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Contribution of Peer Deviancy Training to the Early Development of Conduct Problems: Mediators and Moderators

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Three variables were tested as moderators of the relationship between peer deviancy training and child antisocial behavior in a longitudinal study of 267 boys and girls from ages 5.3 to 9.3 years. Deviancy training was directly measured by observation of the discourse and play of children with same-gender classmates. Peer deviancy training was significantly related to multi-setting child antisocial behavior from ages 5.3 to 9.3 years. Child impulsivity, poor parental discipline, and peer rejection were all significant moderators of that relationship, even in the context of their direct association with trajectories of antisocial behavior and after controlling for deviant peer affiliation. These moderator effects appeared to be associated with children's increased sensitivity to peer modeling and reinforcement of deviant discourse and play. Not all children are equally affected by peer deviancy training, and an array of intervention strategies are described that may serve to protect children from deviant peer influence.

RESEARCH HAS REPEATEDLY FOUND that affiliation with deviant peers substantially increases risk for the emergence and persistence of antisocial behavior (Dodge, Dishion, & Lansford, 2006). The negative effects of deviant peer affiliation have been observed during childhood (Hanish, Martin, Fabes, Leonard, & Herzog, 2005; Snyder, Horsch, & Childs, 1997) adolescence (Patterson, Dishion, & Yoerger, 2000) and early adulthood (e.g., Duncan, Boisjoly, Kremer, Levy, & Eccles, 2005; Gardner, Dishion, & Connell, 2008). Exposure to deviant peers may result from naturally occurring incidental contacts (e.g., with classmates), selective affiliation (e.g., in friendships or cliques) among youth in schools and neighborhoods (Dishion, Nelson, Winter, & Bullock, 2004; Kellam, Ling, Merisca, Brown, & Ialongo, 1998), and aggregation of at-risk youth for group interventions (e.g., for skills training or residential care) (Lavallee, Bierman, Nix, & CPPRG, 2005; Lipsey, 2006; Poulin, Dishion, & Burraston, 2001). These affiliations then result in deviancy training in which youth are exposed to peers’ modeling and reinforcement of deviant behavior (Dishion, Spracklen, Andrews, & Patterson, 1996).

This research has resulted in calls to proactively manage aggregation of at-risk youth and to implement explicit tactics to mitigate the potential negative effects when such aggregation occurs (Dishion & Dodge, 2005). However, to effectively respond to these calls, the social mechanisms that mediate and the conditions that moderate deviant peers’ influence on trajectories of antisocial behavior...
need to be better understood. This report examines mediators and moderators of deviant peer influence in school settings during early elementary school. More specifically, two interlocking hypotheses are tested. First, peer modeling and reinforcement are hypothesized to be associated with children’s display of deviant discourse and play, and children’s deviant discourse and play to be associated with increased risk for antisocial behavior—a mediator effect. Second, child impulsivity, poor parental discipline, and peer rejection are hypothesized to augment the relationship of peer modeling and reinforcement to child deviant discourse and play by increasing children’s sensitivity to peer modeling and reinforcement—a moderator effect.

Mediators of the Association Relationship of Deviant Peer Affiliation and Antisocial Behavior
Selection and shaping are often suggested as mediators of the relationship between deviant peer affiliation and risk for antisocial behavior (Gifford-Smith, Dodge, Dishion, & McCord, 2005). Their relative importance has been studied by applying auto-regressive cross-lagged or multi-domain latent growth curve analyses to multi-method longitudinal data to examine the temporal ordering of deviant peer affiliation and antisocial behavior. These studies indicate both selection and shaping operate, reflecting a reciprocal influence between deviant peer affiliation and antisocial behavior (Dishion & Owen, 2002; Laird, Criss, Petritz, Dodge, & Bates, 2008; Wills & Cleary, 1999). However, these optimally designed longitudinal studies do not specify or measure the social-experiential mediating processes by which youths’ behavior is shaped as a result of interaction with deviant peers (Dishion & Dodge, 2005). Although a number of processes have been postulated, peer reinforcement and modeling of antisocial discourse and behavior (often labeled deviancy training) have received the most empirical attention (Dishion & Dodge, 2006). A basic premise of deviancy training is that youths’ discourse and activities during peer interaction is shaped by attention and approval. When interacting with deviant peers, youths’ discourse about and rehearsal of norm-violating behaviors are likely to result in laughter, approval, and excitement, and to be shaped by directly experienced peer contingencies and by vicarious observation of contingencies received by peers. As such, peer deviancy training provides instruction and practice about how, when, and where to engage in norm-violating behavior, and information about what consequences may accrue for that behavior. As a result of equivalence functions of language and verbal rules about the relation of behavior-contingency relationships (Drossel, Waltz, & Hayes, 2007), discourse and rehearsal of norm-violating behaviors and the positive peer consequences they engender serve as cognitive templates and verbal rules promoting the performance of antisocial behavior in other social ecologies.

Deviancy training mediates the association of deviant peer affiliation and antisocial behavior via two processes. First, the rates at which children engage in deviant talk and play are associated with the rates at which they are reinforced by peers for such talk and play, and at which children observe peers getting reinforced for deviant talk and play (Dishion et al., 1996; Snyder et al., 2004). Second, rates at which youth engage in deviant talk and play during peer interaction is prospectively linked to antisocial behavior at home, in school, and in the neighborhood during childhood (Snyder et al., 2005) and adolescence (Dishion et al., 1996; Patterson et al., 2000). It is our hypothesis that three proposed moderator variables (poor inhibitory control, poor parental discipline, and peer rejection) operate on the first process by augmenting children’s sensitivity to the excitement, titillation, and attention engendered by deviant discourse and play during peer interaction.

Moderators of the Effects of Deviant Peers on the Development of Antisocial Behavior
Exposure to and involvement with deviant peers does not necessarily or uniformly facilitate antisocial behavior; not all youth are equally affected. Three types of variables appear to amplify or mitigate the relationship of deviant peer exposure to the development of antisocial behavior: the child’s experiential history in the peer group (peer rejection), children’s temperament (impulsivity), and parenting practices (poor discipline).

Research on the social relationships of children has clearly documented that aggressive children are likely to be rejected by normative peers and that such rejection increments risk for subsequent antisocial behavior (Kupersmidt & Dodge, 2004). Rejection by normative peers may increment peer deviancy training in two ways. First, rejected children may spend more time with other aggressive children, either as a result of aggregation of children who are excluded from the normative peer group or as a result of active mutual selection (Dishion, Patterson, & Griesler, 1994). These increased contacts with deviant peers may result in a greater exposure to antisocial discourse and activities, and shape a susceptibility to peer approval of such discourse and activities (Snyder et al., 2005). Second,
social rejection and exclusion reduces children's access to peer social attention for constructive and skilled behavior (Snyder et al., 2004). As a result, rejected children may actually show increased sensitivity to peer reinforcement (Dishion, Piehler, & Myers, 2008) and may be more likely to utilize deviant discourse and play as a means of generating such reinforcement.

The facilitating main effect of inadequate inhibitory control on antisocial development is well documented (Nigg & Huang-Pollock, 2003). Poor inhibitory control also appears to moderate the association of deviant peer affiliation with antisocial behavior during adolescence. Youth with inadequate effortful control are more susceptible to the negative influence of deviant friends (Dishion & Patterson, 2006; Gardner et al., 2008). Similarly, the impact of deviant peer affiliation on antisocial behavior may be moderated by sensitivity to short-term rewards. Goodnight, Bates, Newman, Dodge, and Pettit (2006) reported the relation between deviant peer affiliation and later externalizing behaviors was greater for youth less able to inhibit behavior in the context of reward than those with better inhibitory skills. Deviant peer influence appears to be engendered by the excitement, exhilaration, and short-term reward antisocial discourse and behavior generates among youth, and to be mitigated by an ability to inhibit norm-violating responses supported by short term positive consequences. The degree to which effortful, inhibitory control similarly moderates the relationship between deviant peer influence and antisocial behavior during childhood has not been examined.

Socialization in the family also appears to influence children's sensitivity to deviant peer influence. Good parental monitoring has been found to mitigate the association of deviant peer affiliation with antisocial behavior during adolescence (Laird et al., 2008) as well as to have powerful main effects by limiting youths' affiliation with deviant peers (Dishion & McMahon, 1998). The moderator effects of other parenting variables have received little empirical attention (Vitaro, Brendgen, & Tremblay, 2000). This is surprising given youths' ability to resist temptation and short-term reward in the relative absence of adult tracking and contingencies is a widely accepted criterion of successful socialization. Given nearly all youth are repeatedly and sometimes extensively exposed to deviant peers, even in relatively normative (Snyder et al., 2005) and advantaged environments (Luthar & Becker, 2002), the lack of research on protective factors resulting from family socialization during childhood is surprising. Parental discipline has a powerful direct effect on antisocial development during childhood (Snyder, Reid, & Patterson, 2003), and is a prime candidate as a moderator of children's susceptibility to deviant peer influence.

In summary, not all youth are necessarily and equally affected by contacts with deviant peers. Some youth may be more vulnerable and others more immune to the influence of deviant peers. Identification of variables which attenuate or exacerbate the contribution of deviant peers to antisocial behavior prior to adolescence is clearly warranted and important. Three promising moderator variables are examined in this report: child impulsivity, parental discipline, and peer rejection. Identification of moderator variables may enable better identification of individuals at heightened risk for deviant peer influence, and lead to a better articulation of intervention tactics that reduce risk for the early development of antisocial behavior engendered by exposure to deviant peers.

Method

The participants were 133 girls and 134 boys whose mean age was 5.3 years at the initial data collection point (entry to kindergarten) and 9.3 years at the last data collection point (in fall fourth grade). This community sample was obtained by recruiting kindergarten children (and their parents) enrolled in one elementary school over 3 consecutive years. The school served a low socio-economic neighborhood in a city with a population of 350,000. Seventy-one percent of the children were European American, 19% African American, 5% Hispanic/Latino, and 3% Native American, and 2% were Asian American. At age 5.3 years, 43% of children lived in intact families with two-biological parents, 28% in single parent families, 21% in blended family households, and 7% in other family configurations. The median family income was $25,000; 28% of the children lived in families with incomes below the poverty line. Forty-six percent of the parents had completed high school, and 20% had less than a high school education. Seventy-five percent of two-parent families were comprised of dual wage earners, and 9% of the families were without any employed adult.

Data collection was continued after participants made school or residential moves. Data were available for over 95% of the 267 children mean ages 5.8, 6.3 and 6.8 years, and for 77% of the children at mean age 9.3 years. Missing data were estimated in AMOS 4.0 using the full information maximum likelihood (FIML) estimation method. FIML does not delete cases missing from one or more waves of data collection, nor does it delete
cases missing one or more variables within a wave of data collection. This procedure avoids biased parameter estimates that are likely to occur if pairwise or list-wise deletion procedures are used to compensate for missing data (Worthke, 2000).

**Measures**

**Deviancy Training**

A construct for peer deviancy training was derived from videotapes of triadic peer interaction of each of the participating children, obtained on multiple occasions from ages 5.3 to 5.8 years. Each child was involved as the target on three occasions, and as a nontargeted coparticipating classmate on a minimum of six occasions. Combinations of same- or opposite-gender classmates were sampled across occasions in a random fashion. On each occasion, the target child and his/her same-gender classmates engaged in two tasks. During the first 15 minutes, the children played structured age-appropriate interactive games, and during the second 15 minutes engaged in free play.

These multi-occasion samples of peer interaction (total = 90 minutes for each child as target; 180 minutes as nontarget) were coded using the Anti-social Content Code (ACC; Oeser & Schreiferman, 2002). ACC codes the content of children’s discourse and play and peers’ responses to such behavior during ongoing interaction. ACC provides real-time coding of the occurrence of each of six forms of norm-violating discourse and play: alcohol and tobacco use, sex, aggression and property destruction, authority defiance, sneaky actions (stealing, cheating, or lying), and “gross” body functions. ACC also dichotomously codes the responses of peers to each display of deviant discourse and play by the target child as positive (agreement, laughter, or other active positive attention) or not positive (ignoring, distress, complaints, dismay, correction, disapproval, or threats to tell an adult). After each 15-minute segment of peer interaction, ACC coders made Likert ratings of how much each nontarget child engaged in deviant discourse and play and received positive responses for their deviant discourse and play from the other nontarget child.

Coders were trained to a criterion of 65% agreement on real-time coding of specific categories of deviant discourse and play and peer responses, and to a criterion intra-class correlation of .70 on the Likert scale ratings. Weekly recalibration meetings were held to minimize observer drift and to maintain coder reliability. Ongoing coder agreement was estimated for 230 (32%) of the 723 observation occasions available for this sample. Percent agreement and Kappa indices of coder reliability for the occurrence/nonoccurrence of specific deviant discourse or play categories were 87.5% and .74, respectively. Percent agreement and Kappa coder reliability for peer responses to deviant talk or play were 77.1% and .60, respectively. The mean intra-class correlation for coders’ ratings of deviant discourse and play was .78, and for peer positive responses to such discourse and talk was .71.

Two composite variables were derived from the ACC codes and ratings. The first composite assessed each child’s deviant discourse and play. This composite was defined by the sum of the following three variables, after each was averaged across observation occasions and standardized: rpm observed deviant talk and play when child was target, ratings of child’s deviant discourse and play when the child was a nontarget, and ratings of positive responses for peer deviant discourse and play made by the child as non-target. Using the same aggregation approach, the second composite for peer modeling and reinforcement of deviant discourse and play was defined by the sum of the following three variables: observed proportion of positive responses made by peers for the target child’s deviant discourse and play, ratings of peers’ deviant discourse and play observed by the target child, and ratings of the positive responses of one nontarget peer to the deviant talk and play of the second non-target peer observed by the target child.

**Deviant Peer Affiliation**

Deviant peer affiliation was a composite construct defined by the sum of the two standardized variables assessed at child age 5.3 years: the mean externalizing scores on the parent Child Behavior Checklist (Achenbach, 1991) and the Teacher Report Form (Achenbach, 1991) of the three classmates the child nominated as preferred playmates. The correlation between teacher and parent reports of preferred playmates’ externalizing problems was .38 (p < .05).

**Child Impulsivity.** A composite for a poor executive control or impulsivity construct was defined by the mean of three measures (after each was standardized) obtained from ages 5.3 to 5.8 years. The first measure was the mean of four scores (after each was standardized) from two individually administered tests: the Trails Test B time and errors (Kindlon, Mezzacappa, & Earls, 1995), and digit span forward and backward (reverse scored) from the WISC-III (Wechsler, 1991). The second measure was the mean percent of time off-task during 5-minute periods of academic work, obtained on three separate occasions (Walker & Severson, 1991). Mean observer agreement as indicated by intra-class correlation of off task time was .72. The time off-task was estimated for 230 (32%) of the 723
third measure consisted of the mean of assessors' ratings of the degree to which each child was inattentive across three occasions of individually-administered assessment tasks. Mean observer agreement as indicated by intra-class correlation was .69. The correlations among the three measures comprising the impulsivity composite ranged from .30 to .40 (all p < .01).

Peer Rejection
Classmates' nominations of three children whom they preferred and three children whom they did not prefer as playmates were obtained in the fall of kindergarten using a picture sociometric technique (Asher, Singleton, Tinsley, & Hymel, 1979). The number of nominations each child received as preferred and as nonpreferred playmates was summed and standardized by classroom. Peer rejection scores were defined by subtracting the standardized score for nominations as preferred playmates from the standardized score for nominations as nonpreferred playmates.

Parental Discipline
The interaction of each child with a parent was videotaped for 2 hours on each of two occasions between child ages 5.3 to 5.8 years. Each occasion was structured around a set of verbally cued tasks, including playing a novel interactive game, free play, clean up, talking about the child's day at school, problem solving, and practice arithmetic and word recognition. The interaction was coded using the Family Peer Process Code (FPP; Stubbs, Crosby, Forgatch, & Capaldi, 1998) and the Specific Affect Coding System (SPAFF; Gottman, McCoy, Coan, & Collier, 1995). FPP codes the occurrence of parent and child verbal and nonverbal social behavior into one of 24 mutually exclusive and collectively exhaustive categories along a real time line, including both the onset and offset of the behavior. FPP coders made Likert ratings of parent behavior after each 15-minute episode of micro-coding. SPAFF codes the occurrence of parent and child behavior into 19 mutually exclusive and collectively exhaustive categories along a real time line, giving coding priority to the display of seven discrete emotions based on a gestalt of facial, vocal, and physical features of behavior. FPP and SPAFF coders were trained to a criterion agreement of 75% prior to coding data, and weekly recalibration and coding training sessions were used to minimize drift. Fifteen percent of all observations were used to assess coder reliability, and coders were unaware of which observation sessions were to be used for reliability assessment.

Four indicators from the FPP and SPAFF data and one from a structured parent interview (Snyder, Cramer, & Patterson, 2005) were combined to define a composite index of poor parental discipline. The first indicator was the rate per minute with which parents observed (FPP) to direct aversive verbal and nonverbal behaviors toward the child. The intra-class correlation index of coder agreement on the rate per minute parent aversive was .87. The second indicator was an odds ratio indexing the likelihood that parents gave in to child aversive behavior (FPP) during a discipline episode. The third indicator was the mean of FPP coders' ratings on six items describing parents' use of ineffective disciplinary responses; relies on negative affect, uses ridicule and sarcasm, grabs or hits, threatens punishment, is erratic or inconsistent, and overly strict and oppressive. The intra-class correlation index of coder agreement on these Likert ratings was .84, and the scale alpha was .79. The fourth indicator was the cross-occasion mean of the rate per minute with which parents were observed to direct anger and contempt (SPAFF) at their children. Average coder agreement on the SPAFF was 83% (kappa = .73). The fifth indicator was defined by parents' rating of likelihood they would use “tough” discipline tactics in response to five common problem child behaviors (e.g., swatting a child for throwing a tantrum for candy at the store). The alpha for this scale was .66. The five indicators of the poor discipline composite were inter-correlated from .27 to .46 (all ps < .01) and significantly loaded on a single construct (all bs > .33, ps < .05; model fit p = .32). Standardized scores of the five indicators were averaged to create a composite of poor discipline.

Multi-Setting Child Antisocial Behavior
Child antisocial behavior was assessed in each of three social ecologies (home, classroom, and school playground) at child ages 5.3, 5.8, 6.3, and 6.8 years. These data were used to estimate a trait construct for children's early antisocial behavior.

Antisocial behavior on the playground. An adaptation of the observation system described by Weiss, Dodge, Bates, and Pettit (1992) was used to code children's behavior on the playground. This interval coding system classifies child behavior into one of several mutually exclusive and collectively exhaustive categories every 10 seconds; the category used in current research ascertained the target child's physical aggression toward peers. Coders also made a series of 5-point Likert item ratings after each 5-minute observation occasion to assess low base-rate behaviors. One item, "the child
engaged in sneaky behavior,” was used to assess covert antisocial behavior on the playground. Codels were trained to a minimum Kappa agreement of .70 prior to data collection at each of the age periods at which playground observations were obtained. Observer agreement was assessed on 10% of all occasions. Interval-by-interval coder agreement on physical aggression ranged from 65% to 69%. Intra-class correlations of the rpm of physical aggression (the metric used in the current analyses) generated by independent coder pairs ranged from .62 to .84 (all ps < .001). Coder agreement on ratings of sneaky behavior as indexed by intra-class correlations averaged .77.

Behavior of participating children was observed on the school playground on six separate occasions at child ages 5.3 and 5.8 years, and on four separate occasions at ages 6.3 and 6.8 years. On each occasion, the behavior of each child was observed and coded for 5 minutes (i.e., 30 consecutive 10-second intervals). The mean cross-occasion rate per minute at which children directed physical aggression toward peers, and the mean ratings of “sneaky behavior” at each of the age periods was calculated and used as indicators of the trait antisocial behavior construct.

Antisocial behavior at home. Parents’ ratings of the behavior problems on the aggression and delinquency scales of the Child Behavior Checklist (Achenbach, 1991) were collected at child ages 5.3, 5.8, 6.3, and 6.8 years. Alpha reliabilities of these scales in this sample were greater than .70 at each developmental point. These mean of the two scales at each age period was calculated and used as indicators of the construct of trait antisocial behavior.

Youth Self-Reported Antisocial Behavior

Children’s self-reported behavior problems were collected at age 9.3 years, using the externalizing scale of the Youth Self Report (YSR; Achenbach, 1991). Previous research has thoroughly established the validity and reliability of the YSR (Achenbach, 1991). The internal reliability of the externalizing scale in this sample was alpha = .87.

Results

Analysis plan

Descriptive statistics and correlations for the composite variables are shown in Table 1. After transformation, only two variables were skewed slightly more than 2.0, indicating significant deviation of distributions from normality was not a major concern (Kline, 2005). All subsequent analyses used square root transformed variables. The correlations indicate two of the proposed moderator variables, impulsivity and peer rejection, shared 27% common variance. The correlations of poor parental discipline with peer rejection and child impulsivity were low, suggesting a relative

Table 1

Descriptive Statistics and Correlations

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Note. Correlations shown in bold are reliable at p < .05; means, standard deviations and skewness for constructs are shown after aggregation, summation of standard scores and/or square root transformation.

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lack of redundancy among these variables. Each of
the proposed moderator variables, child deviant
discourse and play, and deviant peer affiliation
were reliably correlated with measures of child
antisocial behavior at ages 5.3, 5.8, 6.3, 6.8 and 9.3
years.

**Baseline, Direct Effects Models**
The fit of a baseline model (shown by solid paths
and composite variables in Figure 1) without the
proposed moderator variables (shown as dotted
paths and composite variables) to the data was
adequate. As hypothesized, peer modeling and
reinforcement of deviant discourse and play were
reliably related to the child’s deviant discourse and
play. Children’s deviant discourse and play, in turn,
predicted the construct for multi-setting antisocial
behavior from ages 5.3 to 6.8 years. Children’s
deviant discourse and play also predicted self-
reported antisocial behavior at age 9.3 years, after
controlling for earlier antisocial behavior. This
supports the mediator hypothesis. As expected,
deviant peer affiliation at age 5.3 years was
associated with antisocial behavior at ages 5.3 to
6.8 years, but was not a predictor of antisocial
behavior at 9.3 years of age. The lack of a relation
between deviant peer affiliation and child deviant
discourse and play was expected because children’s
discourse and play were assessed during interaction
with a random selection of classmates rather than
preferred peers.

The results of models including variables hypo-
thesized to moderate the association of peer modeling
and reinforcement with children’s deviant discourse
and play, and to have direct relationships to other
variables in the model as shown by dotted lines in
Figure 1 are reported in Table 2, referring to paths
marked “a,” “b,” “c” and “d” in Figure 1. Each
variable contributing to the moderator constructs
was centered and then multiplied to create an
interaction term. A model for each moderator
variable was tested separately. Each model (now
including all constructs and paths shown in Figure
1) fit the data adequately: $X^2(33, 267) < 45.00,$
$p > .06$, CFI > .970, RMSEA < .040. In each
moderator model, the path from child deviant
discourse and play to multi-setting antisocial
behavior from ages 5.3 to 6.8 years was reduced
slightly from that shown in Figure 1, but always
greater than $b = .27$ (all $p$s < .001). The path from
antisocial behavior from ages 5.3 to 6.8 years to
antisocial behavior at age 9.3 years was also
reduced slightly in the full moderator models, but
always greater than $b = .25$ (all $p$s < .01). The path

![Figure 1: Contribution of Peer Deviancy Training to Child Antisocial Behavior: Baseline and Moderator Model.](image-url)

$\chi^2_{(33, 267)} = 30.47, p = .062; \text{CFI} = .979; \text{RMSEA} = .044$

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Results From the Moderator Models

Table 2

<table>
<thead>
<tr>
<th>Added Variable</th>
<th>Paths</th>
<th>Increment in R²</th>
<th>5.3-6.8 yrs antisocial</th>
<th>9.3 yr antisocial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&quot;a&quot;</td>
<td>&quot;b&quot;</td>
<td>&quot;c&quot;</td>
<td>&quot;d&quot;</td>
</tr>
<tr>
<td>impulsivity</td>
<td>.14*</td>
<td>.15**</td>
<td>.44***</td>
<td>.12</td>
</tr>
<tr>
<td>poor discipline</td>
<td>.12*</td>
<td>.20***</td>
<td>.29***</td>
<td>.11*</td>
</tr>
<tr>
<td>peer rejection</td>
<td>.11*</td>
<td>.15**</td>
<td>.41***</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Path "a" refers to how the added variable moderates the relationship of peer modeling and reinforcement of deviant discourse and play to child deviant discourse and play; path "b" refers to the direct association of the added variable on child deviant talk and play; path "c" refers to the direct association of the added variable on kindergarten-first grade chronic antisocial behavior; and path "d" refers to the direct association of the added variable on fourth grade antisocial behavior (see Figure 1 for a graphic display).

The results of the analysis ascertaining the hypothesized occurrence of moderator effects on children's sensitivity to peer modeling and reinforcement of deviant discourse and play are shown in the first column (labeled “a”) in Table 2. Child impulsivity reliably moderated the relation of peer modeling and reinforcement of deviant discourse and play to the rates at which children engaged in such discourse and play (b = .15, p < .05). Following Aiken and West (1991), simple slopes were plotted for the relationship of peers' reinforcement and modeling of deviant discourse and play to rates of child deviant discourse and play at high (+1/2 SD) and low (-1/2 SD) levels of impulsivity. The results are shown in Figure 2. Children with poor relative to good inhibition were more sensitive to peers' reinforcement and modeling of deviant discourse and play. Parental discipline reliably moderated the relation of peer modeling and reinforcement of deviant discourse and play to rates of children's deviant discourse and play (b = .12, p < .05). Simple slopes were plotted for the relationship of peers' reinforcement and modeling of deviant discourse and play to rates of deviant discourse and play at high (+1/2 SD) and low (-1/2 SD) levels of poor discipline, and are shown in Figure 3. Children

HYPOTHEZIZED MODERATOR MODELS

The results of the analysis ascertaining the hypothesized occurrence of moderator effects on children's sensitivity to peer modeling and reinforcement of deviant discourse and play are shown in Figure 2. Children with poor relative to good inhibition were more sensitive to peers' reinforcement and modeling of deviant discourse and play. Parental discipline reliably moderated the relation of peer modeling and reinforcement of deviant discourse and play to rates of children's deviant discourse and play (b = .12, p < .05). Simple slopes were plotted for the relationship of peers' reinforcement and modeling of deviant discourse and play to rates of deviant discourse and play at high (+1/2 SD) and low (-1/2 SD) levels of poor discipline, and are shown in Figure 3. Children

FIGURE 2  Simple Slopes of the Relationship of Peer Reinforcement and Modeling of Deviant Discourse and Play to Rates of Child Norm-Violating Discourse and Play at High (+1/2 SD) and Low (-1/2 SD) Levels of Impulsivity.

FIGURE 3  Simple Slopes of the Relationship of Peer Reinforcement and Modeling of Deviant Discourse and Play to Rates of Child Norm-Violating Discourse and Play at High (+1/2 SD) and Low (-1/2 SD) Levels of Ineffective Discipline.

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Peer deviancy training among school classmates appears to be a powerful risk factor for multi-setting antisocial behavior as early as age 6, and the risk it poses extends to age 9. The potency of deviancy training is also apparent in that it was concurrently and prospectively associated with antisocial behavior even after accounting for other well established risk factors, including deviant peer affiliation, peer rejection, poor parental discipline, and child impulsivity. Peer deviancy training may also serve as an indirect mechanism by which peer rejection, poor discipline, and child impulsivity increment risk for early onset and persisting antisocial behavior. In summary, the data in this report suggest that modeling and reinforcement of deviant discourse and play during peer interaction are associated with the development of verbal rules and cognitive templates which facilitate the performance of antisocial behavior.

These findings are consistent with those reported by other investigators (e.g., Patterson et al., 2000), but extend previous findings in two ways. First, peer deviancy training operates as early as the transition to elementary school as children are systematically exposed to peers who have diverse previous experiences with norm-violating models and who display a variety of deviant discourse and behavior. Second, the risk posed by peer deviancy training is not restricted to friendships or cliques among deviant youth. In this study, incidental involvement in and exposure to norm-violating discourse and behavior and its positive social consequences during interaction with randomly selected same-gender elementary school classmates was similarly associated with increased risk for antisocial behavior that persisted for nearly 3 years.

However, not all children appear to be equally influenced by peer modeling of deviant discourse and play, and by the excitement, attention and titillation deviant discourse and play generate among peers. The degree to which children are influenced by peer deviancy training appears to be moderated by three variables from different domains: child impulsivity or poor executive inhibition; ineffective, coercive and non-contingent discipline; and peer rejection. Each of these variables appears to amplify the effects of peer deviancy training by enhancing children’s reactivity and sensitivity to the social reinforcement generated when discourse and play turn to topics of sex, drugs, aggression, swearing and stealing, defiance of authority, and bragging about risky exploits and experiences (Wills & Dishion, 2004). The explicit description and assessment of the social processes comprising peer deviancy training is not new, but their role as mechanisms by which moderators operate has not been previously tested.

Impulsivity appears to increase children’s sensitivity to peer attention and reinforcement of deviant discourse and play. Inhibition of prepotent responses is a key executive function, enabling effortful control, problem solving, and emotional and behavioral self-regulation (Barkley, 2001). Executive inhibitory control facilitates the ability to avoid events and suppress actions associated with immediate reward, and to approach events and engage in behaviors associated with immediate cues for punishment (Posner & Rothbart, 2000). The data in this report replicate similar findings on the role of impulsivity in moderating the association between deviant peer affiliation and antisocial behavior (Gardner et al., 2008; Goodnight et al., 2006) but extends those findings to a younger sample. While the danger engendered by the mismatch between inadequate executive control...
and increased exposure to environmental risk in early adolescence has received considerable empirical attention (Spear, 2000), a similar mismatch may appear at other salient transitions such as entry to elementary school.

In a similar vein, it is also not surprising that poor parental discipline would be associated with poorer self-regulation by children in the absence of adult tracking and contingencies (Vitaro et al., 2000). As well as replicating its direct and persistent association with antisocial behavior during early childhood (Snyder et al., 2003), poor discipline was also associated with increased rates of child deviant discourse and play, and with reduced capacity to resist the direct and vicarious pull of peer rewards associated with such discourse and play. Although not tested in this study, poor discipline may also undermine the self-regulation children need to tolerate social disapproval and disparagement meted out by peers for signs of embarrassment or withdrawal when exposed to norm-violating discourse and behavior.

The association of peer rejection with increased sensitivity to peer modeling and reinforcement of deviant discourse and play is a novel finding. The relative rates with which various social responses are used by children to relate to peers are shaped by the relative rates at which reinforcement is provided by peers for those response alternatives (Snyder et al., 2004). Rejected children may experience low rates of peer reinforcement for normative discourse and play (Coe & Kupersmidt, 1983). As a consequence, the social excitement and attention generated by deviant discourse and rehearsal may be particularly salient and powerful. Children who are rejected by normative peers may also spend more time interacting with antisocial peers, providing an experiential history that further shapes increased responsiveness to peer modeling and reinforcement of deviant discourse and activities.

It should also be noted that impulsivity, poor discipline and peer rejection were each directly linked with multi-setting child antisocial behavior from ages 5.3 to 6.8 years as well as being indirectly linked through peer deviancy training. The size of the moderated and indirect associations of impulsivity, poor discipline and peer rejection with antisocial behavior was small relative to their direct associations. However, reliable indirect and moderated associations of peer deviancy training with antisocial behavior were still apparent in the context of their more direct associations and after controlling for deviant peer affiliation, suggesting that their indirect and moderated associations are highly reliable and operate early in development.

This report has several strengths. Each of the constructs was measured by multiple informants and methods, and with relatively little measurement overlap among constructs. This reduces measurement error and minimizes source variance as an alternate explanation for observed empirical relationships. The relation of child deviant discourse and play to peer reinforcement of deviant discourse and play has been reported previously for this sample (Snyder et al., 2004), but was tested more powerfully in this report by the addition of indicators of peer modeling of deviant discourse and play, and of target children’s reinforcement of peers’ deviant discourse and play. The relation of child deviant discourse and play to concurrent child antisocial behavior has also been reported previously for this sample (Snyder et al., 2005), but here is extended to child self reported antisocial behavior nearly 3 years later. Thus, the two crucial constructs of peer deviancy training in this report were more powerfully measured to reflect multiple direct and vicarious social processes, and the persisting impact of early peer deviancy training was more clearly substantiated. The longitudinal design provided the opportunity to incorporate constructs into models consistent with the temporal sequence of their operation.

These strengths are balanced by a number of limitations. Strong causal inferences cannot be drawn from these correlational data. The models tested in this report may be incomplete, and fail to incorporate a number of other key variables that would reduce potential bias in estimates of the contribution of deviancy training and associated moderating variables to antisocial development. The degree to which the findings derived from this single-school community sample generalize to children, families, schools and communities with a broader range of characteristics is unknown. However, the sample used to obtain data in this report represents a relatively full range of child adjustment and family characteristics.

The results have a number of potentially important implications. Interventions to reduce the occurrence of peer deviancy training in school settings as early as kindergarten may powerfully reduce risk for early-onset, persisting antisocial behavior. These interventions may focus on reducing the occurrence of deviancy training in a very direct way by increasing adult monitoring of peer interaction on playgrounds and in hallways and restrooms to include deviant discourse, activities and play as well as more overt forms of aggression and disruptive behavior. Interventions could also directly alter peer contingencies for deviant discourse and play, perhaps piggybacking on existing
effective interventions for aggressive behavior such as the good behavior game (Stoelver, Eddy, & Reid, 2000). However, this report indicates a number of intervention tactics and targets may be available in addition to simply trying to limit aggregation of at-risk children and peer deviancy training. Effective parenting is a protective factor, reducing children’s sensitivity to peer modeling and reinforcement of deviant discourse and play, and their co-participation in such discourse and play. More specifically, the promotion of effective parental discipline during early childhood may be a potent means to mitigate future negative peer influence. It may also be useful to complement skills training and peer relationship enhancement interventions for disruptive and aggressive children (e.g., Lochman, Wells, & Lenhart, 2008) with explicit training in resisting or managing peers’ deviant discourse and modeling. These efforts may be particularly important for children who exhibit deficient executive control. Finally, recent efforts to directly enhance children’s executive attentional and inhibitory control (Rothbart & Rueda, 2005), if successful and generalizable, may provide a useful avenue to address the problems of peer deviancy training.

References


disorder and juvenile delinquency (pp. 27–48). New York: Guilford Press.


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