

8-8-2007

Developmental Pathways To Conduct Problems

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Developmental Pathways To Conduct Problems

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy
In
Applied Developmental
Psychology

By

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August, 2007

Table of Contents

List of Tables	iii
Abstract.....	iv
Introduction.....	1
Methods.....	30
Results.....	43
Discussion.....	52
References.....	60
Vita.....	75

List of Tables

Table 1	8
Table 2	32
Table 3	44
Table 4	46
Table 5	48
Table 6	51

Abstract

This study tests the predictions made by several causal theories proposing different etiologies for childhood-onset and adolescent-onset conduct problems. It investigates a variety of causal factors proven to be important for the development of antisocial behaviors, specifically neuropsychological/cognitive deficits, temperamental vulnerabilities, dysfunctional parenting, deviant peers, and rebelliousness. Current theories generally agree that the early onset pathway is distinguished by interactions between a child with a difficult temperament and dysfunctional parent-child interactions. However, theories differ as to whether they emphasize the temperament and neuro-cognitive deficits of the child, or the parenting behaviors. In the adolescent onset pathway, theories typically focus on the importance of affiliation with deviant peers but differ as to whether this is attributed to a personality characterized by the rejection of traditional values and rebelliousness as leading to this association or failures in parenting practices.

Seventy-eight pre-adjudicated adolescent (ranging in age from 11 to 18) boys housed in two short-term detention facilities and one outpatient program for boys at risk for involvement in the juvenile justice system in southeastern Louisiana participated in the current study. The sample was ethnically diverse (56% African-American) and largely came from facilities serving either a large urban or a largely suburban and rural region of the state. The sample was divided into two groups based on the youngest age of a self-reported delinquent act or parent-reported severe conduct problem. The childhood-onset group (n =47) displayed at least one serious antisocial behavior prior to age 12, whereas the adolescent-onset group (n =31) did not. As predicted, the childhood-onset

group showed greater levels of dysfunctional parenting and CU traits. Contrary to predictions, however, this group also showed the strongest affiliation with deviant peers. The only variable strongly associated with the adolescent onset group was lower scores on a measure of traditionalism which indicates less endorsement of traditional values and status hierarchies. The implications of these results for understanding different causal trajectories to antisocial behavior and for designing better prevention and treatment programs for antisocial youth are discussed.

Keywords: juvenile delinquency; age of onset; traditionalism; CU traits; parenting; deviant peers

Introduction

There are a variety of factors that have been linked to conduct problems in youth. These factors include both dispositional and environmental factors (Frick, 1994; Lytton, 1990). A few of the dispositional factors that have been researched extensively are genetic predispositions, intelligence, and deficits in social cognition (Dodge & Frame, 1982; Frick, 1998; Hinshaw, 1992; Mason & Frick, 1994; Moffitt, 1993b; Rutter, MacDonald, LeCouteur, Harrington, Bolton, & Abiley, 1990). Some of the environmental factors that have been linked to conduct problems are a deviant peer group, high-crime neighborhoods/poverty, and exposure to violence (Bierman, 1986; Cohen, Cohen, & Brooks, 1993; Coie, Dodge, & Kupersmidt, 1990; Frick, 1998; Huesmann & Malamuth, 1986; Ingoldsby & Shaw, 2002; Reid, 1993). First, this study will review some of the best studied risk factors that play a role in most causal theories. Second, it will focus on developmental models that provide a framework for understanding how these many factors can place a child at risk for conduct problems.

Cognitive Deficits

One of the most common findings in delinquency research is an IQ deficit (Culberton, Feral, & Gabby, 1989; Duncan, Kennedy, & Patrick, 1995; Moffitt, 1993b). While deficits in IQ cannot fully explain delinquency, Raine (1993) states that .5 to .7 is approximately the average effect size for the association between IQ and antisocial behavior. Stated another way, there is about an eight-point or one-half standard deviation IQ score difference typically found between delinquent youth and their non-delinquent counterparts across studies (Lynam, Moffitt, & Stouthamer-Loeber, 1993; Moffitt, 1993b).

Moffitt (1993a) has suggested that these global deficits are due primarily to deficits in verbal abilities and executive functions. Many studies have been performed examining the difference in the verbal IQ (VIQ) and the performance IQ (PIQ) in delinquent samples. In fact, Wechsler was the first to observe the VIQ-PIQ discrepancy in delinquent samples over 50 years ago, suggesting weaker verbal abilities in delinquent samples (Wechsler, 1944 as cited in Law & Faison, 1996). Many studies have replicated this finding that the PIQ is greater than the VIQ in delinquent samples (Cornell & Wilson, 1992; Culbertson et al., 1989; Duncan et al., 1995; Famularo, Fenton, Kinscherff, Barnum, Bolduc, & Bunschraft, 1992; Lynam et al., 1993; Walsh, Beyer, & Petee, 1987; Wong & Cornell, 1999). This finding is not limited to adjudicated samples. In a study of preadolescents, clinic-referred children with conduct disorder compared to children without conduct disorder had a significantly larger VIQ-PIQ discrepancy (Hodges & Plow, 1990). In addition, there was a significant relationship between the number of conduct disorder symptoms reported and the size of the discrepancy, with the most severely antisocial children exhibiting the greatest discrepancy between their PIQ and VIQ.

Family Dysfunction

In addition to cognitive deficits, many social risk factors have been associated with conduct disorder and delinquency, and many of these risk factors occur within the family. Family risk factors that are associated with the development of conduct disorder include: parental antisocial personality disorder (APD; Frick, Lahey, Loeber, Stouthamer-Loeber, Christ, & Hanson, 1992), parental substance use (Frick et al., 1992), maternal depression (Shaw, Owens, Vondra, Keenan, & Winslow, 1996), marital conflict (Shaw,

et al., 1996), large family size, single parent homes (Kilgore, Snyder, & Lentz, 2000), teen parent homes (Kilgore et al., 2000), family stress (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996), insecure attachment between parent and child (Shaw et al., 1996), and the use of ineffective parenting practices (i.e. harsh parenting, poor monitoring and supervision, low parental involvement, inconsistent parenting, and a lack of warmth in parenting) (Brody, Ge, Conger, Gibbons, Murry, Gerrard, & Simons, 2001).

While there is general agreement that family dysfunction is linked to conduct problems, the specific aspects of family dysfunction that are most important are less clear. A meta-analysis comparing the different types of family dysfunction in relation to conduct problems by Loeber and Stouthamer-Loeber (1986) reported that parental socialization practices are the most powerful predictors of conduct problems. Specifically, there are three types of parental socialization practices that are most highly correlated with conduct problems (Amato & Keith, 1991; Emery, 1982; Frick, 1994; Loeber & Stouthamer-Loeber, 1986). First, the meta-analysis by Loeber and Stouthamer-Loeber (1986) reported that low parental involvement was significantly associated with conduct problems and delinquency in 22 of the 29 analyses reviewed. Second, in the same meta-analysis, poor parental supervision was significantly associated with conduct problems and delinquency in 10 of the 11 analyses reviewed; including six longitudinal studies showing that supervision was a significant predictor of future antisocial behavior and delinquency. Third, ineffectual discipline practices were highly associated with conduct problems including inconsistent parenting, harsh discipline, and failure to use positive strategies (Rey & Plapp, 1990; Wells & Rankin, 1988). Importantly, the most effective interventions in decreasing conduct problems in youth tend to be the

interventions that are designed to change these ineffectual parental discipline practices (Dumas, 1989; Frick, 1993; Kazdin, 1987).

Deviant Peers

Another frequently studied social risk factor to antisocial behavior is association with deviant peers (Moffitt, 1993b; Patterson & Yoerger, 1997). Most researchers agree that peers exert a powerful influence on youths' antisocial behaviors (Deptula & Cohen, 2004). While, much of this research has focused on associations with deviant peers in adolescence (Simons, Johnson, Conger, & Elder, 1998; Simons, Wu, Conger, & Lorenz, 1994), there is evidence for this association across development. For example, it has been found that exposure to higher levels of aggressive peers in preschool is predictive of future aggressive behaviors in children (Sinclair, Pettit, Harrist, Dodge, & Bates, 1994). Importantly, association with deviant peers may not be independent of family dysfunction. Fergusson and Horwood (1999) found that youth reporting the highest level of association with deviant peers were characterized by family dysfunction, parental adjustment difficulties, and high levels of exposure to family social and economic disadvantage.

Temperament

Many researchers have examined the effect that child temperament may have on the development of conduct problems. Temperament is defined as "individual differences in behavioral style that are visible from early childhood" (Sanson & Prior, 1999). Temperamental differences appear relatively early in the lifespan (Garcia-Coll, Kagan, & Reznick, 1984). They are enduring and contribute to a child's behavior and affective patterns across situations (Guerin, Gottfried, & Thomas, 1997). Temperament

“comprises the emotional, motivational, and attentional bases of later personality” (Sanson & Prior, 1999). There have been many temperament dimensions that have been studied and may predispose a child for developing conduct problems (Frick & Morris, 2004); however, much research has focused on several specific dimensions.

First, Kochanska (1993) focuses on individual differences in fearfulness or vulnerability to anxious arousal that are associated with a child’s emotional upset and discomfort occasioned by wrongdoings, which she calls the affective discomfort components of conscience. Consistent with this, Lytton (1990) found that many children with conduct disorder are characterized by deficiencies in fear. Second, Kochanska (1993) also proposes that differences in impulsivity and inhibitory control are associated with a child’s behavioral control in situations when standards of conduct apply. The overt manifestation of the capacity for behavioral control is the child’s compliance with parental standards (Biederman, Rosenbaum, Hirschfield, Faraone, Boldue, Gersten, Meminger, Kagan, Snidman, & Reznick, 1990; Kochanska & Aksan, 1995; Shaw & Bell, 1993). Consistent with this possibility, a number of studies have linked problems of impulsivity with the development of conduct problems (see Frick, 1998; Frick & Morris, 2004 for a review).

Developmental Models

This is only a brief summary of the many risk factors that have been associated with the development of conduct problems. The first implication of this research is that it is very unlikely that the focus on any single risk factor will adequately account for the development of severe conduct problems. There have been a number of different approaches that have been used to integrate multiple risk factors into causal theories to

explain the development of conduct problems. One approach is the cumulative risk model. This approach states that it is the number of risk factors present that determines how much a child is at risk for developing conduct problems and not the specific types of risk factor. For example, Loeber and Farrington (2000) demonstrated that the risk for serious conduct problems was a function of the number of risk factors present, with risk increasing in a linear manner from the presence of no risk factors to the presence of six or more risk factors. Although this cumulative risk approach recognizes the multiple factors that can lead to conduct problems, it does not recognize another body of research. Research has also suggested that is important to recognize that not all children with CD develop their behavioral difficulties due to the same causal factors (Frick, Cornell, Bodin, et al., 2003; Frick & Morris, 2004). Based on this limitation in the cumulative risk approach, another approach has been to designate distinct subgroups of antisocial youth who differ on the developmental processes leading to their conduct problems.

In its definition of Conduct Disorder (CD), the DSM-IV/TR makes the distinction between children who begin showing severe antisocial and aggressive behaviors before age 10 (i.e., childhood-onset) and those who do not show severe conduct problems before age 10 (i.e., adolescent-onset). This distinction between childhood and adolescent onset to severe conduct problems has proven to be very important for defining subgroups of youth who differ in their childhood and adolescent behavior, and who differ in their adjustment as young adults (Frick & Loney, 1999). Age of onset is one of the strongest predictors of the severity and persistence of conduct problems (Lahey, Loeber, Quay, Applegate et al., 1998; Lahey, Goodman, Waldman, Bird, et al., 1999; Mazerolle, Brame, Paternoster, Piquero, & Dean, 2000). Specifically, many studies have reported that youth

with an early onset of conduct problems have more convictions and commit more violent crimes as adults (Moffitt, Caspi, Harrington, & Milne, 2002; Woodward, Fergusson, & Horwood, 2002). In contrast, youth with an adolescent onset of conduct problems tend to have a greater number of convictions and commit more crimes than non-delinquent youth; however not as many as those with an early onset of conduct problems (Moffitt et al., 2002). Youth with an adolescent onset of conduct problems are also more likely to commit misdemeanors and nonviolent crimes (e.g., property and drug offenses) as adults, compared to the greater rates of felonies and violent crimes committed by the early onset group (Kjelsberg, 1999; Moffitt et al., 2002).

More importantly for causal theories, many researchers have studied how risk factors are related differentially to early onset and adolescent onset of conduct problems (Aguilar, Sroufe, Egeland, & Carlson, 2000; Cimborra & McIntosh, 2003; Fergusson, Horwood, & Nagin, 2000; Fergusson, Lynskey, & Horwood, 1996; Kjelsberg, 1999; Klevens, Restrepo, Roca, & Martinez, 2000; Kratzer & Hodgins, 1999; Magnusson, af Klinteberg, & Stattin, 1994; Mazerolle et al., 2000; McCabe, Hough, Wood, & Yeh, 2001; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Moffitt et al., 2002; Nagin, Farrington, & Moffitt, 1995; Piquero, 2001; Piquero & Brezina, 2001; Raine, Yaralin, Reynolds, Venables, & Mednick, 2002; Ridenour, Cottler, Robins, Compton, et al., 2002; Silverthorn, Frick, & Reynolds, 2001; Tibbetts & Piquero, 1999; Woodward, Fergusson, & Horwood, 2002). A summary of several risk factors and their differential association with the onset groups is provided in Table 1. The findings are summarized under six broad dimensions: neuropsychological/cognitive, temperament, dysfunctional parenting, deviant peers, and rebelliousness.

Table 1: Studies differentiating youth with early onset conduct problems, adolescent onset conduct problems and control groups.

Study	N EO/ N AL	Age	Type of Sample	Method of Dx	EO > Control	AL > Control	EO vs. AL	EO = AL
Cimbora & McIntosh (2003)	EO: 20M AL: 14M	13- 18 1X		SR	(Lo) guilt; (Lo) fear; excitement; happiness	(Lo) guilt; (Lo) fear;	<u>EO higher on:</u> (Lo) guilt	anger; (Lo) fear
Moffitt et al. (2002)	EO: 47M AL: 122M	18, 26	CO; P	Rec., CI, P; SR; Obs.	convictions, property crimes, drug trafficking, & violent crimes; neuroticism; mental health problems; More controlling abuse against women, likely to be fathers; child abuse; SES; illegal income; childhood CP's; alienation; distant from family; school drop-outs	property & drug offenses; convictions; variety of offenses neuroticism; impulsivity; mental health problems; abuse against women; SES; illegal income	<u>EO higher on:</u> convictions; adult convictions; neuroticism; callousness; mental health problems; drug & violent offenses; aggression; abuse against women; less education; lower status jobs; unemployment; childhood CP's; distant from family; more school drop-outs <u>AL higher on:</u> impulsivity	Level of offending; variety of offenses; property offenses; mental health problems; illegal income; equal rates of dx'd disorders; Hi SA disorder & APD; economic difficulties; CP's in adol.; police contact; aggression; delinquent friends; perceived less risk; dangerous driving; unsafe sex behavior
Raine et al. (2002)	EO: 47 AL: 60	3-17		P; PR; TR	(Lo) spatial ability age 3; (Lo) verbal &	(Lo) verbal IQ age 11; (Lo) scholastic ability	<u>EO higher on:</u> (Lo) spatial ability age 3	(Lo) verbal IQ age 11; (Lo) scholastic ability

Table 1, cont.

					spatial IQ age 11; (Lo) scholastic ability; (Lo) reading ability			
Ridenour et al. (2002)	EO: 654M 265F AL: 483M 313F				adult Antisocial Personality	adult antisocial personality	<u>EO higher on:</u> adult antisocial personality	adolescent drug & alcohol misuse
Woodward, Fergusson, & Horwood (2002)	EO: 22 (18M & 4F) AL: 158 (98M & 226F)	Birth - 21		PR; SR	involvement in violent & conflictual relationships; assaulted partner; interpartner violence; socially disadvantaged family background, (Lo) SES; punitive mothering; physical parental punishment; (Lo) emotional mothering; parental violence; male; (Lo) IQ; childhood attention problems	assaulted partner; elevated risk of partner difficulties	<u>EO higher on:</u> assaulted partner	NA
McCabe, Hough,	295	11-18		PR; SR	NA	NA	<u>EO higher on:</u> Parental ASB;	NA

Table 1, cont.

Wood, & Yeh (2001)		1X					parental mental illness; males; AA; ADHD; deviant peer association; bully & threaten others; aggressive offenses <u>AL higher on:</u> deviant peer exposure; parental monitoring	
Piquero (2001)	EO: 270 African-American offenders	Birth -18	CO; R	Rec., WISC	(Low) verbal IQ; (Low) Performance IQ; birth weight	N/A	N/A	N/A
Piquero & Brezina (2001)	1886	16	CO;	SR; Obs.	N/A	maturity, behavioral autonomy w/ peers, need for autonomy, rebelliousness; SES	N/A	N/A
Silverthorn, Frick, & Reynolds (2001)	EO: 11M 2F AL: 13M 30F	13-18 1X		SR, Rec.	NA	NA	<u>EO higher on:</u> younger @ ax; CU traits; impulse control <u>AL higher on:</u> <i>Males:</i> special	IQ; grade; race; school failure; public assistance; aggression; destruction of property; theft;

Table 1, cont.

							education; gangs <i>Females:</i> Sexually abused; physically abused; ODD; CD; CU traits; impulse control	violent/nonviolent delinquency
White, Bates, & Buyske (2001)	698M EO: 7% AL: 33%	12- 24; 15- 27; 18- 30			impulsivity; (Lo) harm avoidance; disinhibition; parental hostility; single parent; birth risk X family structure	impulsivity; (Lo) harm avoidance; disinhibition; parental hostility; single parent; birth risk X family structure	<u>EO higher on:</u> Disinhibition; birth risk X family structure	impulsivity; (Lo) harm avoidance; parental hostility; single parent
Aguilar et al. (2000)	EO:38 (21M & 17F) AL: 35 (13M & 22F)	Birth -16	CO; R?	P; T; SP; CI; Obs.	(Low) Math; psychosocial risk; single mothers; physical abuse; internalizing problems; levels of mom's stress; neglectful and physically abusive parenting	life stress; internalizing problems	<u>EO higher on:</u> (Low) achievement, Math & Reading; psychosocial risk; single mothers; physical abuse; (Low) parental responsiveness; internalizing	Early temperament; early neuropsych variables; intelligence
Fergusson et al.	EO: 55 AL: 59	Birth - 18		P; T; SR;	Offender diversity;	Offender diversity; official	<u>EO higher on:</u> official	Offender diversity; Adverse family life

Table 1, cont.

(2000)				Rec.; Med	official contacts; adverse family life events; age of mother; parental education; SES; single parent; poor living standards; marital conflict; parental criminality; parental alcoholism/drug use; early conduct/attention problems; (low) cognitive ability; deviant peer affiliation	contacts; adverse family life events; age of mother; parental education; SES; single parent; poor living standards; marital conflict; parental criminality; parental alcoholism/drug use; early conduct/attention problems; (low) cognitive ability; deviant peer affiliation (increase til 16y/o then decrease)	contacts; age of mother; parental education; SES; single parent; poor living standards; marital conflict; parental criminality; parental alcoholism/drug use; early conduct/attention problems; (low) cognitive ability	events
Klevens et al. (2000)	EO: 76M AL: 147M	18-30		CI; SR	NA	NA	<u>EO higher on:</u> Alcohol & drug use prior to offense; skipped school; run away from home; consumed drugs; carry a weapon; childhood	Dropping out of school; drinking alcohol; about 6 th grade education; current offense

Table 1, cont.

							<p>hyperactivity; oppositional behavior; (Lo) self-esteem; physically aggress women; (Lo) sense of coherence; been arrested; problems at home/work from drinking; used drugs in past month; oldest child; no father; family conflict; poverty; psychological abuse; severe punishment; unavailable mother; temporarily separated from mother; familial antecedents of delinquency or alcohol abuse <u>AL higher on:</u> Fathers had no</p>	
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Table 1, cont.

							education; youngest child	
Mazerolle et al. (2000)	3177 M 478 F	10- 26		Rec.	NA	NA	<u>EO higher on:</u> Offending diversity	NA
Kjelsberg (1999)	EO: 351 (261M & 90F) AL: 130 (67M & 63F)	15- 39 1X		Rec.	NA	NA	<u>EO higher on:</u> males <u>Males:</u> Incarcerations; DBD; CD; attended correctional school; prior police contact; entered criminal registry < 15; SUD comorbidity; multiple caregivers <6; antisocial parent <u>Females:</u> Intravenous drug use; SUD; promiscuous behavior; not discharged home <u>AL higher on:</u> Misdemeanor only	NA

Table 1, cont.

							Females: Discharged home	
Kratzer & Hodgins (1999a)	EO: 441M AL: 703M	13-30	CO; R (pure AL)	Rec., Describe d in another article	convictions; variety of offenses; violent offenses; delinquency; (Low) IQ	delinquency	<u>EO higher on:</u> convictions; variety of offenses; violent acts, theft, & drug- related	NA
Kratzer & Hodgins (1999b)	EO: 30F AL: 148F	13-30	CO; R (pure AL)	Rec., Describe d in another article	convictions; variety of offense; (Low) IQ; illegal acts; violent offenses	NA	<u>EO higher on:</u> convictions; Variety of offenses; illegal acts;	Theft and fraud convictions; violent crimes, vandalism, traffic, narcotics
Sanford et al. (1999a)	Adol. Informant EO: 25 AL: 30				NA	NA	<u>EO higher on:</u> ADHD; aggressive CD symptoms; nonaggressive CD symptoms	NA
Sanford et al. (1999b)	Parent Informant EO: 26 AL: 25				NA	NA	<u>EO higher on:</u> ADHD; welfare	NA
Tibbetts & Piquero (1999)	EO: 70 AL: 137 African- American offenders	Birth - 18		Rec.; Med.;	NA	NA	<u>EO lower on:</u> Birth weight; SES (F) Interactions: Birth weight x SES; birth weight x family	NA

Table 1, cont.

							structure (only for males)	
Patterson & Yoerger (1997)	EO: 53 AL: 60				Association with deviant peers	(Lo) peer relations; (Lo) school achievement; parental ASB; (Lo) income; antisocial; association with deviant peers	<u>EO higher on:</u> Negative family context; family transitions; parental ASB; parental unemployment; (Lo) SES; less effective discipline practices; antisocial <u>AL higher on:</u> Social skills, peer-relational skills; self esteem	
Fergusson, Lynskey, & Horwood (1996)	EO: 61 AL: 64	Birth - 16		PR; TR; SR;	family disadvantage; family adversity; attention deficit behaviors; (Lo) IQ; poor academic ability; (Lo) self-esteem; male; deviant peers	deviant peers; Moderate levels of: Family disadvantage; family adversity; attention deficit behaviors; (Lo) IQ; poor academic ability; (Lo) self-esteem	<u>EO higher on:</u> family disadvantage; family adversity; attention deficit behaviors; (Lo) IQ; poor academic ability; (Lo) self-esteem; male	deviant peers
Moffitt, et	EO: 32M	3-18	CO; P	CI; P;	childhood CP's;	NA	<u>EO higher on:</u>	High CP's in adol.;

Table 1, cont.

al. (1996)	AL: 108M			SR; Rec.; Obs.	alientation; callous; distant from family; school drop- outs		childhood CP's; violent crime convictions; callousness; distant from family; school drop-outs	police contact & records; convictions; aggression; alienation; delinquent friends; perceived less risk; unemployed; dangerous driving; unsafe sex behavior; SA
Nagin, Farrington, & Moffitt (1995)	403M	8-32		SR; PR; TR;	Self-reported offending; conviction rate; burglary; violent; use drugs; smoke; have sex; abuse alcohol; unskilled jobs, unemployed; employment instability; low SES; social failure; divorced; separated; have a child living elsewhere; hit wife/cohabite & don't get along; (Lo) concentration	Self-reported offending; violent; use drugs; smoke; have sex; abuse alcohol; divorced; separated; have a child living elsewhere; property crime; theft Only in Adolescence: unskilled jobs, unemployed; employment instability;	<u>EO higher on:</u> Burglary; social failure; hit wife/cohabite & don't get along	Divorced; separated; have a child living elsewhere

Table 1, cont.

Magnusson et al. (1994)	EO: 59M AL: 60M	10-30		TR; Rec.	Hyperactivity; motor restlessness; concentration difficulties; (Lo) adrenaline excretion (autonomic sympathetic reactivity)	NA	<u>EO higher on:</u> Hyperactivity; motor restlessness; concentration difficulties	NA
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Note. EO = early onset; AL = adolescent limited; M = Male; F= Female; SR = self-report; Rec = record review; PR = parent report; Obs = observation of behavior; TR = teacher report; Med = medical records; Lo = low levels of a trait/behavior; NA = non-applicable. Method of Dx = Method of diagnosis study used to determine age of onset. EO > Control = early onset youth scored higher than controls on these traits/behaviors. AL > Control = adolescent limited youth scored higher than controls on these traits/behaviors. EO vs. AL = early onset youth in comparison to adolescent limited youth on traits/behaviors. EO = AL = no differences between early onset youth and adolescent limited youth on these traits/behaviors.

Neuropsychological/cognitive

Neuropsychological and cognitive deficits have been one of the most frequently studied correlates of early onset conduct disorder. As previously stated, many researchers have found that low IQ, specifically VIQ, is associated with conduct problems (Culberton, Feral, & Gabby, 1989; Duncan, Kennedy, & Patrick, 1995; Moffitt, 1993b). IQ is also commonly used to differentiate early onset and adolescent onset youth with conduct problems (Moffitt, 1993a; Piquero, 2001; Raine et al., 2002). Moffitt (1993a) reported that there was a seventeen-point IQ difference when comparing early onset youth with non-delinquents in her longitudinal study. Moffitt (1993a) found that youth who did not meet criteria for early onset conduct problems, but had committed at least one delinquent act, scored only an average of one-point below their non-delinquent counterparts. Other researchers (Fergusson, Lynsky, & Horwood, 1996; Kratzer & Hodgins, 1999; Woodward, Fergusson, & Horwood, 2002) have also reported that early onset youth had lower IQ scores than both control and adolescent onset groups. Raine and colleagues (2002) also reported that early onset youth had lower spatial ability at the age of 3.

Alternatively, one study found that early onset boys were characterized by low achievement scores, specifically math and reading, in comparison to adolescent onset boys and a comparison group (Aguilar et al., 2000). However, they did not find any differences in relation to intelligence. Similarly, it has been reported elsewhere that early onset youth are poorer in academic ability compared to adolescent onset youth (Fergusson, Lynsky, & Horwood, 1996).

Another study that examined cognitive ability in early onset and adolescent onset boy offenders reported that adolescent onset Caucasian offenders scored higher on tests of cognitive ability than the early onset Caucasian offenders (Donnellan, Ge, & Wenk, 2000). However, they did not find significant results related to spatial and perceptual tests. The results for Hispanic youth were similar; however, there were no significant differences on reading, arithmetic, spatial, and perceptual tests. Finally, there were no significant differences for early onset and adolescent onset African American offenders (Donnellan et al., 2000). Thus, race may be a factor to consider when examining the association between cognitive deficits and the onset of conduct disorder.

Despite the potential moderating role of race, this research has been largely consistent in finding that early onset youth are characterized by greater cognitive deficits than their adolescent onset counterparts.

Temperament

Temperament has also been studied frequently as a correlate that differs between youth with early onset and adolescent onset conduct problems (Cimbora & McIntosh, 2003). Unfortunately, the findings have been mixed. For example, Cimbora and McIntosh (2003) reported that both early onset and adolescent onset youth were low on self-report ratings of fear and guilt in comparison to controls. Although the two groups did not differ on self-report ratings of fearlessness, the early onset youth reported lower levels of guilt or affective morality than adolescent onset youth. Similarly, several research groups (Moffitt et al., 1996; Moffitt et al., 2002; Silverthorn, Frick, & Reynolds, 2001) found that early onset youth scored higher on measures of callousness. However, Silverthorn and colleagues (2001) reported that this relationship was true only for boys.

In their adjudicated sample, girls with adolescent onset also scored high on a measure of callousness.

Most researchers agree that youth with childhood attention and concentration problems are at risk for early onset conduct problems (Nagin, Farrington, & Moffitt, 1995; Woodward, Fergusson, & Horwood, 2002). It has been reported that early onset youth exhibit more difficulty with impulse control (Silverthorn, Frick, & Reynolds, 2001) and attention deficit behaviors (Fergusson, Lynskey, & Horwood, 1996). Accordingly, McCabe and colleagues (2001) reported that youth with early onset conduct problems exhibited higher rates of ADHD. However, this research has not always been consistent. In a study of male delinquency, youth with both early onset and adolescent onset of delinquency were higher on impulsivity than non-delinquents, but the two delinquent groups did not differ (White, Bates, & Buyske, 2001). Even more surprisingly, Moffitt and colleagues (2002) found that adolescent onset youth had the highest levels of impulsivity in their birth cohort of New Zealand youth. Another inconsistency is that girls with adolescent onset conduct problems also exhibit difficulties with impulse control (Silverthorn, Frick, & Reynolds, 2001). Furthermore, Aguilar and colleagues (2000) found no differences on any of their early temperament variables, including impulsivity, between early and adolescent onset youth.

Due to the mixed findings regarding temperament, the results regarding onset of conduct problems and temperament are unclear. Overall, it appears that early onset youth are characterized by higher rates of callousness than adolescent onset youth; however the results for impulsivity have not been consistent. Additionally, high levels of fearlessness appear to characterize both groups.

Dysfunctional Parenting

As noted previously, many aspects of family functioning have been studied in relation to conduct problems. Youth with an early onset of delinquency appear to have a more negative family context, including more family transitions, parental antisocial behavior and parental unemployment, than youth without conduct problems (McCabe et al., 2001; Patterson & Yoerger, 1997). Early onset youth have also been characterized by increased family problems including harsh physical parental punishment, low emotional responsiveness, and parental violence (Patterson & Yoerger, 1997; Woodward, Fergusson, & Horwood, 2002). In addition, McCabe and colleagues (2001) reported that parents of early onset youth had higher rates of mental illness when compared to adolescent onset youths' parents. Fergusson and colleagues (1996) reported that early onset youth demonstrated higher levels of family disadvantage and adversity when compared to both adolescent onset youth and controls. Low parental monitoring has also associated with an earlier onset of conduct problems (McCabe et al., 2001).

It has been reported that adolescent onset youth also experience family disadvantage, adversity, parental antisocial behavior and low parental income in comparison to non-delinquents (Patterson & Yoerger, 1997). However, the levels of family dysfunction for adolescent onset youth do not reach the levels experienced by the early onset youth (Patterson & Yoerger, 1997). In contrast, one study of male delinquents found that both early and late onset of delinquency was associated with higher rates of parental hostility and having a single parent than non-delinquents (White, Bates, & Buyske, 2001). Another study noted gender differences related to early onset of conduct problems and family dysfunction. Kjelsberg (1999) found that early onset boys were

more likely to have an antisocial parent and multiple changes in caregivers before the age of 6. However, there were no family risk factors associated with girls and early onset criminal behavior.

Although there is a consensus in the research that early onset youth are characterized by families with higher levels of disadvantage, few studies have compared parental socialization practices including monitoring/supervision, discipline practices, and involvement between the two onset groups. As previously noted, parental socialization factors were the most powerful predictors of conduct problems in a meta-analysis by Loeber and Stouthamer-Loeber (1986). It appears that early onset youth experience lower parental monitoring (McCabe et al., 2001), less effective discipline practices (Patterson & Yoerger, 1997), and low parental responsiveness (Aguilar et al., 2000). However, there is a need for much more research on the family backgrounds of the two onset groups.

Deviant Peers

The current findings related to age of onset and association with deviant peers are also mixed. One study found that early onset youth are differentiated from adolescent onset youth on more deviant peer associations and are also more likely to bully and threaten others (McCabe et al., 2001). However, other findings indicate that the two groups of antisocial youth do not differ in their association with delinquent friends (Fergusson, Lynsky, & Horwood, 1996; Moffitt et al., 1996; Moffitt et al., 2002; Patterson & Yoerger, 1997). Therefore, the majority of research findings do not suggest a difference between the groups on deviant peer associations.

Rebelliousness

Piquero and Brezina (2001) reported that adolescent onset youth are characterized by higher rates of school rebelliousness, behavioral autonomy with peers, desire for autonomy, and physical maturity. Rebelliousness at school may be an important setting to test for the adolescent onset youth because at school they are continuously reminded of the restrictions placed on their autonomy by adults (Piquero & Brezina, 2001). Moffitt and colleagues (1996) also found that adolescent onset youth showed higher levels of a personality trait named “traditionalism,” which measures unconventional values. For example, these youth approve of permissive parenting, have little or no use for strict religious rules, and disregard established status hierarchies. Thus, it appears in the limited research examining rebelliousness or rejecting of traditional values that these qualities are more strongly associated with youth in the adolescent onset trajectory. It appears that the rebelliousness associated with youth with an adolescent onset of delinquency may lead these youth to engage in many antisocial behaviors (Moffitt et al., 1996). Additionally, it may be the only risk factor that adolescent onset youth are consistently more impaired than early onset youth.

Causal Theories and Age of Onset

To summarize, early onset youth are characterized by greater cognitive deficits, higher rates of callousness, and families with higher levels of dysfunction in comparison to adolescent onset youth and non-delinquent youth. Adolescent onset youth and early onset youth appear to be equally impaired on several risk factors including impulsivity, fearlessness and deviant peer affiliations. Adolescent onset youth may be more impaired on measures of rebelliousness. It is important to note, however, that these findings have

not always been consistent. Also, there have been few attempts to develop theories to explain these findings. Two exceptions are the developmental models proposed by Moffitt and Patterson.

Moffitt (1993b) theorizes that the early behavior difficulties of the early onset boys contribute to the development of persistent conduct problems because these children evoke interactions that intensify their problem behavior. Children in the early onset group may have a tendency toward problem behavior due to a more difficult temperament and neuro-cognitive vulnerabilities which make them more likely to resist their parents' efforts to control them. Also, the problem behavior can affect the parents' discipline strategies and the interactions with their parents and peers. Thus, Moffitt (1993b) proposes that the early onset group develops conduct problems through a transactional process of failed parent-child interactions.

Patterson and Yoerger (1997) also hypothesize that the early onset pathway begins very early in the home. It is theorized that parents, siblings, and peers reinforce early onset antisocial behavior. The initial reactions of family members to the child's coercive behaviors reinforce these behaviors giving them functional value. This leads to a coercive family cycle that reinforces increasingly more severe antisocial behavior.

Both theories agree that the early onset pathway is characterized by dysfunctional parent-child interactions. However, there are also some important differences in Moffitt and Patterson's characterization of the early onset trajectory. Moffitt (1993b) theorizes that difficulties with parents and peers arise primarily due to the difficult temperament of the child. She also theorizes that these children have neuro-cognitive deficiencies that influence their behavior. Thus, she emphasizes the role of biology in her early onset

trajectory. Patterson and Yoerger (1997) place greater emphasis on parenting behaviors in the development of early-onset conduct problems.

According to Moffitt (1993b), the adolescent onset pathway is the most common course of antisocial behavior. The adolescent onset group has no history of conduct problems in childhood and is at less risk for future antisocial behaviors in adulthood. This group also tends to have a lack of consistency in conduct problems across different contexts and also may have crime free periods. Moffitt (1993b) proposes that adolescents are in a maturity gap, between their biological status and the status provided by society. This gap occurs because adolescents begin to show biological and cognitive abilities comparable in a number of respects to adults (Steinberg & Scott, 2003), yet are not allowed by society to have the autonomy of adults. Moffitt proposes that the adolescent onset group develops conduct disorder because these adolescents are striving to be viewed as adults and may use social mimicry to imitate the early onset group to achieve perceived adult status and decrease the maturity gap. Early onset youth tend to be sexually experienced, free of their families, make their own rules, and take risks; thus, Moffitt states that this lifestyle is coveted by their peers and influence the adolescent onset youth. Adolescent onset youth may be especially susceptible to the maturity gap due to their higher rates of rebelliousness. Rebelliousness or rejection of traditional values may place these youth at an increased risk for drug/alcohol use, unsafe sex, and dangerous driving (Moffitt et al., 1996).

Alternatively, the adolescent onset path is theorized by Patterson and Yoerger (1997) to begin in early to middle adolescence. They theorize that this pathway also is related to problems in the family, particularly the monitoring process. However, in

contrast to the early onset group, the adolescent onset group is primarily affected by delinquent peers and secondarily by families. This results in a breakdown in parenting practices, specifically monitoring, problem-solving, discipline, and positive reinforcement. Patterson and Yoerger (1997) theorize that deviant peer involvement leads to the development of covert (e.g. substance use, truancy, stealing, etc.), but not overt antisocial behaviors.

In summary, both theories hypothesize that deviant peers primarily influence youth in the adolescent onset pathway. However, Patterson also theorizes that these youth are secondarily influenced through dysfunctional parenting. Moffitt's theory places greater emphasis on the rebelliousness of the youth.

Gender Differences

Much of the available research, and the theories to explain their findings, focus primarily on boys with conduct problems. Current research on girls suggests a number of potential differences. For example, factors associated with an adolescent onset in girls include neuropsychological deficits, family dysfunction, and callousness, all of which are associated with childhood onset in boys (Silverthorn & Frick, 1999; Silverthorn, Frick, & Reynolds, 2001). Additionally, unlike boys with an adolescent onset of delinquency, girls with an adolescent onset seem to be at an increased risk for continued problems in adulthood (Silverthorn & Frick, 1999). These findings suggest that girls may follow a different trajectory. In the delayed-onset pathway proposed by Silverthorn and Frick (1999), they posit that girls typically show an adolescent onset of conduct problems. However, many of the mechanisms in the adolescent onset girls appear to be similar to those operating for boys in the early onset pathway and may be present throughout

development. The onset of conduct problems may be “delayed” until adolescence for a number of reasons. Girls may have a delayed onset due to parents reinforcing them to express their temperamental problems through internalizing behaviors rather than externalizing behaviors in childhood (Silverthorn & Frick, 1999). It may also be due to children adhering to gender stereotypes more strongly during their early school years, whereby girls are discouraged from showing aggressive behaviors (Silverthorn & Frick, 1999). Finally, girls may experience more protective factors in childhood. For example, girls in elementary school tend to receive more praise, less negative attention and higher grades (Silverthorn & Frick, 1999).

It is important to note that this suggestion of a delayed onset has not been uniformly accepted. For example, Moffitt and colleagues (2002) suggest that girls follow the same two trajectories as the boys. These authors state that there are fewer girls in the early onset trajectory because girls are less likely to experience the individual and environmental risk factors that are required to maintain early onset antisocial behavior. However, when they do show a childhood onset, Moffitt and colleagues (2002) suggests that they show similar differences with their adolescent onset counterparts as found in male samples. Because of the disagreement over whether or not girls show similar developmental pathways, most authors suggest that boys and girls should be studied separately when investigating these different trajectories (Moffitt et al., 2002; Silverthorn & Frick, 1999). Further, because the theories that guide the current study were based on male samples, only boys will be included in the current sample.

Statement of Purpose

To further advance this important body of research, this study tested the predictions made by the causal theories of Moffitt and Patterson. It examined a variety of causal factors, specifically neuropsychological/cognitive deficits, temperament, dysfunctional parenting, deviant peers, and rebelliousness, that have proven to be important for the development of antisocial behaviors. While many studies have examined these factors, few studies have separated the adolescent onset youth from other youth to test the causal factors theorized to be associated with this group. This is an area of serious neglect in the current research because youth on the adolescent onset trajectory comprise a large number of youth experiencing delinquency in adolescence. Further, few of these studies have explicitly compared causal models in testing differential correlates.

In the early onset pathway, both Moffitt and Patterson agree that this pathway is characterized by dysfunctional parent-child interactions. However, Moffitt theorizes that the key process is the temperament and neuro-cognitive deficits of the child. In contrast, Patterson places greater emphasis on parenting behaviors in the development of early-onset conduct problems. In the adolescent onset pathway, both theories agree that their association with deviant peers primarily influences these youth. Patterson believes that it is this association that leads to a breakdown in parenting practices. Alternatively, Moffitt emphasizes rebelliousness or the rejection of traditional values by this group. Based on these theories, the following hypotheses were tested in the current study.

Hypotheses

- 1) Based on past research, early onset youth were predicted to have more neuropsychological/cognitive deficits, callousness, and family dysfunction.

- a. Moffitt's theory would predict stronger effects for neuropsychological/cognitive deficits and higher rates of callousness.
 - b. Patterson's theory would predict stronger effects for family dysfunction.
- 2) Based on past research, there were no differences predicted between the two groups of antisocial youth on fearlessness, impulsivity, and deviant peer associations, although Moffitt's theory suggests that early onset youth may be more impulsive.
- 3) Based on Moffitt's theory, greater levels of rebelliousness were predicted for the adolescent onset youth.

Methods

Participants

Ninety-eight pre-adjudicated adolescent boys housed in two short-term detention facilities and one outpatient program in southeastern Louisiana were recruited for participation. From the detention centers, parents or legal guardians of the boys were contacted by detention center staff and asked for permission for the researcher to contact them for potential participation. Of this initial pool, parents of 7 youth could not be contacted for consent purposes and 8 youth were released from detention before data collection leading to a participation rate of 85% (n=83). The participating detention facilities were locally operated and primarily housed pre-adjudicated youth awaiting trial. Approximately half (57%) of the participants were recruited from a facility in a rural area of the Southeastern United States, while the other half were recruited from a detention facility (29%) and an outpatient program (14%) in an adjacent large urban area. One youth was excluded based on self and parental report of no delinquent activity.

All youth who had a Peabody Picture Vocabulary score less than 65 (n=4) were eliminated from analyses due to concerns about their ability to understand the questionnaires leading to a final sample of 78 boys. The sample ranged in age from 11 to 18 (Mn = 15.15; SD = 1.40). The self-reported ethnic breakdown of the sample was 56.4% African-American and 33.3% Caucasian, which is representative of the demographic distribution of the region served by the three programs. Based on parental report of offense history, the majority of participants had at least one prior detention (56.4%). Table 2 contains complete demographic information for the sample.

Table 2

Sample Demographics

Variable	Mean (SD)	Min-Max	%
Age	15.15 (1.40)	11-18	
Age 1 st Arrest	13.43 (1.88)	7-17	
Verbal IQ	86.03 (13.53)	65-118	
Ethnicity			
African American			56.4
Caucasian			33.3
Other			10.2
Current Arrest Charge			
Violent			14.5
Property			46.1
Status			5.3
Drug			7.9
Sexual			5.3
Other			7.9
None			13.2

Note. N = 78 with the exception of Current Arrest Charge (N=76), Age of first arrest (N = 67); SD = Standard Deviation; Min = minimum; Max = maximum; Age of first arrest and current arrest charge were established with parental report.

Procedure

All procedures were approved by the Institutional Review Board of the University of New Orleans. A detention center staff member contacted all parents of boys referred to the two detention centers, who had valid phone numbers or addresses. The staff member told the parent or legal guardian that a study was being conducted by researchers at the local university, and asked permission to forward their phone number to the researchers. Those parents who agreed to be contacted by the researchers were phoned and had the study procedures explained to them. A maximum of five attempts were made to contact parents/guardians by phone. Parents or legal guardians who agreed to have their child participate were asked to have the consent process tape-recorded and were subsequently mailed a copy of the consent form for their records.

Additionally, subjects were recruited by the Youth Service Bureau (YSB) of St. Tammany Parish, an outpatient program which referred youth entering the Families In Need of Supervision (FINS) program (for youth judged to be “out of control” by their parents) and the Crossroads program (a diversion program for first time non-violent offenders). Youth and their parents were referred by social workers. Parental consent and youth assent were obtained individually at a room at the facility. The mental health screening was required by the YSB and the social workers received a screening report summarizing results that may aid in designing interventions for youth.

For the detained sample, once parental consent had been obtained, youth assent procedures were conducted in a group format with two to eight youth in a private room at the facility. The boys’ were informed that their parent/guardian provided permission for them to participate in the research study. Assent forms were read to all participants and

youth were allowed to ask questions at any time. For youth who did not require parental consent (18 years and older, n=1), youth consent procedures were conducted individually in a private room at the facility. Confidentiality was strictly enforced by using identification numbers rather than names on all forms, and this was explained in detail in the consent and assent procedures.

For both samples, all data collection occurred in a private room within the facility and was conducted by a data collection team of at least three persons. After obtaining youth assent, a battery of questionnaires was administered to participants in small groups (2-8 participants per group). To control for reading and comprehension differences, all measures were read aloud to the group. While the questions were read, research assistants were stationed in the room to ensure that a) participants understood the questions, b) participants were answering the questions privately, c) participants were answering the questions one at a time, and d) participants were able to ask questions. The room was set up to maximize the separation of participants during data collection. The assistants stood close enough to the youth to observe them, but far enough away to allow them privacy. The battery consisted of self-report questionnaires that took approximately one to one-and-a-half hours to complete. The participant then individually completed the Peabody Picture Vocabulary Test (Dunn & Dunn, 1997). Following participation in the study and collection of the measures, youth received a candy bar and beverage.

Measures

Delinquency: Age of Onset. Age of onset was estimated by determining the earliest age at which any delinquent act or serious conduct problem was reported from two sources. First, the Self-Reported Delinquency Scale (SRD; Elliot & Ageton, 1980)

was used to assess the number and types of delinquent acts committed and earliest age that these acts were committed from the youth self-report.

The SRD was developed from a list of all offenses reported in the Uniform Crime Report with a juvenile base rate of greater than 1% (Elliot & Huizinga, 1984) and it lists 36 questions about illegal juvenile acts. The youth reported whether or not a specific act had ever occurred, the number of times the act had occurred, and the age at which the act first occurred. The general delinquency scale totals the number of delinquent acts across all items and was used in analyses (Krueger, Schmutte, Caspi, Moffitt, Campbell, & Silva, 1994). This scale assessed for the frequency of specific types of delinquent acts, including drug offenses (9 items), violent offenses (8 items), property offenses (7 items), and status offenses (4 items). The coefficient alpha in the current sample was 0.87 for the total score.

In addition, parental report of conduct disorder symptoms listed in the DSM-IV, first age of police contact and/or arrest, and arrest charges were assessed during the initial phone contact with the custodial parent of all youth. The age of onset that was utilized for data analysis was the youngest age reported based on these two sources of information, limiting these to only severe forms of antisocial and delinquent behavior. The items included to calculate age of onset were parental report of age of first police contact and self report of youngest age of serious delinquent behavior including: damage/destroy property at school/other places, stolen a motor vehicle/items over \$50, bought/sold/held stolen goods, carried a hidden weapon, attacked someone, gang fights, sold marijuana/illicit drugs, hit/threatened to hit a teacher/other adult at school, sexual

relations with someone against their will, use force to get money from other students/teachers/other people, and broken into a building/vehicle.

The use of both parent and child report to determine earliest age of onset was based on past research showing that both parent report and adolescent self-report showed similar median age of onset for antisocial behaviors and both were correlated with external criteria (e.g. severity of impairment) (Lahey et al., 1999). Additionally, Farrington and colleagues (1996) reported that self-report accesses behaviors that may have not come to the attention of authorities or parents. Alternatively, parental report may capture events that the youth may not want to report. Thus, the method used in this study utilizes the advantages of both methods of obtaining information about the onset of severe antisocial behaviors.

There has been little consistency in the literature concerning the operational definition of early versus adolescent-onset. Fourteen years of age is the age used by both Patterson and Yoerger (1993) and Tibbets and Piquero (1999) in their research to designate adolescent onset of severe antisocial behavior. Alternatively, the DSM-IV/TR makes the distinction between children who begin showing severe antisocial and aggressive behaviors before age 10 (i.e., childhood-onset) and those who do not show severe conduct problems before age 10 (i.e., adolescent-onset). Robins (1966) found that youth age eleven years or younger were over twice as likely to be diagnosed with Antisocial Personality Disorder as an adult compared boys who began exhibiting antisocial behavior after the age of eleven. Therefore, there appears to be agreement that early onset of conduct problems begins before the age of twelve. There is less agreement on the optimal age to define adolescent onset but after the age of 11 is typically

considered adolescent onset in most definitions. Given this, age eleven was used as a cut-off between early onset (n= 47) and adolescent onset (n = 31) groups for this study. Most youth excluded from analyses based on their low verbal scores were in the adolescent onset group (three of the four eliminated cases).

Neuropsychological/cognitive. Neuropsychological/cognitive deficits were assessed using the Peabody Picture Vocabulary Test (PPVT-III; Dunn & Dunn, 1997). The PPVT-III is a brief norm-referenced measure of verbal ability for those ages 2.5 to 90 years. This test assesses a child's receptive language abilities. The standardized scores of the third revision of the PPVT-III correlated .90 with the Full-Scale IQ scores from the Wechsler Intelligence Scale for Children, Third Revision in a sample of 41 children ages 7 year, 11 months through 14 years, 4 months (Dunn & Dunn, 1997). The correlation with Verbal Scale IQ was slightly higher than the correlation with Performance Scale IQ (.91 and .82, respectively). The PPVT-III was also validated using the Kaufman Adolescent and Adult Intelligence Test with adolescents' aged 13 years through 17 years, 8 months (Dunn & Dunn, 1997). The correlation with crystallized IQ was slightly higher than with fluid IQ (.87 and .76, respectively). It was correlated .85 with the composite IQ score.

Impulsivity. Impulsivity was rated using two measures. First, the Behavioral Assessment System for Children 2 Self-Report of Personality (BASC-2 SRP; Reynolds & Kamphaus, 2004) is a behavior rating scale system that covers a broad range of both adaptive and maladaptive child behavior. There are several SRP forms including, child (SRP-C; ages 8-11) and adolescent (SRP-A; ages 12-21). Only the 176 item adolescent version was used in the current study. The BASC-2 has been standardized on a large

nationwide sample of children and adolescents and has proven to produce reliable scores using several indices of reliability (e.g., internal consistency and test-retest) (Reynolds & Kamphaus, 2004). The 7-item Hyperactivity scale includes items; such as “Acts without thinking,” “Is restless during movies” and was used as one measure of impulsivity. In the current BASC-2 standardization sample, the Hyperactivity scale yielded a coefficient alpha of 0.76 in adolescents aged 12-14 and 0.74 in adolescents aged 15-18 (Reynolds & Kamphaus, 2004). Additionally, it had a two to eight week test-retest reliability of 0.69 (Reynolds & Kamphaus, 2004). The coefficient alpha in the current sample was 0.74.

The second measure of impulsivity was the Control subscale of the Multidimensional Personality Questionnaire-Brief Form (MPQ-BF; Patrick, Curtain, & Tellegen, 2002). This subscale uses 13 items, which are answered by selecting either “True” or “False” to an item (e.g. “I like to stop and think things over before I do them”). This subscale measures impulsivity in comparison to behavioral restraint. Moffitt and colleagues (1996) used this measure and were able to distinguish boys with conduct problems from abstainers. The Control subscale on the MPQ-BF and the full MPQ are highly correlated ($r = .93$; Patrick, Curtain, & Tellegen, 2002). One item was eliminated from this scale to achieve adequate internal consistency due to a low item-total correlation of -0.01. This resulted in a coefficient alpha for the control scale of 0.77 in the current sample.

Sensation Seeking. The Sensation Seeking scale on the BASC-2 SRP was used to measure sensation seeking (Reynolds & Kamphaus, 2004). This scale measures the youth’s desire to engage in potentially dangerous or exciting activities (e.g., “I like it when my friends dare me to do something,” “I like to drive in a car that is going fast”).

In the current BASC-2 standardization sample, the Sensation Seeking scale yielded a coefficient alpha of 0.69 in adolescents aged 12-14 and 0.70 in adolescents aged 15-18 (Reynolds & Kamphaus, 2004). Additionally, it had a two to eight week test-retest reliability of 0.76 (Reynolds & Kamphaus, 2004). In the current sample, the coefficient alpha for this scale was 0.65.

Callousness. The Inventory of Callous-Unemotional Traits (ICU; Frick, 2004) is a 24-item self-report scale designed to assess callous and unemotional traits in youth. The ICU was derived from the CU scale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2000). The CU component of the APSD has emerged as a distinct factor in clinic (Christian, Frick, Hill, Tyler, & Frazer, 1997), community (Frick, et al., 2003; Frick, Bodin, & Barry, 2000), and forensic samples (Kruh, Frick, & Clements, 2005), and has been shown to identify a more severe and aggressive subgroup of antisocial youth in these samples. Further, antisocial youth who also show high CU scores show a number of distinct characteristics, such as preference for novel, exciting, and dangerous activities (Frick et al., 2003; Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999), decreased sensitivity to cues of punishment when a reward-oriented response set is primed (Barry, Frick, DeShazo, Grooms, McCoy, Ellis, & Loney, 2000; Fisher & Blair, 1998; Frick et al., 2003) and less reactivity to threatening and emotionally disturbing stimuli (Blair, 1999; Loney, Frick, Clements, Ellis, & Kerlin, 2003).

However, the CU scale of the APSD has demonstrated only moderate internal consistency in past studies (e.g., Loney et al., 2003), which is likely due to its small number of items ($n = 6$) and three-point rating system. Also, 5 out of the 6 items are worded in the same direction, increasing the possibility of response bias. The ICU was

developed to overcome these limitations. It was constructed based on a factor analysis of parent and teacher ratings on the APSD, using the four items that loaded significantly on the CU scale in both clinic-referred and community samples (Frick et al., 2000). These four items (“is concerned about the feelings of others,” “feels bad or guilty,” “is concerned about schoolwork,” and “does not show emotions”) were restructured into four positively and four negatively worded items and placed on a four-point scale (0 = “not at all true,” 1 = “somewhat true,” 3 = “very true,” and 4 = “definitely true”). One item was deleted from the current scale due to an item-total correlation of -0.12 in the current sample. The resulting alpha coefficient of the ICU scale was 0.81.

Parenting Practices. Parenting practices was assessed by the youth global self-report format of the Alabama Parenting Questionnaire (APQ; Frick, 1991). The APQ measures the five domains of parenting that have been most consistently related to conduct problems: poor monitoring/supervision, involvement, inconsistent discipline, corporal punishment, and positive reinforcement. The youth global self-report of the APQ consists of 42 items that assess the frequency of different parenting practices and uses 3 to 10 items to assess each construct. On the global report forms, items are rated on a frequency scale of 1 to 5, (1= Never, 5= Always). Examples of items in each subscale of the youth form include the following: “You have a friendly talk with your Mom” (Parental Involvement subscale), “You parents praise you for behaving well” (Positive Reinforcement subscale), “You go out without a set time to be home” (Poor monitoring/Supervision subscale), “The punishment your parents give depends on their mood” (Inconsistent Discipline subscale), and “Your parents spank you with their hand when you have done something wrong” (Corporal Punishment subscale). The sum of the

responses of the items in a particular domain composes each subscale score on the global formats. The APQ was chosen to measure parenting techniques because it assesses the five domains of parenting that have been most consistently linked to conduct problems (Frick, 1991). The global child self-report scales of the APQ demonstrated adequate reliability and only minimal correlation with social desirability in a clinic-referred sample (Shelton, Frick, & Wootton, 1996). Also, in a clinic-referred sample of adolescents, the subscales of the APQ were associated with severe conduct problems (Frick, Christian, & Wootton, 1999).

A composite score was formed from the APQ that involved converting all 5 subscales to z-scores and inverting the two positive parenting dimensions by multiplying the standard scores by -1 . Then, all five scales were summed to form a dysfunctional parenting composite. In the current sample, the coefficient alpha for the involvement with mothers scale was 0.87 ($n=73$) and for the positive parenting scale was 0.77. In the current sample, the alpha coefficient for the poor monitoring/supervision scale was 0.79 ($n=77$). Furthermore, the coefficient alpha for the inconsistent discipline scale was 0.58 and for the corporal punishment scale was 0.72.

Deviant Peers. The Peer Delinquency Scale (PDS; Keenan, Loeber, Zhang, Stouthamer-Loeber, & Van Kammen, 1995) was used to assess deviant peer association. The PDS was developed for use in the Pittsburgh Youth Study to assess the level of deviant peer group affiliation in a high-risk community sample of approximately the same age as the current sample (see Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998). On the PDS, participants report on their friends' engagement in a wide variety of disruptive behaviors. Boys were asked to rate how many of their friends

engaged in a number of deviant behaviors (e.g. shoplifting, skipping school, selling drugs) in the last 6 months on a 5-point rating scale, ranging from “none” (0) to “all” (4). Consistent with past research assessing delinquent peer affiliation, any rating above none was considered as indicating some level of delinquent peer association, and the number of behaviors in which there is some level of peer involvement was summed (Henry, Tolan, & Gorman-Smith, 2001; Lahey, Gordon, Loeber, Stouthamer-Loeber, & Farrington, 1999; Simons, Whitbeck, Conger, & Conger, 2001). Past research has concluded that the PDS has high internal consistency and has been related to the youth’s level of delinquency (Loeber et al., 1998). In the current sample, the coefficient alpha for the PDS was 0.91.

Rebelliousness. Rebelliousness was measured in the current study using two different measures that were selected to a) measure multiple aspects of rebelliousness and b) do so in a way that was not confounded with delinquent behavior. The first measure is the Parent Intrusiveness Scale (PIS; Gender and Achievement Research Program, 2004). It measures adolescents’ perceptions that their parents allow them too little autonomy. This scale includes six items based on items from the Philadelphia Family Management Study (Gender and Achievement Research Program, 2004). Examples of items on the scale include, “Your parent treats you more like a kid than like an adult” and “Your parent always tells you what to do and how to act.” In the current sample, the coefficient alpha for the PIS was 0.76.

The second measure is the Traditionalism subscale of the Multidimensional Personality Questionnaire-Brief Form (MPQ-BF; Patrick, Curtin, & Tellegen, 2002). This subscale uses 12 items, which are answered by selecting either “True” or “False” to

an item (e.g. “It is a pretty unfeeling person who does not feel love and gratitude toward her/his parents”) or he will select one of two statements for an item (e.g. “I would prefer to see: (A) Stricter observance of major religious holidays or (B) Greater acceptance of nontraditional families, like single parent families.”) Youth who score high on this subscale describe themselves as endorsing high moral standards and needing a conservative, predictable social environment; whereas low scorers are described as unconventional. Moffitt and colleagues (1996) used the Multidimensional Personality Questionnaire (MPQ) Traditionalism scale to measure personality traits associated with adolescent onset conduct problems. The Traditionalism subscale on the MPQ-BF and the full MPQ are highly correlated ($r = .93$; Patrick, Curtain, & Tellegen, 2002). The scale was re-written for this study to make it easier to understand for adolescents. Three items were eliminated from the current scale due to item-total correlations of 0.09, 0.06, and -0.08 in the current sample. The resulting alpha coefficient for the Traditionalism subscale was 0.51.

Results

Descriptive Statistics

The means and standard deviations for all of the main study variables are reported in Table 3 and indicate sufficient variability on measures to detect hypothesized associations. The zero-order correlations among study variables and with demographic variables are reported in Table 3. Ethnicity was negatively correlated with CU traits ($r = -0.26, p < .05$). Additionally, Verbal IQ was significantly associated with sensation seeking ($r = 0.23, p < .05$).

Table 3

Means, standard deviations, internal consistency and correlations of main study variables

Variable	Mean (SD)	Min-Max	Age	Ethnicity	IQ
<u>Delinquency</u>					
Total	13.83 (6.65)	2-30	0.14	-0.08	-0.06
Peer	10.88 (3.33)	2-15	0.22	-0.12	-0.21
<u>Cognitive</u>					
Verbal IQ	86.03 (13.53)	65-118	-0.08	0.04	-
<u>Parenting Practices</u>					
Dysfunctional Parenting	4.53 (3.53)	-1.28 – 16.26	-0.09	-0.19	-0.18
<u>Social/Behavioral/Emotional</u>					
CU Traits	25.99 (9.52)	7-52	-0.20	-0.26*	-0.09
Rebelliousness					
Parental Intrusiveness	17.40 (5.70)	6-30	-0.08	-0.02	-0.03
Traditionalism	12.53 (1.82)	9-17	0.01	-0.07	0.02
Sensation Seeking	53.65 (10.46)	33-74	-0.00	-0.17	0.23*
Impulsivity					
Control	17.52 (3.07)	12-24	0.03	0.01	-0.16
Hyperactivity	55.56 (12.63)	33-84	0.15	-0.14	-0.00

Note. N = 78, with the exception of Peer Delinquency (N = 74), Dysfunctional Parenting Composite (N = 75); SD = standard deviation; Min = minimum; Max = maximum; IQ = Verbal IQ; CU = callous-unemotional. Ethnicity was coded 0 = Caucasian and 1 = other ethnicities.

Verbal IQ was assessed using a norm-referenced measure (PPVT-III). As expected, the average Verbal IQ score ($X = 86.03$) was in the Below Average range. Sensation seeking was also assessed using a norm-referenced measure (BASC-2 SRP). The average score on sensation seeking was comparable to scores of other youth ($X = 53.65$). The BASC-2 SRP was also used to assess impulsivity and hyperactivity. The average score on hyperactivity was somewhat higher (.5 SD) than scores of other youth of the same age ($X = 55.68$).

T-tests and chi-squares were run to compare the early onset and adolescent onset groups on demographics, self-report of delinquency, and parent report of current violent offense. The results of these analyses are reported in Table 4. The groups were significantly different on their total self-report of delinquent behaviors and self-report of violent offenses. As predicted, the early-onset group did show significantly higher scores on a measure of self-report of delinquency ($t = 2.09, p < .05$). Additionally, the early-onset group showed significantly higher numbers of self-reported violent offenses ($t = 3.06, p < .01$). There were no group differences on self-reported non-violent offenses, current or history of violent charges by parent report, age, or ethnicity. The two groups were also compared on the percentage of each group recruited from each site and this also did not differ significantly ($X^2 = 0.40, p = n.s.$). Specifically, 12.8% of the early onset group came from the Youth Service Bureau and 87.2% came from detention facilities. For the adolescent onset group, 16.1% came from Youth Service Bureau and 83.9% were recruited from detention facilities.

Table 4

T-tests and chi-squares of demographic variables and self-report of delinquency

Variable	Early Onset Mn (SD) / %	Adol onset Mn (SD) / %	Mean Difference (SE)	95% Confidence Interval	X ² / T	Eta ²
<u>Demographics / History of Charges</u>						
Data Site (% detention)	87%	84%			0.40	
Ethnicity (% Caucasian)	30%	39%			0.42	
Current Violent (% yes)	20%	6%			0.08	
History of Violent (% yes)	18%	15%			0.76	
Age	14.91 (1.50)	15.52 (1.15)	-0.60 (0.32)	-1.23 – 0.03	-1.89	.045
<u>Self-report Delinquency</u>						
Delinquency	15.09 (6.72)	11.94 (6.17)	3.15 (1.51)	0.15 – 6.15	2.09*	.054
Violent Offenses	3.49 (1.71)	2.32 (1.56)	1.17 (0.38)	0.41 – 1.93	3.06**	.110
Non-violent Offenses	11.60 (5.52)	9.61 (5.23)	1.98 (1.25)	-0.51 – 4.48	1.58	.032

Note. N = 78, with the exception of current violent offense (N = 76) and history of violent offense (N = 53); p < .05; ** p < .01; *** p < .001

Differences between Early-Onset and Adolescent-Onset groups on Cognitive Deficits, Callousness, and Parenting

The first hypothesis predicted that children in the early onset group would show lower scores on a measure of cognitive ability, higher scores on a measure of callous-unemotional traits, and higher scores on a measure of family dysfunction. The results of these analyses are reported in Table 5. Contrary to hypothesis, the groups did not differ on the PPVT-III ($t = .35, p = n.s.$). However, consistent with predictions, the early-onset group did show significantly higher scores on the measure of CU traits ($t = 2.48, p < .01$). Also, consistent with predictions, the early onset group did show significantly higher scores on the dysfunctional parenting composite ($t = 2.24, p < .05$).

The two main theories used to guide the prediction of these group differences made somewhat different predictions as to which variables would show the strongest effects. The findings were somewhat mixed. Consistent with Moffitt's contention (Moffitt et al., 2002), the effect of CU traits ($\eta^2 = .075$) showed the strongest effects. However, there was no significant difference on verbal intelligence ($\eta^2 = .002$) as would be predicted by this theory. Further, the effect size for the dysfunctional parenting composite was comparable ($\eta^2 = .064$) in partial support of Patterson's emphasis on dysfunctional parenting practices in the etiology of early onset antisocial behavior (Patterson & Yoerger, 1997).

Table 5

T-tests of main study variables

Variable	Early Onset Mn (SD)	Adol onset Mn (SD)	Mean Difference (SE)	80% Confidence Interval	T	Eta ²
<u>Cognitive</u>						
PPVT-III	86.47 (14.09)	85.35 (12.83)	1.11 (3.15)	-2.96 - 5.18	0.35	.002
<u>Parenting Practices</u>						
Dysfunctional Parenting	5.24 (3.41)	3.41 (3.49)	1.82 (0.82)	0.77 – 2.88	2.24*	.064
<u>Social/Behavioral/Emotional</u>						
CU Traits	28.09 (9.98)	22.80 (7.89)	5.29 (2.13)	2.53 – 8.05	2.48**	.075
Rebelliousness						
Parental Intrusiveness	17.34 (5.28)	17.48 (6.38)	-.14 (1.33)	-1.86 – 1.57	-.11	.000
Traditionalism	12.91 (1.63)	11.94 (1.94)	0.98 (0.41)	0.45 – 1.51	2.39**	.070
Sensation Seeking	54.89 (10.60)	51.77 (10.13)	3.12 (2.41)	0.002 – 6.24	1.29	.022
Impulsivity						
Control	17.54 (3.09)	17.48 (3.08)	0.06 (0.71)	-0.86 – 0.98	0.08	.000
Hyperactivity	56.49 (12.97)	54.16 (12.17)	2.33 (2.93)	-1.46 – 6.11	0.80	.008
Peer Delinquency	1.92 (0.93)	1.36 (0.81)	0.56 (0.20)	0.30 – 0.83	2.77***	.092

Note. N = 78, with the exception of Peer Delinquency (N = 74), and the Dysfunctional Parenting Composite (n=75); CU = callous-unemotional; PPVT-III measures verbal IQ. p < .05; ** p < .01; *** p < .001

Differences between Early-Onset and Adolescent-Onset groups on Impulsivity, Sensation Seeking, and Deviant Peers

The second hypothesis predicted that children in the early onset and adolescent onset groups would not show any differences on measures of sensation seeking or deviant peers, but may show differences in measures of impulsivity. As seen in Table 5, the groups did not differ on measures of impulsivity or sensation seeking. Contrary to the hypothesis, the early onset group did show significantly higher scores on a measure of peer delinquency ($t = 2.77, p < .001$).

The two main theories used to guide the prediction of these group differences made somewhat similar predictions. The findings were somewhat mixed. Consistent with Moffitt's and Patterson's contention (Moffitt et al., 2002; Patterson & Yoerger, 1997), the effect of sensation seeking traits ($\eta^2 = .022$) did not demonstrate strong group effects, as indicated by the effect sizes and 80% confidence interval reported in Table 5. However, there was also not a significant difference on impulsivity ($\eta^2 = .000 - .008$) as may be predicted by Moffitt's theory (Moffitt et al, 2002). Contrary to the predictions of both theories, the effect size for peer delinquency showed the strongest effects in the early onset group ($\eta^2 = .092$).

Differences between Early-Onset and Adolescent-Onset groups on Rebelliousness

The third hypothesis predicted that children in the adolescent onset group would show higher scores on measures of rebelliousness. Also noted in Table 5, consistent with predictions, the adolescent onset group did show significantly higher scores on a measure of traditionalism ($t = 2.39, p < .01$). However, the groups did not differ on an additional measure of rebelliousness, parent intrusiveness ($t = -0.11, p = n.s., \eta^2 = .00$). The effect

size for the traditionalism measure was ($\eta^2 = .070$) in partial support of Moffitt's emphasis of rebelliousness in the etiology of adolescent onset antisocial behavior (Moffitt et al., 1996).

Supplementary Analyses

All analyses were repeated dividing the sample into elevated and non-elevated scores on all measures to determine if the proportion of extreme scores differed across groups using chi-square analyses. However, the same pattern of significant findings emerged using these non-parametric analyses. Additionally, all analyses were repeated by eliminating those cases with questionable scores based on the BASC validity indices. Again, this did not affect the results.

Unique Contribution of Variables in Predicting Group Membership

Logistic regression analyses were performed to test the independent contribution of all variables that significantly differentiated groups. Results are reported in Table 6. Overall, the regression equation including these variables (e.g., CU Traits, Peer Delinquency, Traditionalism, and the Dysfunctional Parenting Composite) correctly identified 69.3% of the sample. The correct identification of the early onset group was greater (84.8%) than the correct identification of the adolescent onset group (44.8%). However, based on the regression coefficients reported in Table 6, none of the four variables contributed independently to the prediction of group differences.

Table 6

Logistic regression of significant study variables

Variable	Beta (SE)	p
Constant	4.65 (2.07)	.03
CU Traits	-.02 (.03)	.50
Peer Delinquency	-.50 (.34)	.15
Traditionalism	-.27 (.17)	.11
Dysfunctional Parenting Composite	-.10 (.09)	.25

Note. N = 74; SE = standard estimate; CU = callous-unemotional. The results are from a logistic regression analysis predicting group membership with early onset coded as “0” and adolescent onset coded as “1”.

Discussion

In general, the results support the distinction between the early onset and adolescent onset groups. While other studies have also supported this distinction (Cimborá & McIntosh, 2003; Fergusson et al., 2000; McCabe, Hough, Wood, & Yeh, 2001; Moffitt et al., 2002; Patterson & Yoerger, 1997), this study focused on several variables that were critical to two main theoretical models that have been used to explain the differences between these two groups of antisocial youth. Moffitt and Patterson both assert the early onset pathway is distinguished by interactions between a child with a difficult temperament and dysfunctional parent-child interactions. However, Moffitt emphasizes the temperament and neuro-cognitive deficits of the child, while Patterson stresses parenting behaviors in the development of conduct problems. In the adolescent onset pathway, both theories focus on affiliation with deviant peers. However, Moffitt's theory focuses on the rejection of traditional values and rebelliousness as leading to this association, while Patterson's theory maintains that this association with deviant peers is a result of failures in parenting practices.

As predicted by Moffitt and colleagues (1996), the only variable strongly associated with the adolescent onset group was traditionalism. Specifically, low levels of traditionalism were found for the adolescent onset group. This measure assessed decreased acceptance of conservative values (e.g., "I don't like the old fashioned ways of doing something") and a disregard for established hierarchies (e.g., "This country needs stricter rules for how people should act"). This finding is consistent with past research (Moffitt et al., 1996). It suggests that youth in the adolescent onset group may exhibit unconventional values (e.g., decreased acceptance of conservative values, disregard

established status hierarchies) and this could be a critical component in their development of problem behavior.

This is an important finding because lack of conventional values is one of the few factors that has been found to be more deviant in the adolescent onset group (Moffitt et al., 1996). Past findings could be interpreted as indicating differences in severity between the two antisocial groups, with the early onset group being more dysfunctional. For example, children in the early onset group could be more severe behaviorally, (e.g., greater number of offenses and violent offenses) and have increased dispositional (e.g., callousness) and contextual (e.g., dysfunctional parenting) risk factors. The current findings indicate one area in which children in the adolescent onset pathway are more deviant; that is, they show lower levels of traditional values.

However, these findings do need to be interpreted in light of the fact that an additional measure of rebelliousness, parental intrusiveness, showed no difference between the groups. This measure assessed the youth's perception of parental authority (e.g., "Your parent always tells you what to do and how to act"). The failure to find group differences on this measure could be due to the fact that this measure of conventionality is specific to respecting parental authority. Given that it is specific to parenting and the early onset group reported more dysfunctional parenting practices, this failure to differentiate the groups may be because the early onset youth also did not respect their parental authority because of these dysfunctional parenting practices. Thus, they reported similarly to adolescent onset youth to these questions concerning perception of parental authority.

Another finding consistent with both Moffitt and Patterson's theories of the etiology of early onset conduct problems is the importance of dysfunctional parenting for this group. In this study, the childhood-onset group showed greater levels of inconsistent discipline, poor monitoring/supervision, corporal punishment, low involvement with mothers, and low positive parenting. This finding is consistent with many other studies (Aguilar et al., 2000; McCabe et al., 2001; Patterson & Yoerger, 1997). The early onset group may have a tendency toward problem behavior due to a more difficult temperament and are more likely to resist their parent's efforts to control them. Also, the problem behavior can affect the parent's discipline strategies and the interactions with their parents and peers.

While both theories tested in this study recognize the role of dysfunctional parenting, Patterson's theory places greater emphasis on parenting as the key factor in development of conduct problems in the early onset group (Patterson & Yoerger, 1997), while Moffitt's theory stresses temperament and neuro-cognitive variables (Moffitt, 1993b). In the current study, measures of Verbal IQ and impulsivity did not differentiate groups, a finding that is not consistent with Moffitt's theory. However, in support of Moffitt's early onset theory, a measure of callous-unemotional traits differentiated the early onset youth from the adolescent onset youth.

This finding provides further support for past findings that high levels of CU traits differentiate early onset youth from adolescent onset youth (Moffitt et al., 1996; Moffitt et al., 2002; Silverthorn, Frick, & Reynolds, 2001). CU traits appear to designate a unique group of children in the early onset pathway who seem to have a unique temperamental style, related to lack of sensitivity to emotional stimuli and lack of

responsiveness to cues to punishment (Frick, 2006). This temperamental risk factor could lead to problems in conscience development, as indicated by the presence of CU traits (Frick & Morris, 2004). The current findings suggest that CU traits may be more important than impulsivity as a dispositional risk factor for youth developing conduct problems in the early onset group.

Contrary to both theories, affiliation with deviant peers differentiated the early onset youth from the adolescent onset youth. Some past research has not found that early onset and adolescent onset youth differ in their affiliation with deviant peers (Fergusson, Lynskey, & Horwood, 1996; Moffitt et al., 1996; Moffitt et al., 2002; Patterson & Yoerger, 1997) whereas other have found similar differences (Kimonis, Frick, & Barry, 2004, McCabe et al., 2001). Kimonis and colleagues (2004) proposed two reasons that may explain why early onset youth, especially those with CU traits, may be more likely to affiliate with deviant peers. First, these children may have certain characteristics (e.g., thrill seeking tendencies) that make them more likely to befriend a deviant peer group. Second, affiliation with a deviant peer group may increase the likelihood of developing of CU traits. For example, association with a deviant peer group may desensitize children to the negative effects their behavior can have on others (Kimonis et al., 2004).

Limitations of the current study

There were several limitations in the current study. The first is a small sample size. There were 78 subjects and they were divided into two groups. This led to relatively low power to detect small to moderate effect sizes. The sample was an ethnically diverse sample in the southeastern United States and this demographic composition could also influence the generalizability of results to other samples. Another

limitation of the current study is the lack of institutional records. Institutional records were not used because the records obtained often provided very limited information on the youth's criminal history. Thus, information was gathered on youth's current and past offense history from a parent at the time of consent. Another limitation of the current study was a lack of a normal control group. The current study was not able to determine if the groups differed from a community control group that had not been involved in the juvenile justice systems and, thus, normative statements could not be made.

Additionally, a limitation of the current study was the use of the PPVT-III as a measure of verbal ability. The PPVT-III only assesses receptive verbal ability and this may not be the only type of verbal ability associated with the Verbal IQ deficit commonly found in delinquent populations. Another limitation of the current study was the inability to make causal or directional statements. Finally, the measure of traditionalism (Multidimensional Personality Question - Traditionalism scale) had low internal consistency, which may have reduced the power to detect associations with this measure; however, the measure did differentiate groups despite this low inconsistency.

Future Research

Future research is needed regarding the adolescent onset trajectory to delinquency. Specifically, research is needed to examine the role of rebelliousness and the rejection of traditional values that appears to be a greater risk factor for this group in comparison to their early onset counterparts. Future longitudinal studies may examine the interaction of these traits with other risk factors (e.g., dysfunctional parenting and deviant peers) in an attempt to understand the causal processes leading to the behavior problems of these youth. Although we found that dysfunctional parenting and

association with deviant peers were more associated with the early onset group, we were unable to test if the adolescent onset group may be at increased risk on these factors in comparison to a normal control group. Thus, the adolescent onset group may show higher rates of these risk factors than normal developing adolescents and these factors may interact with rebelliousness to set them on a trajectory for conduct problems.

In general, further attention should be given to this group of youth. The adolescent onset youth group is reportedly larger than the early onset group in many community studies (Moffitt et al., 1996), although it was not the larger group in the current sample of juvenile justice involved youth. Additionally, although they may not continue to offend at the rate of the early onset group, research has shown that this group is still at risk for future problems related to adult development (i.e., romantic relationships, financial hardships, substance use, employment) (Nagin, Farrington, & Moffitt, 1995; Moffitt et al., 2002; Woodward, Fergusson, & Horwood, 2002). For example, Moffitt and colleagues (2002) reported in their longitudinal sample of a birth cohort followed to age 26 that youth who showed an adolescent onset to their conduct problems were significantly more likely to self-report offenses (e.g., property, drug, violent) at age 26 than a comparison group, albeit less than the early onset group. The adolescent onset group was also significantly more likely to self-report mental health problems (i.e., drug dependence, PTSD) and informant reports indicated that they were significantly more likely to experience mental health problems including depression and anxiety. Finally, they were also more likely to experience difficulties with education and employment, and they earned less than the comparison group (Moffitt et al., 2002).

The results of the current study support findings indicating the severity of problems exhibited by the early onset group. Further, these findings have several implications. Prospective longitudinal studies need to examine the dispositional (i.e., callousness) and contextual (i.e., dysfunctional parenting) risk factors associated with an early onset of conduct disorder. Additionally, it would be useful to study the interaction of these factors in an effort to understand the causal processes leading to an early onset of behavior problems. It is also important to continue to study different subgroups within the early onset group, specifically youth with CU traits, as they appear to have a host of severe outcomes associated with them (Frick & Dickens, 2006). Future research should include an examination of CU traits and association with a deviant peer group, as both appear to be significantly associated with an early onset of conduct problems.

Applied Implications

Current and past research on the developmental trajectories in the development of conduct problems illustrate that early onset and adolescent onset groups are distinctive groups with unique risk factors. Interventions targeting these youth should be tailored to the specific needs of each group (see Frick, 2006). For example, interventions that target parenting practices and anger management may be more effective for youth in the early onset group. Youth with CU traits in the early onset group may benefit from interventions that focus on teaching parents to foster empathetic concern in young children and help them develop cognitive perspective-taking skills. Youth in the adolescent onset group may benefit the most from interventions such as mentoring programs that increase their contact with prosocial peers, structured after-school activities and programs that enhance identity development. Future intervention and prevention programs will continue to be

enhanced by understanding the etiology as it relates to the different developmental pathways to conduct disorder.

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