were all related to later MD; however, neither interparental aggression or SIP were directly related to MD. Further, when examined in a multivariate framework, only neighborhood risk and empathy contributed significant independent variance to later MD. Similar results were found using a person-centered approach in which both levels of neighborhood risk and empathy were found to differ by MD group (high, middle, and low). When tested in a cumulative risk model, children with an accumulation of non-specific risk also showed higher levels of MD. Finally, MD was found to mediate the link between empathy and later AB, and partially mediate the link between neighborhood and AB.

7.1   EFFECTS OF EARLY RISK ON LATER MD

Even within a univariate framework, only some of the hypothesized risk factors were related to MD. These included observed parenting assessed at ages 1.5 and 2, neighborhood risk derived from census data between child ages 6 and 10, and parent and child's report of empathy assessed

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at age 12. All of these measures were modestly related to adolescent reports of MD at age 15, spanning 3 to 13.5 years and using multiple informants and methods. Notably, both inter-parental aggression and SIP were not related to MD. Inter-parental aggression itself may not be related to MD because violence between parents may not necessarily be exhibited in front of the child, or may not be a salient enough cue by itself to teach children that the world is a harsh and uncaring place. SIP, despite some theoretical similarities with MD (i.e., hostility towards others), may not be related to MD because SIP is focused more on cognitive schemas about other individual's motivation for behavior rather than attitudes about society in general. In addition, SIP is theorized to be related more directly to reactive aggression (Dodge & Schwartz, 1997) than proactive behavior, while MD may be more related to proactive antisocial behavior. The relationship between SIP and MD may also have been attenuated in the current study because of differences in how each construct was assessed. SIP was measured using vignettes and asking boys how they would likely respond to similar situations, while MD was evaluated using a questionnaire in which youth were asked to describe global attitudes towards others in general rather than in specific situations. This finding is an issue that clearly needs more careful attention in future research.

When results were assessed in a multivariate framework, associations between rejecting parenting and MD were attenuated by the additions of neighborhood risk and empathy. In addition, the effect of neighborhood impoverishment was also somewhat attenuated by the addition of empathy, the latter of which was shown to mediate or partially mediate univariate associations between rejecting parenting, neighborhood impoverishment, and MD. Theoretically, these results are consistent with a pathway in which boys' development of empathy towards

others is the mechanism through which associations between exposure to 'harsh' family and neighborhood environments predict later MD.

Children's IQ was also used as a covariate in analyses to rule out potential '3rd variable' explanations of MD. Similar to rejecting parenting, IQ assessed at age 11 was found to be related to MD in univariate models, but not within a multivariate framework. These findings suggest that while youth with lower intellectual skills may be more predisposed to disengage from societal values, this disengagement appears to be more heavily influenced by other community and individual factors, such as neighborhood risk and empathy.

7.2   EMPATHY AND MD

In sum, empathy was found to be the most robust predictor of MD maintaining its association in multivariate analyses and either partially or more fully mediating associations between other risk factors and MD. As mentioned above, theoretically, these findings could be interpreted as illuminating a possible pathway towards MD in which the quality of early parenting and neighborhood contexts contribute towards the development of empathy, which in turn affects the development of later MD. Accordingly, youth with adverse experiences in their home with parents, and with peers and other adults in their neighborhood, may develop low levels of empathy towards others during the transition to adolescence and be primed to develop a cognitively disengaged stance towards society and others. As empathy was only measured at 12, it is also not possible to rule out the possibility of child effects as an alternative explanation, such that children with lower levels of empathy during early childhood might have elicited harsher parenting from caregivers and selected peers and adults in their neighborhoods that reinforced

them for acting more callously towards others. Future studies with long-term longitudinal designs and earlier assessments of empathy could examine this possibility.

As empathy was the most robust predictor of MD and mediated the relationship of other variables to MD, it is important to consider how different and similar these two factors are. From a theoretical perspective, they clearly share a sense of disengagement. In the case of empathy, this disengagement is directed towards other persons and showing regard and care for other's sense of well being. In the case of MD, disengagement is directed at society as a whole and its values rather than the concerns of specific individuals. While it is possible that these two constructs may represent different manifestations of the same underlying trait, the items assessed in each measure seem to tap slightly different processes. Empathy is a more person-specific construct and although it might represent a component of MD, is less focused on a broader sense of disenfranchisement directed at society. Future studies are needed that are more explicitly designed to distinguish similarities and differences between empathy and MD, including by identifying subgroups of youth who show similar and dissimilar levels of empathy and MD and exploring how these groups might differ on other attributes (e.g., levels of person-centered crime versus property crime).

7.3   CUMULATIVE EFFECTS OF RISK

Just as many studies have shown a link between the accumulation of non-specific risk and later externalizing behaviors (Ackerman, et al., 1999; Loeber, et al., 2001), the current study demonstrated a modest link between nonspecific child, family, and contextual risk factors and attitudes about others. The present findings are consistent with research suggesting a threshold

effect in which the presence of 0 versus 1 risk factor does not discriminate outcomes, but having more than 1 risk factor does (Rutter, 1979). However, unlike previous work that has focused primarily on behavioral outcomes such as AB, the current study included an intra-psychic outcome of reported disengagement from societal values. Furthermore, MD fully mediated the association between cumulative risk and AB, consistent with the notion that MD may be a mechanism through which non-specific risk is linked to AB.

7.4   MD AS A MEDIATOR OF EARLY RISK AND ADOLESCENT ANTISOCIAL BEHAVIOR

While few risk factors were related to both MD and AB, MD was observed to partially mediate the path between neighborhood and AB and fully mediate the path between empathy and AB. MD was also related to four of the five narrow-band factors of the SRD, suggesting that MD is comparably associated with most domains of AB, the sole exception being drug dealing.

That MD was only moderately correlated with AB (i.e., $r = .32$) yet partially or fully mediated pathways between neighborhood and empathy and neighborhood risk, suggests that: 1) MD and AB are related but not synonymous constructs, and 2) MD is a cognitive mechanism similar to SIP through which early risk may increase children's likelihood of participating in deviant behaviors. Interestingly, even though both MD and SIP were longitudinally related to youth reports of AB, mirroring the work of previous research on SIP (Orbio de Castro, et al., 2002), SIP was not related to MD. As noted above, this finding suggests that SIP and MD may be separate cognitive mechanisms that have independent associations with later AB, an issue worthy of exploration in future research.

7.5   LIMITATIONS

The current study was designed to maximize several important considerations in developmental research, including the use of multiple assessment methods and informants, a prospective, longitudinal design of over 14 years, and the use of a sample of boys at risk for showing meaningful levels of antisocial behavior (i.e., 68 already have court records in Allegheny County). However, the current study does have several limitations. First, while using a low-SES sample of boys may be advantageous in many ways, the findings may not be generalizable to girls and children from non-urban, higher SES samples. As there is some evidence that AB may develop differently in girls (Pepler & Craig, 2005; Silverthorn & Frick, 1999), it is also possible that different types of risk factors may be related to the development of MD in females. Moreover, while other studies on MD have used normative samples (Bandura, et al., 1996), little work using normative samples has examined the developmental precursors of MD. In fact, the only other study to examine any precursors of MD also used a high risk sample (Pelton, et al., 2004). Therefore, future studies using more normative populations are needed to assess whether risk factors such as rejecting parenting, neighborhood risk, SIP, empathy, and others not measured in this study (e.g., peer associations, peer and familial attitudes, involvement with school, religion, and other community groups) are linked to MD in lower risk environments. For example, the effect of neighborhood risk may be stronger when there is greater variation in neighborhood quality, or conversely, its effect may be attenuated in the absence of high levels of community-level risk.

Second, while an advantage of the model tested in this study was the measurement of risk factors at developmentally salient periods (e.g., rejecting parenting during the terrible twos, SIP at school-age), there was great variation in the proximity of the measurement of risk factors

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relative to the assessment of MD. Thus, the stronger associations between empathy and MD could be partially accounted for by the short span of time relative to the timing of the measurement other risk factors (e.g., rejecting parenting measured at age 2). Perhaps if rejecting parenting or a comparably developmentally salient caregiving factor (e.g., monitoring) had been assessed at age 12, empathy and parenting would have shown more similar levels of association with MD. Furthermore, by assessing parenting at an early age, the results of this study cannot be directly compared to the results from the Pelton et al. (2004) study, in which parenting was found to be related to MD and AB but was measured in relation to MD at a much closer interval than the current study.

Third, another limitation of this study is the large amount of missing data. As 11 time-points were used over 15 years, missing data were inevitable. However, as previous analyses showed, those that were included in the analyses did not differ on several demographic measures or on any other study measure. A decision was made to use only the same sub-sample of children in all analyses to avoid using several different groups in each analysis, which can lead to conflicting results. However, it should be noted that separate analyses for all hypotheses not involving AB using a more sophisticated statistical methods of imputation (i.e., expectation maximization) did not change the overall pattern of results, suggesting that the results were generalizable to the larger sample. The imputation method was not used for the data collected at age 16 since the data set was significantly smaller at this age. The relatively smaller sample size used in the mediation analyses may have also affected the likelihood of detecting mediation effects involving AB. For example, with the sample size of 148 used in the mediation analyses, the power to detect a small effect (i.e. $\beta = .150$) was relatively low: .44

(http://www.stat.uiowa.edu/~rlenth/Power/). Future studies with a goal of testing mediation should consider using larger sample sizes to maximize their probability of detecting such effects.

7.6   CLINICAL IMPLICATIONS AND FUTURE DIRECTIONS

The study of MD, while in its infancy, offers much potential for understanding the intrapsychic mechanisms underlying the development of AB, and potentially its treatment. The application of cognitive theories to other mental illnesses has been used to successfully develop and refine psychological interventions for such problems as depression (e.g., Young, Weinberger, & Back, 2001). In the long run, research on MD and other cognitive factors involved in AB may help with treatment planning but also with the early identification of children at risk for later AB based on their cognitive profiles. MD may also be helpful in identifying subgroups of children with AB, as the classification of "conduct disordered" currently encompasses a very heterogeneous group of youth. By identifying subgroups, such as those that are more disengaged from society, specific interventions could be developed that are more tailored to behavioral symptoms and both cognitive abilities and attitudes. For example, findings from the current study suggest that even within the domain of cognitive attitudes, SIP and MD represent fairly independent pathways leading to adolescent AB.

More proximally, understanding MD and its development may help bridge the gap in the literature between early development of conscience and later theories of moral development. Moreover, understanding the development of MD may help researchers understand adolescents generally and how attitudes and behaviors in this age group may be linked, particularly in high risk environments. Future studies could also focus on other outcomes related to MD such as

school achievement and drop out, participation in societal activities such as voting, and even later parenting as adolescents mature and have their own children.

While further research on MD has great potential and the current results begin to fill this void, it should also be noted that the entire developmental model presented in this study only accounted for 10.2% of the variance in MD. This modest amount of variance is not uncommon in social science research, particularly across time, method, and informant. Nonetheless, the current results suggest that future studies should explore other potential risk factors and/or study risk factors at different ages, such as parental monitoring during early adolescence (Stattin & Kerr, 2000; Dishion & McMahon, 1998), peer influence and deviant peer associations (Dishion, 2000; Dishion, Eddy, Haas, Li, & Spracklen, 1997), school achievement (Aguilar, et al., 2000; Moffit, 1993a), and possible genetic factors that may be involved in transmission of MD.

Lastly, more research is needed on MD as a theoretical and psychometric construct. A one-factor approach has been used in past studies, which is quite long for a scale with 32 items. In analyses to identify possible ethnic differences, factor analyses with 7 or 8 factors also fit the data acceptably and accounted for significantly more variance in MD than did a one-factor solution while also closely matching Bandura's (1996) theoretical factors. Therefore, a future focus on the psychometrics of this measure may be warranted. More research is also needed on the correlates of MD itself to help elucidate more concretely what it means to be morally disengaged. Additionally, more research is needed in large, diverse, normative samples to test whether MD does vary by ethnicity in normative populations and if it may be interpreted as a different construct as a function of cultural background. Although results from the current study suggested an overall pattern of factorial invariance by ethnicity, future work is clearly needed using more normative samples of youth (Bandura et al., 1996, Pelton et al., 2004).

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In summary, the current study tested a developmentally sensitive model of the precursors of MD and tested MD as a cognitive mediator of early risk and AB. This study sought to advance our understanding of these issues by using a moderately large sample of low SES boys followed over a 14-year period and utilizing a diverse array of methods of assessment. Empathy and to a lesser extent, neighborhood risk, were the most robust precursors of MD, and MD did partially or fully mediate these factors' relationship with later AB. The results indicate a need for more research on MD, its development, its precursors, and its outcomes, and the potential for cognitive mechanisms to link early risk to later antisocial behavior.

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