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Adolescent Characteristics And Peer Influence As Predictors Of Antisocial Behavior In Males

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**ADOLESCENT CHARACTERISTICS AND PEER INFLUENCE AS PREDICTORS OF
ANTISOCIAL BEHAVIOR IN MALES**

by

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THESIS

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of Wayne State University,

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Advisor

Date

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CHAPTER 1 INTRODUCTION

Violent and property crimes in the United States are estimated to cost victims \$450 billion annually (Miller, Cohen, & Wiersema, 1996, p. 794). The Office of Juvenile Justice and Delinquency Prevention reported that persons under the age of 18 accounted for 16% of all violent crime arrests and 26% of property crimes (Puzzanchera, 2009). Youth crime is part of the larger constellation of antisocial behavior. The terms “delinquency,” “conduct problems,” and “antisocial behavior” are often used analogously to describe behavior that “violates social norms or the rights of fellow human beings” (Park, Lee, Sun, Vazsonyi, & Bolland, 2010, p. 409). In this paper, delinquency and antisocial behavior will primarily be the terms used to describe norm-violating behavior. Given the serious financial and personal costs associated with juvenile delinquent behavior, the need for a greater understanding of the process through which antisocial behaviors develop is clear. This project examined deviant talk during peer conversations as a potentially mediating process between early adolescent characteristics and late adolescent antisocial behavior.

Peer Context

An extensive body of research has established aspects of peer networks as risk factors for the development of delinquent behaviors (for a review see Brechwald & Prinstein, 2011). In adolescence, youths have established peer networks with moderate stability that have consolidated around similar youth characteristics (Cairns, Leung, Buchanan, & Cairns, 1995; Cairns, Perrin, & Cairns, 1985). For example, aggressive youth tend to belong to peer networks with other aggressive youth (Cairns, Cairns, Neckerman, Gest, & Garipey, 1988). Furthermore, youths who establish friendships with delinquent youths have consistently been shown to be at

higher risk for antisocial behavior (Dishion & Owen, 2002; Lacourse et al., 2006; Monahan, Steinberg, & Cauffman, 2009).

Despite strong evidence showing a relationship between deviant friendships and antisocial behavior, studying how adolescent peers influence each other towards delinquent or non-delinquent behaviors has been difficult. Dishion and colleagues conducted a series of studies using direct observation of dyadic conversations between adolescent boys to investigate the socialization process (Dishion, Andrews, & Crosby, 1995). Discussions were coded as either normative talk or deviant talk. *Deviant talk* was defined as the discussion of index (e.g., vandalism) or statutory crimes (e.g., alcohol consumption), aggressive acts, lying, swearing, and rude gestures (Dishion, et al., 1995). In antisocial dyads, reinforcement in the form of laughing, smiling, and joking was found to be highly contingent on discussion of deviant topics. Similarly, antisocial dyads offered significantly less reinforcement when discussing non-deviant or prosocial topics than normative dyads (Dishion, Spracklen, Andrews, & Patterson, 1996). The differences in reinforcement contingencies for deviant talk were found to predict serious antisocial behavior such as violent crime (Dishion, et al., 1996). Deviant talk combined with peer reported delinquent behavior creates a *deviancy training* construct that has been shown to be a robust predictor of premature adolescent autonomy, promiscuity, substance use, and police arrests during adolescence (Dishion, Nelson, & Bullock, 2004; Patterson, Dishion, & Yoerger, 2000).

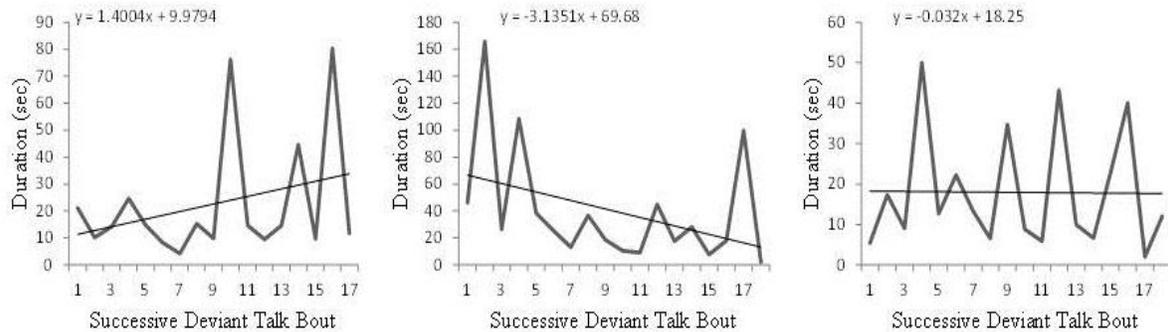
The majority of work on deviant talk within peer dyads has used an overall percentage of time dyads engaged in deviant talk as a predictor of antisocial behavior. One limit of this method is that it does not provide information on how conversations unfold during the course of an interaction. In dynamic systems theory, an infinite number of potential conversations are

possible; however, through repeated interactions conversations move towards a smaller number of more rewarding topics known as attractor states (Hollenstein, 2007). Granic and Dishion (2003) hypothesized that the discussion of antisocial behaviors would become rewarding and engrossing to such an extent that over the course of a single interaction antisocial youths would increasingly be drawn to deviant talk. To test this hypothesis, an attractor index of deviant talk was created. Each time one or both youths in a dyad engaged in deviant talk the duration of the deviant talk bout was recorded. The duration of each bout was then ordered from first to last. Conversations of antisocial adolescents had increasingly longer bouts of deviant talk, whereas normal peers had stable or decreasing lengths of deviant talk (Granic & Dishion, 2003). Figure 1 demonstrates idealized graphs of dyads with a positive deviant talk slope (figure left), negative slope (figure middle), and negative slope (figure right). The attractor index incrementally predicted over the mean amount of deviant talk for number of arrests, school expulsion, and drug abuse three years later while controlling for prior delinquency (Granic & Dishion, 2003). Conceptually, the attractor index of deviant talk adds to the literature on deviant talk on how conversations unfold between deviant dyads. Interestingly, the attractor index of deviant talk was uncorrelated with the mean duration of each bout supporting the index of attractor force as a distinct measure from the overall percentage of time engaged in deviant talk (Granic & Dishion, 2003).

In summary, deviant talk is defined as the discussion of illegal activities, violation of the rights of others, and gross behavior and has been shown to be a powerful predictor of antisocial behavior (Dishion, et al., 1996); however, multiple methods of conceptualizing and measuring deviant talk have been suggested (Granic & Dishion, 2003). The proposed study investigated the

relative predictive ability of a measure of mean duration of deviant talk and an attractor state index of deviant talk.

Figure 1. Hypothetical examples of time-series with positive (left), negative (middle), and flat (right) slopes.



Youth Characteristics

Multiple models of the development of adolescent antisocial behavior conceptualize early childhood characteristics as central risk factors that set the stage for maladaptive relationships and subsequent delinquent behavior (Dishion, Veronneau, & Myers, 2010; Dodge, Greenberg, Malone, & CPPRG, 2008). Dispositional traits such as daring and low prosociality (Lahey et al., 2008) along with cognitive deficits such as low verbal abilities (Moffitt, 1993) have been linked to antisocial behavior. However, few studies have focused explicitly on the relationship between youth characteristics and deviant peer socialization. In a study with kindergarten aged children, Snyder et al. (2008) found relations between measures of impulsivity-inattention, verbal skills, social display of emotions, peer rejection, and deviant peer affiliation predicted involvement in antagonistic and deviant peer processes; however, the relationship between adolescent characteristics and deviancy training has not yet been established.

Daring. A behavioral propensity for engaging in risky behaviors without thinking has been referred to as novelty seeking (Cloninger, Svrakic, & Przybeck, 1993), venturesomeness (Eysenck & Eysenck, 1977), sensation seeking (Zuckerman, 1994), and combinations of

impulsiveness and low self-discipline (Costa & McCrae, 1992). A rich research literature exists on impulsivity and closely related characteristics. For example, fearlessness at 2-years-old has been linked to conduct problems in early and middle childhood (Shaw, Gilliom, Ingoldsby, & Nagin, 2003). Also, Farrington and West (1993) found that a single item measuring ‘daring’ in adolescence was a robust predictor of future criminal offending. In early adulthood, sensation seeking is associated with stealing, drug use, and risky sexual behavior (Henderson et al., 2004; Newcomb & McGee, 1991). The importance of impulsivity is highlighted by its inclusion as one of five broad personality traits included in the diagnostic system for the Diagnostic and Statistical Manual for Mental Disorder upcoming fifth edition (DSM-V; American Psychiatric Association).

For children and adolescents, a recent dispositional model by Lahey and Waldman (2003) proposed a factor labeled “daring” as a risk factor for conduct problems. This component describes youths who have positive responses to novel and risky situations. Daring is proposed to be related to delinquency through increased rates of an approach response to high-risk situations. However, this association does not fully explain how daring leads to delinquency instead of lawful, high-intensity activities. One possibility is that daring youths are influenced toward delinquency through approach responses during social interactions, particularly with peers. Thus, a specific route from daring to antisocial behavior could involve delinquent peer influences. Therefore, this study investigated both the direct path from daring to antisocial behavior and the indirect path through deviant peer influence.

Prosociality. Prosociality has been defined as “sympathetic concern for others, helping and sharing, respect for social rules, and guilt over misdeed” (Lahey, et al., 2008, p. 794). High prosociality has been found to be positively related to compliance with adult commands (Lahey,

et al., 2008) and negatively related to antisocial behavior in adolescence (Trentacosta, Hyde, Shaw, & Cheong, 2009). Conceptually, prosociality is the opposite of Frick's description of callous-unemotional traits: low guilt, low empathy, and superficial display of emotion (Frick & White, 2008). Evidence suggests that youths with an arrogant and deceitful interpersonal style are at higher risk for particularly violent and chronic criminal behaviors (Frick & Dickens, 2006). Callous-unemotional traits are associated with increased self-report of delinquency, increased number of arrests, and increased risk for antisocial personality disorder symptoms up to seven years later (McMahon, Witkiewitz, Kotler, & CPPRG, 2010).

Prosociality is believed to assist in the development of adaptive social bonds and increase the subjective experience of praise for appropriate behavior (Lahey, et al., 2008). Increased social bonds and appreciation of praise for appropriate behavior are likely contributors to the decrease in antisocial behavior from childhood to adolescence found by Broidy et al. (2003). In contrast, it is likely that youth with low prosociality fail to form adaptive social bonds. Instead, they may form peer relationships that promote delinquent rather than adaptive behavior. Therefore, this study examined the hypothesis that prosociality has an indirect link to antisocial behavior through deviant peer influence.

Verbal ability. In addition to early adolescent personality characteristics, child verbal abilities are important to consider in predicting future involvement with delinquent peers and antisocial behavior. The relationship between intellectual functioning and juvenile delinquency is well established (Hirschi & Hindelang, 1977; Moffitt, 1993; Tremblay, Pihl, Vitaro, & Dobkin, 1994), and within intellectual functioning, verbal ability deficits are the most consistently associated with antisocial behavior (Lahey, Loeber, Burke, & Rathouz, 2002; Moffitt, Lynam, & Silva, 1994; Snow & Powell, 2008). A number of hypotheses have been tested to explain the

relationship between verbal ability and antisocial behavior. The association cannot be accounted for by race, class, observed test motivation, child abuse, head injury, or ADHD (Lynam, Moffitt, & Stouthamer-Loeber, 1993; Raine et al., 2005).

One possible explanation is that verbal abilities serve as a general protective factor (Lahey et al., 2002). From this hypothesis, youths with low verbal abilities would be more susceptible to deviant influences which in adolescence would likely come from peers. McGloin, Pratt, and Maahs (2004) found support for a two step mediation model in which low verbal ability leads to school failure which in turn leads to deviant peer associations and then to antisocial behavior. In a similar vein, the current study tested the hypothesis that low verbal ability is indirectly associated with antisocial behavior through deviant peer influence.

Other Risk Factors for Antisocial Behavior

Numerous factors other than individual youth characteristics and the peer context have been identified as predictors of adolescent conduct problems. Adverse social contexts, including neighborhood dangerousness, predict early-starting antisocial trajectories (Ingoldsby et al., 2006). The social context is also composed of important relationships between children and their caregivers. Low parental monitoring, in particular, has shown to be related to misconduct in adolescence (Laird, Pettit, Dodge, & Bates, 2003). Early conduct problems also serve as an important factor to consider because many youths demonstrate persistent levels of aggressive and antisocial behavior across childhood and adolescence (Broidy, et al., 2003). Therefore, this study considered neighborhood dangerousness, parental monitoring, and early externalizing problems as predictors of antisocial behavior in models of the associations among youth characteristics, deviancy training, and antisocial behavior during adolescence.

The Proposed Study

Social networks, and peer networks in particular, have been emphasized in models of the development of antisocial behavior (e.g., Granic & Patterson, 2006; Xie, Swift, Cairns, & Cairns, 2002). Youth dispositional characteristics and verbal abilities have also been linked to antisocial behavior (Lahey, et al., 2008; Moffitt, et al., 1994); however, dispositional traits and verbal ability have not been studied in conjunction with deviancy training in adolescence. The proposed analyses used data from an ongoing study of the development of at-risk male adolescents to evaluate three aims. The first aim was to examine the predictive ability of adolescent characteristics and deviant talk on antisocial behavior while controlling for family income, neighborhood dangerousness, parental monitoring, and earlier externalizing problems. High daring, low prosociality, low verbal ability, and deviant peer influence were expected to each be significantly and uniquely associated with antisocial behavior in late adolescence. The second aim of this study was to investigate the role of deviant talk as a mediator of the associations between prosociality, daring, and verbal ability and antisocial behavior. It was predicted that each adolescent characteristic would have significant direct and indirect effects on antisocial behavior. The third aim of this study was to simultaneously examine and compare two measures of deviant talk as predictors of antisocial behavior: (1) deviant talk as traditionally measured using percentage of deviant talk duration and (2) a dynamic systems index of deviant talk attractor force based on the procedures outlined in the study by Granic and Dishion (2003). At an exploratory level, moderation between youth characteristics when predicting antisocial behavior was also examined.

Chapter 2 METHOD

Participants

Participants were drawn from a larger, ongoing study of childhood resilience and vulnerability in low-income families, the Pitt Mother and Child Project (PMCP). In 1991 and 1992, mothers with infant boys between the ages of 7 and 17 months ($N = 310$) were recruited from Women, Infants, and Children Nutrition Supplement Clinics in Allegheny County, PA. A detailed description of the PMCP study has been previously published (Shaw, et al., 2003). At the first assessment, the sample was 53% European American, 36% African American, 5.7% biracial and 6% were other races (e.g., Hispanic American or Asian American). The current study examined data from late childhood and adolescence for a subsample of 178 youths who participated in a peer interaction task at age 15.

Procedures

Target youths and their primary caregiver participated in 2- to 3- hour visits at ages 11, 12, 15, and 17 years. Mothers were the primary caregiver for 90% of the target children. Data were collected in the laboratory at age 11 and at home at ages 12, 15, and 17. During the visits, mothers and target children completed surveys on family demographics, neighborhood factors, family issues, child behavior, and youth characteristics. In addition, the target child participated in an assessment of verbal ability at age 11, and a peer interaction task was completed at age 15. All study measures and procedures were approved by the University of Pittsburgh Institutional Review Board. All participants (caregivers, target children, and peers) were reimbursed for their time.

Measures

See Appendix A for copies of primary measures.

Prosociality (age 12). The Child and Adolescent Disposition Scale (CADS) is composed of items describing an emotion or behavior of the youth and how often it occurred during the

previous 12 months (Lahey, et al., 2008). Ratings were available for 86% of the primary caregivers and 85% of the adolescents. The primary caregiver and adolescent independently rated the child on a 4-point rating scale, ranging from 1 (*not at all*) to 4 (*very much/very often*) ratings. An example of an item from the prosociality scale is “do you (does he) feel bad for other children your (his) age when they get hurt?” Primary caregivers responded to 10 items, and target adolescents responded to 9 items. The caregiver and adolescent reports were then converted to z-scores and aggregated to form a composite score. The correlation between primary caregiver and adolescent report was moderate ($r = .23, p < .001$). The same procedure for aggregating child and parent reports on the CADS has been used previously with the same dataset (Trentacosta, et al., 2009).

Daring (age 12). Daring was measured from the CADS using 5 items from the primary caregiver report and 5 items from the target adolescent report. Example items include “are you (is he) daring and adventurous,” and “does he (you) like things that are exciting and loud?” Composite scores were created for daring by averaging ratings from the primary caregiver and target adolescent. The aggregating of primary caregiver and adolescent reports was supported by moderate correlations for daring ($r = .36, p < .001$).

Verbal ability (age 11). Child verbal ability was estimated at age 11 using a laboratory assessment from the Vocabulary subtest from the Wechsler Intelligence Scale for Children-III (WISC-III; Wechsler, 1991). The Vocabulary subtest was selected because of its high average correlation with Full Scale IQ and the high test-retest reliability and internal consistency (Sattler, 1992). Administration was completed by trained research assistants who completed didactic training sessions and video-taped administration with non-study children.

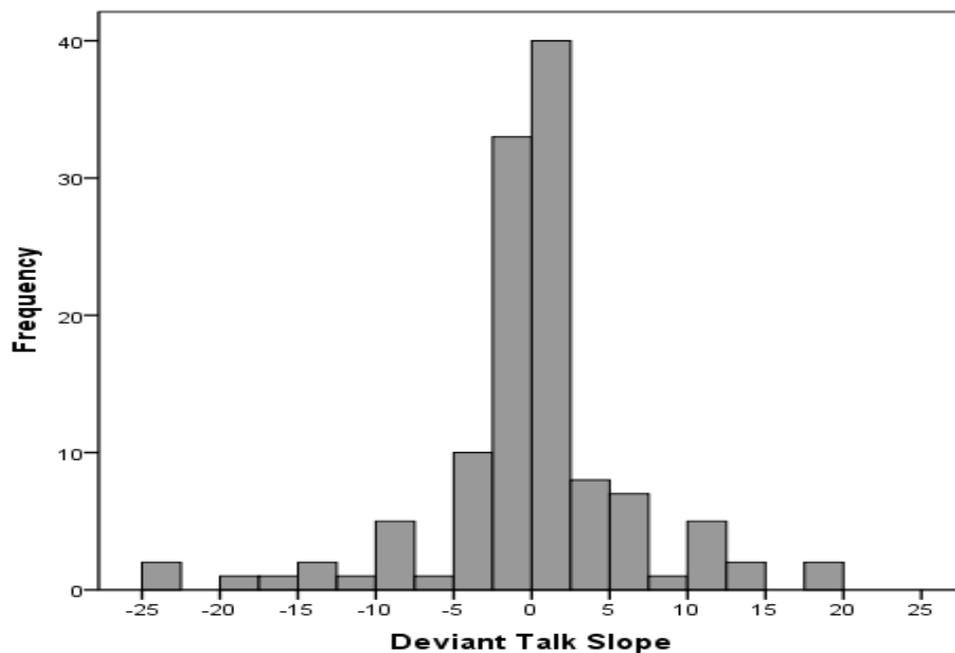
Deviant talk (age 15). At age 15, target youths invited a friend to participate in a 20 minute, video-taped discussion. Each dyad was given cue cards and told to discuss four topics for 5 minutes each: (1) plan an activity; (2) current problems for target youth; (3) current problems for peer; and (4) plan a party. Conversations were coded from the video-recorded interactions by trained research assistants as either *deviant talk* or *normative talk* using the Norm Topic Code: A System for Coding Topics and Reactions in Friendship Dyads (unpublished manual, Piehler & Dishion, 2005).

Deviant talk was coded for all verbal and nonverbal communication that violated laws, social norms, or was inappropriate for the setting. Conversation topics coded as deviant included index (robbery) and statutory (drinking) crimes. Obscene language and gestures such as giving the camera the finger were coded as deviant. Demeaning or victimizing discussion of others was also coded as deviant; for example, “We should beat him up on Monday” or “That girl is a dog” were coded as deviant. Additionally, conversation or behavior that was inappropriate for the setting such as discussion of stealing the video camera or mooning the camera was coded as deviant. Discussion of delinquent or deviant behavior that was not in support of the behavior was coded as normative talk. In addition, discussion of delinquent behaviors as a problem was not coded as deviant. Assessment of inter-rater reliability was not available for this study.

Two variables were created from the observed peer interactions. Deviant talk was first measured as an overall percentage of time spent in deviant talk. This variable is consistent with observational studies that collapse across time. Deviant talk was also measured as an attractor state for conversations by calculating the slope of deviant talk bouts engaged in throughout the task. A time-series plot was created for each dyad with the bouts of deviant talk along the x-axis and the duration of each bout on the y-axis. A slope was then assigned to the plot using linear

regression. At least two bouts of deviant talk were required to calculate a slope which reduced the sample size for analyses using the deviant talk slope variable to 121 participants. The subsample of participants with two or more bouts of deviant talk was then compared to the overall subsample of 178 participants to determine if they differed on the study variables. The only significant difference between participants with two or more bouts of deviant talk from participants with fewer than two bouts was on the percentage of time spent engaging in deviant talk, $t(176) = 6.75, p < .001$. Participants with a deviant talk slope did not differ from the larger subsample on any other study variables. Figure 2 shows a frequency chart for the deviant talk slopes. The deviant talk slope mean was .01, and the standard deviation was 6.35.

Figure 2. Distribution of values for the slope index of deviant talk bouts



Antisocial behavior. Three separate measures were used as indexes of antisocial behavior. During the home visit at age 15 primary caregivers and the target youths were administered the Schedule for Affective Disorders and Schizophrenia for School Aged Children

(K-SADS; Kaufman, Birmaher, Brent, & Rao, 1997). The K-SADS is a semi-structured interview that assesses internalizing and externalizing disorders as defined by the DSM-IV (American Psychiatric Association [DSM-IV], 2000). The same examiner independently interviewed both the mother and adolescent and made a clinical judgment on any disagreements. Prior to data collection, each examiner participated in extensive training at the Western Psychiatric Institute and Clinic or was trained by a doctoral-level clinical psychologist who had attended the training. Every case that approached or met diagnostic criteria was discussed with the other interviewers and Daniel S. Shaw, a licensed clinical psychologist with 18 years experience using the K-SADS. A continuous measure of Conduct Disorder symptomatology was created by summing the 15 possible symptoms that range from aggression against others to theft and destruction of property (American Psychiatric Association [DSM-IV], 2000).

Self-reported adolescent antisocial behavior was measured at age 17 using an adapted version of the Self Report of Delinquency Questionnaire (SRD) developed by Elliott, Huizinga, and Ageton (1985). The SRD assesses the frequency with which an individual has engaged in aggressive and delinquent behavior, alcohol and drug use, and related offenses during the prior year. 62 items were rated on a 3-point scale of 1 (*never*) 2 (*once/twice*), or 3 (*more often*). Examples of specific items include “received an in-school detention,” “thrown rocks or bottles at people,” and “secretly taken a sip of beer.” Scaled scores were created by averaging across responses. Internal consistency was high ($\alpha = .92$).

Court records from the primary county in which the participants resided (Allegheny, PA) were collected to assess each boy’s involvement with the legal system. When available, records from other counties in which the other participants lived were obtained. Court records were last obtained in 2009 when the boys were between 17 and 19 years old. The number of petitions,

including failure to comply with court orders, was summed to create a continuous measure of contact with the legal system. Court data were available for 93% of the 178 youths that participated in the peer interaction task. Of the boys with data, 40% had at least one petition against them.

Covariates. Parent monitoring of the adolescents' whereabouts at age 12 was collected as part of an interview developed at the Oregon Social Learning Center (Dishion, Patterson, Stoolmiller, & Skinner, 1991). Items included parental monitoring of after school activities and plans for the following day. Confirmatory factor analysis supports the five item scale. An example item is "How often does at least one of your parents know where you are after school?" The boys' answers were recorded on a 5-point response scale ranging from 1 (*never or almost never*) to 5 (*always or almost always*). The internal consistency of the scale is adequate ($\alpha = .60$).

Neighborhood dangerousness was assessed via primary caregivers' reports on the Me and My Neighborhood questionnaire which was an adaption from the City Stress Inventory (Ewart & Suchday, 2002). Seven items using a 4-point response scale, ranging from 0 (*never*) to 3 (*often*), were used to form an exposure to violence scale. The scale demonstrated adequate internal consistency ($\alpha = .79$).

Primary caregivers completed the Child Behavior Checklist (CBCL; Achenbach, 1991) for the target youth each year from age 5 to 10. In addition alternate caregiver reports were obtained when possible, and teacher ratings were obtained using the Teacher Report Form (TRF). An Externalizing factor on the CBCL includes broad-band problems such as "argues a lot," "gets in many fights," and "lying or cheating." Similar items are found on the TRF. All responses are rated on a 3-point scale from 0 (*not true*) to 2 (*very true or often true*). Internal consistency for the CBCL and TRF Externalizing factors demonstrated good internal reliability

across middle childhood (α s ranged from .88 to .91 for primary caregiver reports, from .87 to .94 for alternate caregivers, and from .95 to .97 for teacher reports). Reports were standardized and averaged across reports and time-points to create a single measure of middle childhood externalizing problems.

Chapter 3 RESULTS

Descriptives

Preliminary analysis included an examination of descriptive statistics for study variables (see Table 1). Externalizing behavior, prosociality, and daring are presented as z-scores. Verbal ability, which is measured by a modified administration of the WISC-III Vocabulary subtest, is presented as a scaled score. The study variables were examined for outliers and distribution shape. Neighborhood dangerousness, deviant talk mean, the number of court petitions, self-reported delinquency, and the number of conduct disorder symptoms were positively skewed. Log transformations were performed on each of the variables to correct for skew. Family monthly income was converted to a z-score to reduce the number of iterations needed to reach convergence during model estimation in Mplus. For deviant talk slope two participants' data were identified as outliers with z-scores of -8.72 and 3.16. Each value was transformed to the next value closest to the mean.

The subsample of 178 adolescents with peer interaction data were compared to the full sample for differences on all study variables as well as key demographic variables (e.g., maternal education). No significant differences were found on child age, primary caregiver education, family income, or any study variables (t -scores ranged from $t(255) = -1.85$ to $t(234) = .59$; p -values ranged from .065 to .82). Overall, 8.3% of the data points were missing for the sample of 178 participants. To determine if the data were missing in a random or non-random way, Little's

missing completely at random (MCAR) test was conducted in SPSS 18 (Little, 1988). A non-significant chi-square was found which supports treating the data as missing completely at random $\chi^2(253, 178) = 161.97, p = .35$.

Table 1

Means and Standard Deviations

Variable	N	Range	<i>M</i>	<i>SD</i>
Covariates				
Parental Monitoring	155	1.40 to 5.00	4.19	.70
Externalizing Behavior Age 5 - 10	174	-1.41 to 2.84	-.04	.78
Neighborhood Dangerousness	150	.00 to 57.86	7.94	1.81
Family Income (\$/month)	176	389 to 9583	2962.98	1867.45
Predictors				
Prosociality (combined report)	155	-2.40 to 1.75	.018	.74
Daring (combined report)	155	-2.37 to 2.00	-.03	.80
Verbal Ability	150	1 to 18	9.18	3.21
Deviant Talk (%)	178	.00 to 57.86	7.94	8.88
Deviant Talk Slope	121	-12.73 to 19.37	0.01	6.35
Antisocial Behavior				
Court Petitions	166	0 to 7	.95	1.681
CD Symptom Count	169	0 to 9	.96	1.66
Self-Report Delinquency	167	0 to 59	13.27	11.97

Correlations

After data screening and transformations, bivariate correlations were created for all study variables (see Table 2). Among the youth characteristics, daring was not significantly correlated with prosociality or verbal ability. Prosociality and verbal ability had a significant positive correlation. As hypothesized, there were significant correlations between prosociality and deviant talk; however, the relationships between verbal ability and daring with deviant talk was non-significant. The correlation between the mean amount of time spent in deviant talk and the slope of variable was non-significant which is consistent with previous research (Granic & Dishion, 2003). The bivariate correlations between deviant talk slope and the other study variables were also non-significant. The correlations between the outcome variables (court

Table 2

Bivariate Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Monthly Income	--										
2. Externalizing	-0.19*	--									
3. Neighborhood Dang	-0.04	0.26*	--								
4. Parental Knowledge	0.11	-0.17*	-0.10	--							
5. Prosociality	0.12	-0.20*	-0.13	0.46***	--						
6. Daring	-0.04	0.20*	-0.07	-0.005	0.04	--					
7. Verbal Ability	0.21*	-0.21*	-0.21*	0.25***	0.18*	-0.02	--				
8. Deviant Talk	-0.09	0.07	-0.006	-0.15	-0.17*	0.13	-0.09	--			
9. Dev Talk Slope	0.15	0.02	-0.06	-0.03	0.11	0.05	0.05	0.18	--		
10. Court Petitions	-0.20*	0.35***	0.37***	-0.16	-0.14	0.19*	-0.36***	0.27***	0.01	--	
11. CD Symptoms	-0.17*	0.29***	0.25***	-0.13	-0.13	0.25***	-0.20*	0.20***	-0.11	0.57***	--
12. Self-Report Delin	0.05	0.12	0.11	-0.05	-0.11	0.25***	-0.07	0.19*	0.02	0.27***	0.51**

Note: Bivariate correlations presented for transformed variables. * $p < .05$, ** $p < .01$

ns, conduct disorder symptoms, and self-report of delinquency) were statistically significant and in the moderate to high range, supporting the creation of a latent construct.

Model estimation

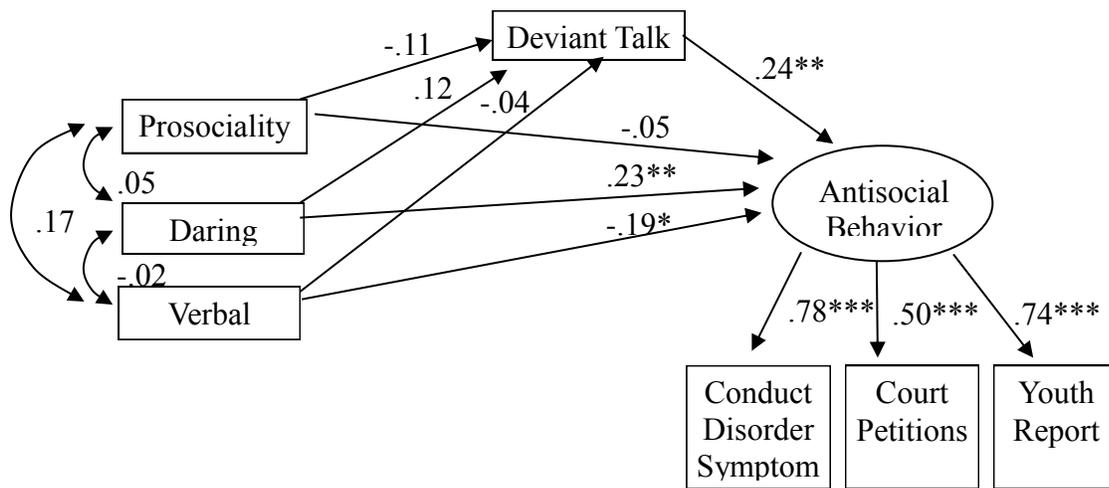
All models were run in Mplus 6.0 (Muthén & Muthén, 2010). Maximum likelihood estimation with robust standard errors (MLR) was used to account for missing data because it is robust to non-normality (Yuan & Bentler, 2000). Multiple indices were used to assess model fit. The chi-squared goodness of fit tests the specified model, and a non-significant value supports model fit (Hu & Bentler, 1993). A Root Mean Square Error of Approximation (RMSEA) below .06 supports model fit. Adequate model fit is also indicated with Comparative Fit Index values higher than .90 (CFI; Bentler, 1990). Indirect effects were calculated using the default setting in Mplus which utilize the delta method (MacKinnon, 2008).

Prior to model testing a measurement model was run to test the factor structure of antisocial behavior. Loadings for conduct disorder symptoms, court petitions, and self-reported delinquency were estimated. The latent construct was then allowed to correlate with the manifest variables (prosociality, daring, verbal ability, and percent deviant talk). Model fit was adequate, $\chi^2(8, N = 178) = 12.85, p = .11, RMSEA = 0.08, CFI = .92$. The loadings for each of the indicators of antisocial behavior were significant and in the expected direction, which supported the construction of the latent construct.

Three groups of models were conducted to test the hypothesis that youth characteristics associated with antisocial behavior have indirect effects through peer influence. The first set of models calculated peer influence as the percentage of time the target youth and a peer engaged in deviant talk. Model 1 estimated direct paths from prosociality, daring, and verbal ability to a latent factor of antisocial behavior (see Figure 3). Indirect paths were also included from

prosociality, daring, and verbal ability through percent deviant talk to antisocial behavior. The model controlled for family income, childhood externalizing behavior, parental monitoring, and neighborhood dangerousness. Fit indices suggested poor overall model fit $\chi^2(34, N = 178) = 39.30, p < .001, RMSEA = 0.09, CFI = .86$. Based on the path coefficients, the model supported direct paths from daring, verbal ability, and percent deviant talk to antisocial behavior. The direct

Figure 3. Initial model of youth characteristics as predictors of antisocial behavior with the average amount of time spent in deviant talk as a mediator.



Note. Standardized path coefficients and loadings are presented in the figure. Model controls for parental monitoring, earlier externalizing behavior, neighborhood dangerousness, and family income (\$/month). * $p < .05$, ** $p < .01$, *** $p < .001$

path from prosociality to antisocial behavior was not statistically significant. The model accounted for in 42% of the variance in antisocial behavior. Testing for indirect effects from youth characteristics to antisocial behavior through percent deviant talk were non-significant for prosociality ($B = -.03, SE = .023, p = .23$), daring ($B = .03, SE = .02, p = .20$), and verbal ability ($B = -.009, SE = .02, p = .68$). The estimated relationships for youth characteristics and covariates accounted for only 5% of the variance in percent deviant talk. Conduct disorder symptoms, court petitions, and youth report of antisocial behavior had significant loadings on the

latent construct of antisocial behavior and in the expected directions. The latent construct accounted for 55% of the variance in number of court petitions, 61% in conduct disorder symptoms, and 25% in self-report of delinquency. Among the covariates, childhood externalizing behavior ($B = .18, SE = .07, p < .05$) and neighborhood dangerousness ($B = .29, SE = .09, p < .01$) significantly predicted antisocial behavior. The paths from family income ($B = -.12, SE = .07, p = .10$) and parental knowledge ($B = .01, SE = .1, p = .91$) failed to reach statistical significance.

Interactions among youth characteristics were also explored. Three separate interactions were tested: prosociality by daring, prosociality by verbal ability, and daring by verbal ability. No statistically significant interactions were found between the youth characteristics when predicting antisocial behavior (see Table 3).

Table 3

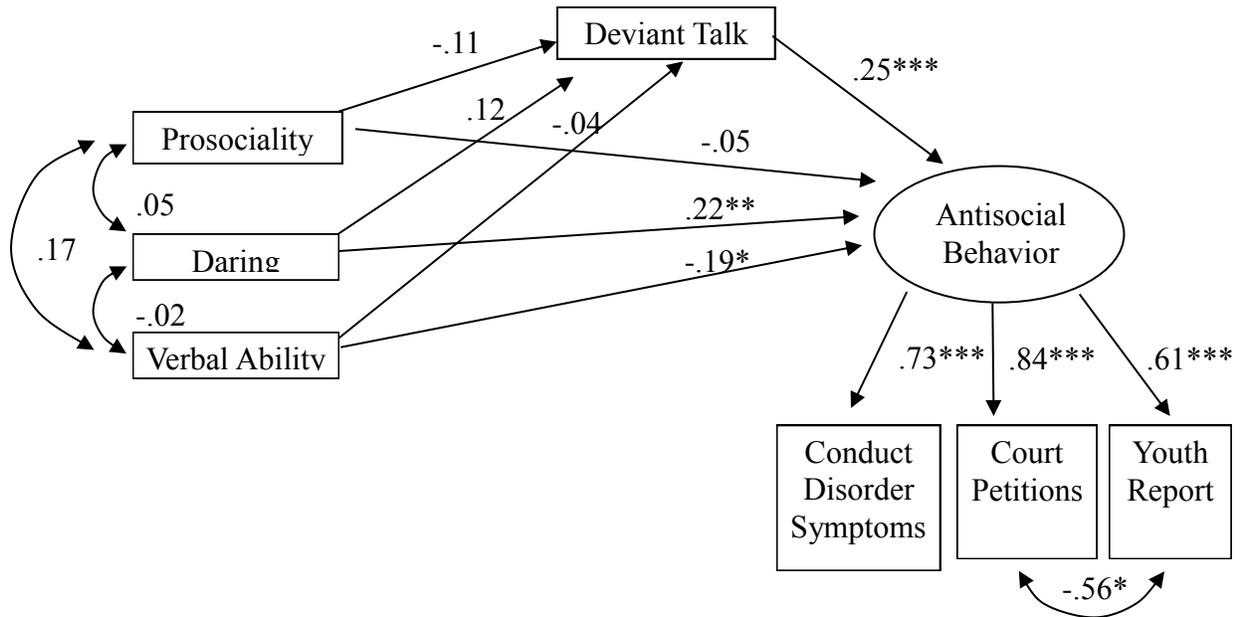
Interactions of Youth Characteristics as Predictors of Antisocial Behavior

		<i>B</i>	<i>SE</i>	<i>P</i>
1.	Prosociality	-.16	.06	.007
	Daring	.21	.06	.001
	Prosocial X Daring	-.15	.09	.09
2.	Prosociality	-.18	.22	.42
	Verbal Ability	-.04	.02	.007
	Prosocial X Verbal Ability	.008	.02	.67
3.	Daring	.22	.17	.19
	Verbal Ability	-.05	.02	.003
	Daring X Verbal Ability	-.006	.02	.70

Modification indices produced by Mplus indicated that model fit would improve if the error term of self-report of delinquency was allowed to correlate with the error term of the number of court appearances (see Figure 4). The addition of this relationship resulted in adequate

model fit $\chi^2(15, 178) = 24.18, p = .06, RMSEA = .06, CFI = .94$. The modified model accounted for 38% of the variance in antisocial behavior. The modification did not affect the statistical

Figure 4. Modified model of youth characteristics as predictors of antisocial behavior with the average amount of time spent in deviant talk as a mediator.



Note . Standardized path coefficients and loadings are presented in the figure. Model controls for parental monitoring, earlier externalizing behavior, neighborhood dangerousness, and family income (\$/month). * $p < .05$, ** $p < .01$, *** $p < .001$

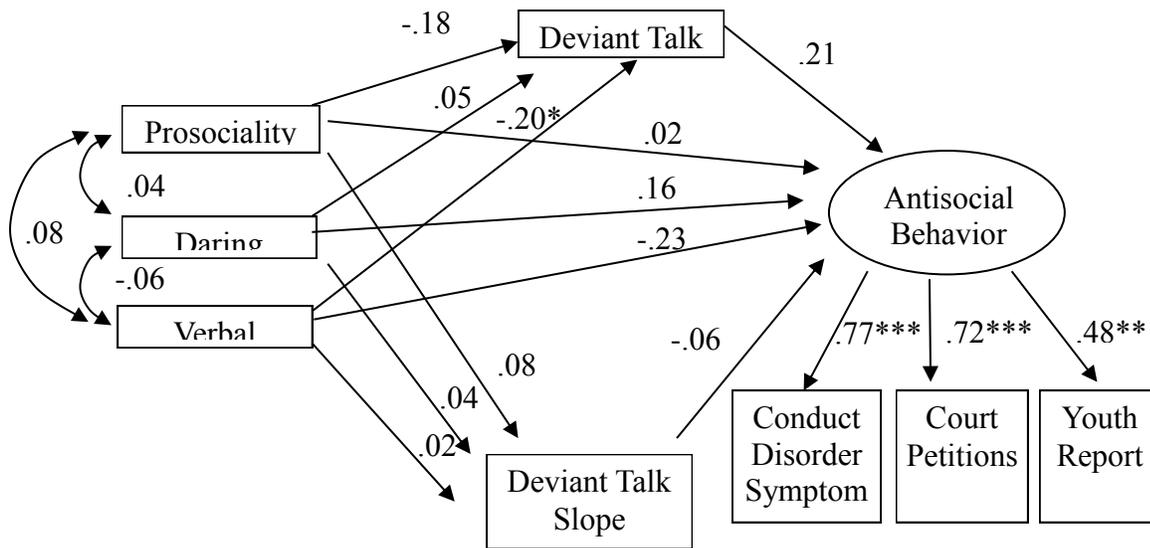
significance of the relationships between the youth characteristics, percent deviant talk, and antisocial behavior. The direct paths from daring, verbal ability, and percent deviant talk to antisocial behavior remained significant, and the path from prosociality to antisocial behavior remained non-significant. The direct paths from the youth characteristics to percent deviant talk remained non-significant, and the indirect paths from youth characteristics to antisocial behavior remained non-significant. The modification, correlating court petitions and youth report, revealed a significant, negative relationship. The variance accounted for in each of the indicator variables changed. The change in variance accounted for from Figure 3 to the modified model

was 25% to 37% for self-reported delinquency, 55% to 70% for court petitions, and 61% to 53% for conduct disorder symptoms. The modifications to Figure 3 resulted in increased model fit, but the relationships among the study variables were not changed. No further modifications were conducted given that the goodness of fit indexes are less likely to provide a valid estimate of model fit after modifications (MacCallum, Wegener, Uchino, & Fabrigar, 1993).

In Figure 5, both percent deviant talk and deviant talk slope were included. In order to calculate slopes, only participants with at least two bouts of deviant talk were included in this analysis which reduced the sample from 178 to 121 participants. Direct paths were estimated from prosociality, daring, verbal ability, percent deviant talk, and deviant talk slope to antisocial behavior. Separate indirect paths were also specified from the three youth characteristics through percent deviant talk and deviant talk slope to antisocial behavior. Similar to the first model, family income, childhood externalizing behaviors, neighborhood dangerousness, and parental monitoring were included as covariates. Multiple fit indices indicated poor overall model fit $\chi^2(17, N = 121) = 21.18, p = .03, RMSEA = 0.09, CFI = .89$. Self-reported delinquency, court petitions, and conduct disorder symptoms had significant loadings on the latent construct of antisocial behavior. The variance accounted for in the indicators was 51% for court petitions, 59% for conduct disorder symptoms, and 23% for self-reported delinquency. The direct paths from youth characteristics and percent deviant talk to antisocial behavior were non-significant. Among the covariates, the direct paths to antisocial behavior were significant for childhood externalizing behaviors ($B = .20, SE = .10, p < .05$) and neighborhood dangerousness ($B = .25, SE = .12, p < .05$). The model accounted for 38% of the variance in antisocial behavior. The path from verbal ability to percent deviant talk was significant. Among the covariates, there was a significant relationship between childhood externalizing behaviors and percent deviant talk.

There were no significant direct paths to deviant talk slope. The model accounted for 13% of the variance in percent deviant talk and 4% of the variance in deviant talk slope. The indirect paths from prosociality, daring, and verbal ability to antisocial behavior through percent deviant talk and deviant talk slope were not statistically significant.

Figure 5. Model controls for monthly income, early externalizing behaviors, and exposure to violence in the neighborhood.



Note. Standardized path coefficients and loadings are presented in the figure. Model controls for parental monitoring, earlier externalizing behavior, neighborhood dangerousness, and family income (\$/month). * $p < .05$, ** $p < .01$, *** $p < .001$.

Chapter 4 DISCUSSION

Previous research has shown links between (low) prosocial behavior, daring, and (low) verbal ability with antisocial behavior. Cascade models of development from early childhood to early adulthood typically include deviant peer influence as a step between earlier risk and later antisocial behavior (e.g., Dodge, et al., 2008). The current study was conducted to replicate and expand on previous research in two ways. First, the current study looked at youth characteristics

at a developmental stage that is more proximal to adolescence. Second, direct observations of adolescent interactions were used to measure deviant influence. Multiple methods were implemented to calculate deviant talk including an overall percentage of time engaged in discussion of delinquent behavior. This calculation of deviant talk is in-line with previous studies (Dishion, et al., 1995; Dishion, et al., 1996). In order to understand the interactions as a process, a slope measure of deviant talk was also calculated to provide an index of each dyad's tendency to become increasingly focused on discussion of deviant topics over the course of the interaction. The deviant talk slope variable is based on dynamic systems principles (Hollenstein, 2007) and has previously been shown to be a prospective predictor of antisocial behavior (Granic & Dishion, 2003).

The first aim of this study was to examine the predictive ability of youth characteristics and deviant peer influence on antisocial behavior. Significant relationships were found between daring and verbal ability with antisocial behavior. Notably, daring and verbal ability were significant predictors of antisocial behavior while controlling for parental monitoring, neighborhood dangerousness, family income, childhood externalizing behaviors, prosociality and deviant talk. Additionally, correlations between the youth characteristics were non-significant or low, thus supporting daring and verbal ability as independent risk factors for antisocial behavior. The findings are consistent with a large body of literature that links concepts similar to daring to antisocial behavior (Caspi, Henry, McGee, & Moffitt, 1995; Lahey, et al., 2008). The association between verbal ability and antisocial behavior is also consistent with Moffitt's (1993) hypothesis of links between neuropsychological deficits and antisocial behavior. The link between verbal IQ deficits and juvenile delinquency is well established (e.g., Brennan, Hall, Bor, Najman, & Williams, 2003; Lynam, et al., 1993); however, this study adds to the literature by

demonstrating that verbal ability remains an important factor in predicting antisocial behavior even while controlling for numerous known risk factors. The link found between the tendency to engage in conversations about delinquent topics (deviant talk) and antisocial behavior is also consistent with previous observational studies (Dishion, et al., 1995; Dishion, et al., 1996; Granic & Dishion, 2003).

The second aim of this study was to examine deviant peer influence as a potential mediator between youth characteristics and antisocial behavior. Numerous variables are known to predict antisocial behavior, but questions remain about the process through which risk factors operate to produce maladaptive behaviors. The mediational models tested in this study did not support indirect paths from youth characteristics to antisocial behavior through either of the deviant talk variables. The findings suggest that high daring, low verbal ability, and high deviancy training constitute significant risk factors but through different routes. Caution is necessary when interpreting the results due to the poor model fit of the initial path model; however, the current study does underscore the need to attend to multiple domains of risk when examining predictors of antisocial behavior.

Theorists have previously proposed biopsychosocial models of delinquent and antisocial behavior in which risk is conferred by maladaptive functioning across multiple domains (e.g., Dodge & Pettit, 2003). Although the current study investigated multiple domains of risk as predictors of antisocial behavior, it lacked a fully integrative approach because neurobiological and physiological predictors were not included. Recent reviews suggest that biological markers play a central role in the development of aggression and antisocial behavior (Van Goozen, Fairchild, Snoek, & Harold, 2007). For example, a 5-year longitudinal study found low levels of cortisol was predictive of low levels of self control and high levels of aggression (Shoal et al.,

2003), and a meta-analysis of autonomic system activity found that aggressive youths have lower heart-rates while resting and during stressors (Ortiz & Raine, 2004). In addition to allowing a more complete examination of a biopsychosocial model of the development of antisocial behavior, the addition of biological measures to the present study could have provided further insight on how deviant peer dynamics unfold at neurobiological or psychophysiological levels.

The temporal relationship of variables is also an area of research that needs to be examined. Dynamic systems theory complements biopsychosocial models by trying to define and quantify the relationships of variables over macro and micro timescales. The application of dynamic systems theory and related analytic approaches to understand the development of antisocial behavior has been summarized by Granic and Patterson (2006). The current study sought to replicate one of the existing dynamic systems techniques by creating an index of deviancy training as an organizing feature of conversations. Furthermore, the third aim of this study was to compare two methods of conceptualizing and calculating discussion of deviant topics among adolescents. The first method, percent deviant talk, was a simple percentage of time. This calculation of deviant talk collapses information across time, but it has been shown to predict adolescent problem behavior (Dishion, et al., 1996). Granic and Dishion (2003) reconceptualized deviant talk as a dynamic, organizing property of conversations. In the current study, comparison of the percent of time spent in deviant talk and a process measure of deviant talk failed to reveal significant relationships between either deviant talk measure and youth characteristics. Further evidence that the deviant talk slope measure was a poor predictor can be found in non-significant bivariate correlations between the deviant talk slope variable and the three variables (court petitions, conduct disorder symptoms, and self-reported delinquency) that comprised the antisocial behavior latent construct.

A number of factors could have attenuated the relationship between deviant talk slope and antisocial behavior. The slope measure is inherently a ‘noisy’ measure. A single extended bout of deviant talk could heavily influence the magnitude and direction of the slope variable. Additionally, the requirement of two or more bouts of deviant talk reduced the sample size for the path model that included the slope variable. It should be noted that in the previous study that utilized a similar measure, four or more bouts of deviant talk were required to create stable slope estimates (Granic & Dishion, 2003). A similar requirement could not be used in this study due to sample size constraints. Also, other dynamic systems analytic approaches, such as state space grids, were not appropriate for the present data. State space grids are used to graphically represent two variables over a time series. Data can then be generated to examine dynamic systems measures of transitions between dyadic states and dispersion across dyadic states (Hollenstein, 2007). Within adolescent dyads, state space grids have been used to show that the organization of conversations for aggressive dyads is different from the organization of conversations for non-aggressive dyads (Dishion, Nelson, Winter, & Bullock, 2004). Examination of conversation slopes for non-deviant topics may also be of theoretical interest within a dynamic systems framework. However, the current study was limited to the use of deviant talk slope due to the lack of reliability on codes other than the core distinction between “deviant” versus “non-deviant” conversation topics during the peer interaction. “Non-deviant” was not able to be examined as an attractor index because the vast majority of all conversations were non-deviant (i.e., on average, approximately 8% of peer dyads’ time was spent engaging in deviant talk; thus, 92% of conversations were non-deviant).

Limitations and Future Directions

In addition to the methodological and analytic considerations noted above, this study contained a number of other limitations. The research on deviancy has been conducted almost exclusively with boys, and the current study was also limited by not including girls. The small literature on deviancy training which includes males and females suggests that training occurs in female adolescents, but to a lesser degree (Dishion & Skaggs, 2000; Granic & Dishion, 2003; Piehler & Dishion, 2007). Questions that could be addressed in future research include whether males' and females' conversations are organized around different factors. It is also important to note that participants were recruited during early childhood from low-income communities deemed to be at high-risk for antisocial behavior. In adolescence, the sample lived in diverse neighborhoods (Vanderbilt-Adriance & Shaw, 2008); however, the relationship between youth characteristics and antisocial behavior may have been different with a sample with more diversity in early life experiences. Peer influence in the current study was limited to measurement of deviancy training within a single peer relationship. Aggressive youths, similar to non-aggressive youths, are embedded in broader peer networks, and aggressive behaviors occur within a group context more often than a dyadic setting (Cairns, et al., 1988; Xie, et al., 2002).

One strength of this study is the use of multiple methods of data collection, reducing the threat of method effects. Deviant talk, a central variable in the study, was obtained through direct observation of real time behavior which increases the ability to understand the abstract construct of deviancy training through a connection with real behavior. An additional strength is the temporal ordering of variables. The use of longitudinal data reduced many of the problems associated with cross-sectional data; however, no causal inferences can be made from this study because there was no experimental manipulation. The pathway from youth characteristics to

deviant peer influence to antisocial behavior is a plausible causal pathway, but it is not the only potential pathway. Snyder and colleagues have produced important work showing the influence of deviancy training in children as early as kindergarten (Snyder, Bank, & Burraston, 2005; Snyder, et al., 2008). It is likely that a bidirectional relationship exists in which a youth's characteristics influence his peer relationships and his friends, in turn, influence future development of individual characteristics.

One important route for future research is to investigate whether variables that predict the deviant peer process can tease apart initiating versus following in the peer process. For example, life-course antisocial youths (see Moffitt, 1993) may be the primary initiators while adolescent-limited antisocial youths could be the followers in the conversation. Future examination would benefit from the ethical use of experimental manipulation to allow causal inferences, and more advanced analyses, such as the actor-partner independence model (Kenny, 1996). The actor-partner model is particularly well suited for teasing apart the shared and unique contribution each adolescent contributes to the discussion of deviant topics which could then be compared to their status as an early- or late-starter for antisocial behavior.

APPENDIX A

Prosociality (10 items)

1. Does he help other children his own age without being asked?
2. Would he feel guilty if he broke the law?***
3. Does he share his things with other children his own age without being asked?
4. Does he feel bad for other children his age when they get hurt?
5. Does he try to cheer up children his age who are sad or upset?
6. Does he feel sorry for kids who get picked on?
7. Does he want everyone to follow the rules, including himself?
8. Does he care about other children's feelings?
9. Does he enjoy learning about new and interesting things?
10. Is he concerned about what is right and wrong?

***Included on the parent version of the subscale, but not on the child versions of the subscale.

Daring (5 items)

1. Is he daring and adventurous?
2. Does he like rough games and sports?
3. Does he enjoy doing things that are risky and dangerous?
4. Does he enjoy things that are exciting and loud?
5. Is he brave?

Self-Report of Delinquency (62 items)

Teenagers get involved in many different kinds of activities. Please indicate how often you engaged in these behaviors in the *past year*. Please be honest in answering these questions, and know that all of your answers will be kept *confidential*.

Never	Once or Twice	More Often
0	1	2

1. Have you received an in-school detention?
2. Have you received an in-school suspension?
3. Have you been expelled from school?
4. Have you cheated on school tests or assignments?
5. Have you been caught cheating on school tests?
6. Have you skipped school without an excuse?
7. Have you been sent home from school for bad behavior?
8. Have you *on purpose* broken or damaged or destroyed something belonging to your parents or other people in your family?
9. Have you *on purpose* broken or damaged or destroyed something belonging to a school?
10. Have you *on purpose* broken or damaged or destroyed other things that did not belong to you, not counting things that belong to your family or school?
11. Have you written things or sprayed paint on walls or sidewalks or cars, where you were not supposed to be?
12. Have you purposely set fire to a building, a car, or something else or tried to do so?

13. Have you stolen or tried to steal a bicycle or skateboard?
14. Have you taken something from a store without paying for it?
15. Have you taken some money at home that did not belong to you, like from your mother's purse or from your parents' dresser?
16. Have you taken anything else at home that did not belong to you?
17. Have you taken anything at school from the teacher or other kids that did not belong to you? (select "never" if not in school)
18. Have you taken something out of somebody's house or yard or garage that did not belong to you?
19. Have you taken something from a car that did not belong to you?
20. Have you gone into or tried to go into a building to steal something?
21. Have you avoided paying for things such as movies, bus, or subway rides or food?
22. Have you snatched someone's purse or wallet or picked someone's pocket?
23. Have you gone joyriding, that is, taken a motor vehicle, such as a car or motorcycle, for a ride or drive without the owner's permission?
24. Have you stolen while confronting someone, like in a mugging, purse snatching, or extortion?
25. Have you hit a teacher or another grown-up at school?
26. Have you hit other students or got into a physical fight with them? (select "never" if not in school)
27. Have you hit one of your parents? (select "never" if not in school)
28. Have you hit your brother or sister or got into a physical fight with him/her?
29. Have you carried a hidden weapon other than a plain pocket knife?
30. Have you thrown rocks or bottles at people?
31. Have you bullied, threatened, or intimidated someone else?
32. Have you been physically cruel to someone else (causing harm)?
33. Have you been physically cruel to an animal (causing harm)?
34. Have you threatened anyone with a weapon (like a bat, brick, broken bottle, knife, or gun)?
35. Have you used a weapon that can cause serious physical harm to others (like a bat, brick, broken bottle, knife, or gun)?
36. Have you secretly taken a sip from a glass or bottle of beer?
37. Have you secretly taken a sip from a glass or bottle of wine?
38. Have you secretly taken a sip from a glass or bottle of liquor?
38. Have you secretly taken a sip from a glass
39. Have you secretly smoked a cigarette, smoked a pipe, or chewed tobacco?
40. Have you smoked marijuana?
41. Have you sniffed glue?
42. Have you tried cocaine or crack?
43. Have you tried LSD?
44. Have you tried heroin?
45. Have you tried ecstasy?
46. Have you tried methamphetamine or speed?
47. Have you **sold** marijuana (pot, grass, hash)?
48. Have you **sold** hard drugs, such as heroin, cocaine (crack), or LSD?
49. Have you ever tried other drugs that weren't listed above? If yes, please list: _____

-
50. Have you been stopped and questioned by the police?
 51. Have you been placed in a police car or brought to the police station?
 52. Have you been arrested?
 53. Have you gone into someone's garden, backyard, house, or garage when you were not supposed to be there?
 54. Have you run away from home?
 56. Have you been involved in any gang activities?
 55. Have you been loud, rowdy, or unruly in a public place so that people complained about it or got you in trouble?
 57. Have you stayed out late at night without your parent's permission?
 58. Have you had sex with another person?
 59. Have you had unsafe sex (i.e., sex without a condom)?
 60. Have you forced someone into sexual activity with you?
 61. Have you forced someone to have unsafe sex with you (i.e., sex without a condom)?
 62. Have you gotten someone else pregnant?

Peer Interaction Task

“For the next 20 minutes we are going to have the two of you talking to each other about 4 different topics. I will leave the room after giving you the instructions for each discussion topic.

We won't share the information with your parents or anyone else outside of the Pitt Mother & Child Project, so you can talk freely. And because we want to keep this video confidential, please use only first names when talking about each other or other people. Please try to talk in as much detail as you can, and try to use up the full 5 minutes. If you finish the topic early, relax and just talk about other things. Please talk in a normal voice tone and don't get out of your chairs or move them around at all during the discussions. I will keep track of time and come tell you each new topic when time is up. The first thing I'm going to have you do is introduce yourselves, but do you have any questions before we begin?”

Activity #1: Planning an Activity
“Please introduce yourselves (pause and let each say their 1st name). For the next 20 minutes we would like you to talk about 4 topics. You may have talked with each other about some of these things before and some may be new. We'll give you a cue card for each topic to help guide your discussion.

Activity # 1: Plan an Activity
*“First, I would like you to plan an activity that you can do with each other next week. Make it something that you enjoy and plan it in as much detail as possible. It doesn't need to be expensive or take a lot of time. You'll have 5 minutes for this discussion. Try to use the full amount of time. Here's your card. Do you have any questions? Fine. One more thing. Please stay away from the camera during these tasks. Touching it might damage it or the recording we make.
 Thanks.”*

GREEN

CARD

After 5 minutes, knock and re-enter the room.

Activity #2: Current Problems for TC (from target child's Problem Questionnaire)

"Now I'd like the two of you to talk about a current problem that (TC) identified a few minutes ago, _____. (TC) please talk about why it is a problem and then if you've tried to solve it what you did and if it worked. Then talk with (friend name) about ways you might solve the problem and any ways that (friend name) could help. You'll have 5 minutes for this discussion. Here's your card. Do you have any questions?" If you run out of things to talk about on this topic, discuss _____ (use 2nd topic from list).

LIGHT

BLUE

CARD

After 5 minutes, knock and re-enter the room.

Activity #3: Current Problems for Friend

"This time, I'd like the two of you to talk about a current problem that (friend name) identified a few minutes ago, _____. (Friend name) please talk about why it is a problem and then if you've tried to solve it what you did and if it worked. Then talk with (TC) about ways you might solve the problem and any ways that (TC) could help. You'll have 5 minutes for this discussion. Here's your card. Do you have any questions?"

AQUA CARD

After 5 minutes, knock and re-enter the room.

Activity #4: Planning a Party

"For the last 5 minutes we'd like you to plan a party. This is a party you would have at one of your houses. Please talk about who would be there, what you would do, and about how long it would last and anything else that you think is important. Here is a card to guide your discussion. Do you have any questions?"

PINK CARD

After 5 minutes, knock and re-enter the room.

The child-peer tasks are now done. Escort friend from area and have sibling join target child in room. **Complete ethnicity checklist with friend.** If friend is all done with questionnaires and has a way to get home (e.g., walking a few blocks away), Examiner B can reimburse him for his time (signing receipt of payment) and is free to leave the assessment. If the friend will need to wait for a ride from you or a person picking him up, invite friend to play with our portable Nintendo (to be purchased later in the Fall) or other materials we have (e.g., comic books) while he waits. He may be able to call a parent and get a ride or home, or need transportation from the Examiners at the end of the visit. If friend is going to leave the visit soon, allow target child time

to say good-bye. If friend is going to hang out for a while, keep target child in same area, and escort sibling to room where target child and friend have been convening discussion tasks.

REFERENCES

- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profiles*. Burlington: University of Vermont, Department of Psychiatry.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed, txt rev.). Washington, DC
- American Psychiatric Association. *Personality Disorders*. (2012, June 1). *Personality disorders*. Retrieved from <http://www.dsm5.org/proposedrevision/pages/personalitydisorders.aspx>
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238-246. doi: 10.1037//0033-2909.107.2.238
- Brechwald, W. A., & Prinstein, M. J. (2011). Beyond homophily: A decade of advances in understanding peer influence processes. *Journal of Research on Adolescence*, *21*, 166-179. doi: 10.1111/j.1532-7795.2010.00721.x
- Brennan, P. A., Hall, J., Bor, W., Najman, J. M., & Williams, G. (2003). Integrating biological and social processes in relation to early-onset persistent aggression in boys and girls. *Developmental Psychology*, *39*, 309-323. doi: 10.1037/0012-1649.39.2.309
- Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., . . . Vitaro, F. (2003). Developmental Trajectories of Childhood Disruptive Behaviors and Adolescent Delinquency: A Six-Site, Cross-National Study. *Developmental Psychology*, *39*(2), 222-245. doi: 10.1037//0012-1649.39.2.222.
- Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Garipey, J. L. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology*, *24*, 815-823. doi: 10.1037//0012-1649.24.6.815

- Cairns, R. B., Leung, M. C., Buchanan, L., & Cairns, B. D. (1995). Friendships and social networks in childhood and adolescence: Fluidity, reliability, and interrelations. *Child Development, 66*, 1330-1345. doi: 10.2307/1131650
- Cairns, R. B., Perrin, J. E., & Cairns, B. D. (1985). Social structure and social cognition in early adolescence: Affiliateive patterns. *Early Adolescence, 5*, 339-355. doi: 10.1177/0272431685053007
- Caspi, A., Henry, B., McGee, R. O., & Moffitt, T. E. (1995). Temperamental origins of child and adollescent behavior problems: From age three to fifteen. *Child Development, 66*, 55-68. doi: 10.2307/1131190
- Cloninger, C. R., Svrakic, D. M., & Przybeck, T. R. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry, 50*, 975-990. doi: 10.1001/archpsyc.1993.01820240059008
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Dishion, T. J., Andrews, D. W., & Crosby, L. (1995). Antisocial Boys and Their Friends in Early Adolescence: Relationship Characteristics, Quality, and Interactional Process. *Child Development, 66*(1), 139-151. doi: 10.1111/j.1467-8624.1995.tb00861.x
- Dishion, T. J., Nelson, S. E., & Bullock, B. M. (2004). Premature adolescent autonomy: parent disengagement and deviant peer process in the amplification of problem behaviour. *Journal of Adolescence, 27*(5), 515-530. doi: 10.1016/j.adolescence.2004.06.005
- Dishion, T. J., Nelson, S. E., Winter, C. E., & Bullock, B. M. (2004). Adolescent freindship as a dynamic system: Entropy and deviance in the etiology and course of male antisocial

- behavior. *Journal of Abnormal Child Psychology*, 32, 651-663. doi: 10.1023/B:JACP.0000047213.31812.21
- Dishion, T. J., & Owen, L. D. (2002). A longitudinal analysis of friendships and substance use: Bidirectional influence from adolescence to adulthood. *Developmental Psychology*, 38, 480-491. doi: 10.1037//0012-1649.38.4.480
- Dishion, T. J., Patterson, G. R., Stoolmiller, M., & Skinner, M. L. (1991). Family, school, and behavioral antecedents to early adolescent involvement with antisocial peers. *Developmental Psychology*, 27, 172-180. doi: 10.1037//0012-1649.27.1.172
- Dishion, T. J., & Skaggs, M. (2000). An ecological analysis of monthly "bursts" in early adolescent substance use. *Applied Developmental Science*, 4, 89-97. doi: 10.1207/S1532480XADS0402_4
- Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy*, 27(3), 373-390.
- Dishion, T. J., Veronneau, M., & Myers, M. W. (2010). Cascading peer dynamics underlying the progression from problem behavior to violence in early to late adolescence. *Development and Psychopathology*, 22, 603-619. doi: 10.1017/S0954579410000313
- Dodge, K. A., Greenberg, M. T., Malone, P. S., & CPPRG. (2008). Testing an Idealized Dynamic Cascade Model of the Development of Serious Violence in Adolescence. *Child Development*, 79(6), 1907-1927. doi: 10.1207/S1532480XADS0402_4
- Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology*, 39, 349-437. doi: 10.1037/0012-1649.39.2.349

- Elliott, D. S., Huizinga, D., & Ageton, S. S. (1985). *Explaining delinquency and drug use*. Thousand Oaks, CA: Sage.
- Ewart, C. K., & Suchday, S. (2002). Discovering how urban poverty and violence affect health: Development and validation of a neighborhood stress index. *Health Psychology, 21*, 254-262. doi: 10.1037//0278-6133.21.3.254
- Eysenck, S. B., & Eysenck, H. J. (1977). The place of impulsiveness in a dimensional system of personality description. *Journal of Social and Clinical Psychology, 16*, 57-68. doi: 10.1111/j.2044-8260.1977.tb01003.x
- Farrington, D. P., & West, D. J. (1993). Criminal, penal and life histories of chronic offenders: Risk and protective factors and early. *Criminal Behavior and Mental Health, 3*, 492-523.
- Frick, P. J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports, 8*, 59-72. doi: 10.1007/s11920-996-0063-6
- Frick, P. J., & White, S. F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and atisocial behavior. *Journal of Child Psychology and Psychiatry, 49*, 359-375. doi: 10.1111/j.1469-7610.2007.01862.x
- Granic, I., & Dishion, T. J. (2003). Deviant Talk in Adolescent Friendships: A Step Toward Measuring a Pathogenic Attractor Process. *Social Development, 12*(3), 314-334. doi: 10.1111/1467-9507.00236
- Granic, I., & Patterson, G. R. (2006). Toward a comprehensive model of antisocial development: A dynamic systems approach. *Psychological Review, 113*(1), 101-131. doi: 10.1037/0033-295x.113.1.101
- Henderson, V. R., Hennessy, M., Barrett, D. W., Curtis, B., McCoy-Roth, M., Trentacoste, N., & Fishbein, M. (2004). When risky is attractive: Sensation seeking and romatic partner

- selection. *Personality and Individual Differences*, 38, 311-325. doi: 10.1016/j.paid.2004.04.010
- Hirschi, T., & Hindelang, M. J. (1977). Intelligence and delinquency: A revisionist review. *American Sociological Review*, 42, 571-587. doi: 10.2307/2094556
- Hollenstein, T. (2007). State space grids: Analyzing dynamics across development. *International Journal of Behavioral Development*, 31, 384-396. doi: 10.1177/0165025407077765
- Hollenstein, T. (2007). State space grids: Analyzing dynamics across development. *International Journal of Behavioral Development*, 31(4), 384-396. doi: 10.1177/0165025407077765
- Hu, L., & Bentler, P. M. (1993). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 16-99). Newbury Park, CA: Sage.
- Ingoldsby, E. M., Shaw, D. S., Winslow, E., Schonberg, M., Gilliom, M., & Criss, M. M. (2006). Neighborhood disadvantage, parent-child conflict, neighborhood peer relationships, and early antisocial behavior problem trajectories. *Journal of Abnormal Child Psychology*, 34, 303-319. doi: 10.1007/s10802-006-9026-y
- Kaufman, J., Birmaher, B., Brent, D., & Rao, U. (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children - Present and lifetime version (K-SADS-PL): Initial reliability and validity data. *Journal of American Academy of Child and Adolescent Psychiatry*, 36, 980-988. doi: 10.1097/00004583-199704000-00018
- Kenny, D. A. (1996). Models of non-independence in dyadic research. *Journal of Social and Personal Relationships*, 13, 279-294. doi: 10.1177/0265407596132007
- Lacourse, E., Nagin, D. S., Vitaro, F., Cote, S., Arseneault, L., & Tremblay, R. E. (2006). Prediction of Early-Onset Deviant Peer Group Affiliation: A 12-Year Longitudinal Study. *Arch Gen Psychiatry*, 63(5), 562-568. doi: 10.1001/archpsyc.63.5.562

- Lahey, B. B., Applegate, B., Chronis, A. M., Jones, H. A., Williams, S. H., Loney, J., & Waldman, I. D. (2008). Psychometric characteristics of a measure of emotional dispositions developed to test a developmental propensity model of conduct disorder. *Journal of Clinical Child and Adolescent Psychology, 37*, 794-807. doi: 10.1080/15374410802359635
- Lahey, B. B., Loeber, R., Burke, J., & Rathouz, P. J. (2002). Adolescent outcomes of childhood conduct disorder among clinic-referred boys: Predictors of improvement. *Journal of Abnormal Child Psychology, 20*, 333-348. doi: 10.1023/A:1015761723226
- Lahey, B. B., & Waldman, I. D. (2003). A developmental propensity model of the origins of conduct problems during childhood and adolescence. In B. B. Lahey, T. E. Moffitt & A. Caspi (Eds.), *Causes of conduct disorders and juvenile delinquency* (pp. 76-117). New York: Guilford Press.
- Laird, R. D., Pettit, G. S., Dodge, K. A., & Bates, J. E. (2003). Change in parents' monitoring knowledge: Links with parenting, relationship quality, adolescent beliefs, and antisocial behavior. *Social Development, 12*, 401-419. doi: 10.1111/1467-9507.00240
- Lynam, D., Moffitt, T. E., & Stouthamer-Loeber, M. (1993). Explaining the relation between IQ and delinquency: Class, race, test motivation, school failure, or self-control? *Journal of Abnormal Psychology, 102*, 187-196. doi: 10.1037//0021-843X.102.2.187
- Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*, 1198-1202. doi: 10.1080/01621459.1988.10478722

- MacCallum, R. C., Wegener, D. T., Uchino, B. N., & Fabrigar, L. R. (1993). The problem of equivalent models in applications of covariance structure analysis. *Psychological Bulletin*, *114*, 185-199. doi: 10.1037//0033-2909.114.1.185
- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Mahwah, NJ: Erlbaum.
- McGloin, J. M., Pratt, T. C., & Maahs, J. (2004). Rethinking the IQ-delinquency relationship: A longitudinal analysis of multiple theoretical models. *Justice Quarterly*, *21*, 603-635. doi: 10.1080/07418820400095921
- McMahon, R. J., Witkiewitz, K., Kotler, J. S., & CPPRG. (2010). Predictive validity of callous-unemotional traits measured in early adolescence with respect to multiple antisocial outcomes. *Journal of Abnormal Psychology*, *119*, 752-763. doi: 10.1037/a0020796
- Miller, T. R., Cohen, M. a., & Wiersema, B. (1996). *Victim costs and consequences: A new look*. Washington, DC: National Institute of Justice.
- Moffitt, T. E. (1993). Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, *100*, 674-701. doi: 10.1037/0033-295X.100.4.674
- Moffitt, T. E., Lynam, D., & Silva, P. A. (1994). Neuropsychological tests predicting persistent male delinquency. *Criminology*, *32*, 277-300. doi: 10.1111/j.1745-9125.1994.tb01155.x
- Monahan, K. C., Steinberg, L., & Cauffman, E. (2009). Affiliation with antisocial peers, susceptibility to peer influence, and antisocial behavior during the transition to adulthood. *Developmental Psychology*, *45*, 1520-1530. doi: 10.1037/a0017417
- Muthén, L., & Muthén, B. (2010). *Mplus 6.0* [Statistical program]. Los Angeles, CA.

- Newcomb, M. D., & McGee, L. (1991). Influences of sensation seeking on general deviance and specific problem behaviors from adolescence to young adulthood. *Journal of Personality and Social Psychology, 61*, 614-628. doi: 10.1037/0022-3514.61.4.614
- Ortiz, J., & Raine, A. (2004). Heart rate level and antisocial behavior in children and adolescents: A meta-analysis. *Journal of American Academy of Child and Adolescent Psychiatry, 43*, 154-162. doi: 10.1097/01.chi.0000101373.03068.5c
- Park, N. S., Lee, B. S., Sun, F., Vazsonyi, A. T., & Bolland, J. M. (2010). Pathways and predictors of antisocial behaviors in African American adolescents from poor neighborhoods. *Children and Youth Services Review, 32*(3), 409-415. doi: 10.1016/j.chilyouth.2009.10.012
- Patterson, G. R., Dishion, T. J., & Yoerger, K. L. (2000). Adolescent growth in new forms of problem behavior: Macro- and micro-peer dynamics. *Prevention Science, 1*, 3-13. doi: 10.1023/A:1010019915400
- Piehler, T. F., & Dishion, T. J. (2005). *The Norm Topic Code (NTC): A system for coding topics and reactions in friendship dyads*. Unpublished manual.
- Piehler, T. F., & Dishion, T. J. (2007). Interpersonal Dynamics Within Adolescent Friendships: Dyadic Mutuality, Deviant Talk, and Patterns of Antisocial Behavior. *Child Development, 78*(5), 1611-1624. doi: 10.1111/j.1467-8624.2007.01086.x
- Puzzanchera, C. (2009). *Juvenile Arrests 2008*: Washington, DC: Office of Juvenile Justice and Delinquency Prevention.
- Raine, A., Moffitt, T. E., Caspi, A., Loeber, R., Stouthamer-Loeber, M., & Lynam, D. (2005). Neurocognitive impairments in boys on the life-course persistent antisocial path. *Journal of Abnormal Psychology, 114*, 38-49. doi: 10.1037/0021-843X.114.1.38

- Shaw, D. S., Gilliom, M., Ingoldsby, E. M., & Nagin, D. S. (2003). Trajectories leading to school-age conduct problems. *Development and Psychopathology*, *39*(2), 189-200. doi: 10.1037/0012-1649.39.2.189
- Shoal, G. D., Giancola, P. R., & Kirillova, G. P. (2003). Salivary cortisol, personality, and aggressive behavior in adolescent boys: A 5-year longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*, 1101-1107. doi: 10.1097/01.CHI.0000070246.24125.6D
- Snow, P. C., & Powell, M. B. (2008). Oral language competence, social skills and high-risk boys: What are juvenile offenders trying to tell us? *Children and Society*, *22*, 16-28. doi: 10.1111/j.1099-0860.2006.00076.x
- Snyder, J., Bank, L., & Burraston, B. (2005). The consequences of antisocial behavior in older male siblings for younger brothers and sisters. *Journal of Family Psychology*, *19*(4), 643-653. doi: 10.1037/0893-3200.19.4.643
- Snyder, J., Schrepferman, L., McEachern, A., Barner, S., Johnson, K., & Provines, J. (2008). Peer deviancy training and peer coercion: Dual processes associated with early-onset conduct problems. *Child Development*, *79*, 252-268. doi: 10.1111/j.1467-8624.2007.01124.x
- Tremblay, R. E., Pihl, R. O., Vitaro, F., & Dobkin, P. L. (1994). Predicting early onset of male antisocial behavior from preschool behavior. *Archives of General Psychiatry*, *51*, 732-739. doi: 10.1001%2Farchpsyc.1994.03950090064009.
- Trentacosta, C. J., Hyde, L. W., Shaw, D. S., & Cheong, J. (2009). Adolescent dispositions for antisocial behavior in context: The roles of neighborhood dangerousness and parental knowledge. *Journal of Abnormal Psychology*, *118*(3), 564-575. doi: 10.1037/a0016394

- Van Goozen, S. H. M., Fairchild, G., Snoek, H., & Harold, G. T. (2007). The evidence for a neurobiological model of childhood antisocial behavior. *Psychological Bulletin*, *133*, 149-182. doi: 10.1037/0033-2909.133.1.149
- Vanderbilt-Adriance, E., & Shaw, D. S. (2008). Protective factors and the development of resilience in the context of neighborhood disadvantage. *Journal of Abnormal Child Psychology*, *36*, 887-901. doi: 10.1007/s10802-008-9220-1
- Xie, H., Swift, D. J., Cairns, B. D., & Cairns, R. B. (2002). Aggressive behaviors in social interaction and developmental adaption: A narrative analysis of interpersonal conflicts during early adolescence. *Social Development*, *11*, 205-224. doi: 10.1111/1467-9507.00195
- Yuan, K. H., & Bentler, P. M. (2000). Three likelihood-based methods for mean and covariance structure analysis with nonnormal missing data. *Sociological Methodology*, *20*, 165-200. doi: 10.1111/0081-1750.00078
- Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge University Press.

ABSTRACT**ADOLESCENT CHARACTERISTICS AND PEER INFLUENCE AS PREDICTORS OF
ANTISOCIAL BEHAVIOR**

by

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Deviant peer influence during adolescence has been found to predict substance use, delinquency, and aggression. This study examined youth characteristics (prosociality, daring, and verbal ability) along with peer influence (deviant talk) as predictors of antisocial behavior. Peer influence, in the form of deviant talk, was also examined as a potential mediator between youth characteristics and antisocial behavior. The current study added to the literature by examining a slope measure of deviant talk as an organizing feature of peer discussions. Data were collected prospectively from a subsample of 178 youths participating in the Pitt Mother and Child Project. Findings supported daring, verbal ability, and percent deviant talk as direct predictors of antisocial behavior while controlling for a number of risk factors. Evidence of a mediated relationship was not found. The findings suggest independent pathways from youth characteristics and peer influence to antisocial behavior.

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Benjamin Goodlett received a Bachelors of Science in Psychology from the University of South Carolina Honors College in 2008. He completed an honor's thesis titled "Sex Differences in Physical Activity in Adolescents and Strategies used for Enlisting Peers" with Dr. Dawn Wilson. In the Fall of 2009, he entered the Clinical Psychology doctoral program at Wayne State University. Ben is currently serving as a Graduate Research Assistant in Dr. Christopher Trentacosta's Family Emotions Laboratory. Through his work with Dr. Trentacosta, Ben has been furthering his interest in observational research of parent-child and peer interactions that contribute to the development of conduct problems.