Friendships and deviancy training in young children

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Abstract

Purpose – *The purpose of this study was to test a new approach to deviancy training, that is, the shaping and reinforcing of disruptive behaviors in social interaction, which considers not only reinforcement, but also the modeling processes involved, as well as children's roles as either providers or receivers of the training.*
Design/methodology/approach – *Using teacher reports and observations from a semi-naturalistic experimental setting with young children, the authors examined the prevalence of provided and received modeling and positive reinforcement, as well as the concurrent contribution of behavior problems on these processes in friendship dyads using a convenience sample of six-year-old twins (N = 783; 386 boys). Frequency analyses and linear and logistic regressions were conducted.*
Findings – *Results indicated that modeling and positive reinforcement – provided and received – were prevalent in this low-risk sample, that behavior problems were associated mainly with provided dimensions, and that deviancy training processes were also displayed between disruptive and non-disruptive children.*
Practical implications – *Findings are relevant to peer-oriented programs designed to prevent antisocial behaviors. Prevention should target these mixed friendships where deviant behavior likely begins.*
Originality/value – *This study provides preliminary support for a new measure of deviancy training, underscores the importance of the roles taken by children, and shows that deviancy training takes place between disruptive and non-disruptive young children.*

Keywords *Reinforcement, Social learning, Modelling, Behaviour problems, Childhood, Deviancy training*

Paper type *Research paper*

Friends are important socialization agents across the lifespan. In childhood, they provide contexts where children learn social rules and form their behavior repertoire. Children begin selecting their friends at an early age and do so on the basis of similarities in age, sex, and activity preferences, a process called differential selection (Howes, 1996). In addition, there is emerging evidence that even preschool children tend to affiliate on the basis of similarities in behaviors such as aggression (Farver, 1996; Snyder *et al.*, 1997; Boivin *et al.*, 2005). In this way, children sharing certain characteristics tend to befriend each other, and through these friendships, gradually share social norms that influence their behavior toward each other and toward others. Over time, their initial similarities intensify by way of reciprocal socialization in play and conversations where they construct their self-perceptions and create contexts favorable to the reinforcement of shared behavioral tendencies (Cairns and Cairns, 1994). For children with aggressive tendencies, it is these friendships that may provide a fertile ground for deviancy training, that is, the shaping and reinforcing of deviant behaviors in social interaction, as this seems to be the case for antisocial adolescents.

Early theories of deviant behavior identified friendships among deviant adolescents as contexts promoting the transmission of values and social rules conducive to antisocial behaviors, such as delinquency and substance abuse (Sutherland, 1939; Burgess and Akers, 1966). These theories are supported by recent empirical studies that have documented the social transactions through which friendships among deviant adolescents promote the growth of

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problem behavior. Specifically, these studies showed that deviant peers provided positive reinforcement for rule breaking, which significantly predicted future antisocial behavior (Dishion *et al.*, 1996, 1997). The positive reinforcement of rule breaking also mediated the contribution of early involvement with deviant peers to the growth in deviant behaviors over the course of several years (Patterson *et al.*, 2000). This accumulated evidence supports the view that deviant adolescents not only select each other on the basis of behavioral homophily, but also influence each other through a series of mechanisms known as "deviancy training."

Because these initial studies focussed exclusively on the adolescent period, and given that the nature and dynamics of friendships vary with age (Cairns and Cairns, 1994), the presence, form and impact of deviancy training during early childhood need to be assessed specifically. To our knowledge, only two studies have examined these questions (Snyder *et al.*, 2005, 2008). Using a high-risk sample of 267 children aged five to seven years, Snyder and colleagues measured deviancy training by videotaping children's interactions on various occasions during the kindergarten year. Children were paired in same-sex dyads and first played a structured game, then had free-play time. Behaviors of the target children were coded as either normative or deviant, and behaviors of their partner in response to these deviant acts were coded as positive or non-positive. Deviancy training was derived from the occasions where target children received a positive response from their partner for their deviant behavior. Measuring conduct problems, as well as deviant peer association separately, Snyder and his colleagues showed that deviant peer association predicted deviancy training, which in turn predicted growth in conduct problems several years later.

These studies suggest that like in adolescence, peers' interactions in childhood may yield deviancy training and influence the course of behavior problems. However, in these studies, as in the previous studies with adolescent samples, deviancy training was measured exclusively as the proportion of positive reinforcements received for deviant verbal statements (deviant talk) and for playful enactments of deviant behaviors (deviant role taking), ignoring the social processes presiding over the initial learning of these behaviors. Research designs that omit the mechanisms involved in the first learning of deviant behaviors, such as modeling, imply that children have already learned them, and are therefore particularly limited when studying deviancy training in early childhood, when children are more likely to be learning new behaviors.

Modeling has been proposed as the most basic and pervasive mechanism of human learning (Bandura, 1973), the observation of another's actions providing information about the social context, the rules and consequences associated with a behavior. By accounting for how deviant behavior first appears, modeling could provide a missing piece to the learning onset of antisocial behavior. According to Burgess and Akers' social learning theory, deviant peer association, differential reinforcement of deviant behaviors, but also imitation resulting from exposure to deviant models and group norms fostering deviant behaviors are jointly responsible for the learning of deviant behavior. This is likely in adolescence, but possibly also in childhood (Burgess and Akers, 1966). Whereas differential reinforcement implies direct interactions among adolescents, exposure to group norms and the resulting modeling process do not necessarily, although the failure to adhere to valued social norms may be met with social punishment in the form of exclusion, in line with differential reinforcement principles (Juvonen and Galvan, 2008). In two studies with adolescents (grades 7 through 12), the dimensions mentioned successfully accounted for 54 percent of the variance for alcohol drinking, 68 percent for marijuana use and 54 percent for cigarette smoking (Akers *et al.*, 1979; Krohn *et al.*, 1985). However, imitation was systematically less predictive than the other variables. Imitation was measured through questionnaire as the number of models (parents and friends) whom adolescents frequently saw acting in deviant ways, and hence overlapped with the measure of deviant peer association. Consequently, imitation's low predictive power could be due to its' appearance early in the learning process which may blur its onset, making it easier for the other components of the model to then overshadow its contribution as deviant behavior is learned. Measuring how imitation plays a role in deviancy training is thus a challenge that could be met more easily with younger populations before such behaviors are consolidated. The present study proposes a comprehensive approach to deviancy training that considers modeling processes in addition to

reinforcement processes, and uses a quasi-naturalistic experiment to document deviancy training in young children.

Inherent to the idea of deviancy training is the interdependency between the individuals involved as they serve both as models and observers, and thus can mutually model and reinforce the behaviors. However, the studies reviewed herein have typically focussed only on the target child as the receiver of deviancy training and did not document how providing or receiving deviancy training relates to disruptive behavior. A bi-directional analysis of children's roles should provide a more complete picture of deviancy training. In addition, the dynamic flow of providing and receiving deviancy training would theoretically be more robustly maintained in defined friendships between children, rather than simple acquaintances. Because friends spend more time with each other, engage in more conversation than general peers, and tend to become more similar over time, deviancy training between close friends could be more stable and lead to more significant learning experiences than those occurring among general peers (Hartup *et al.*, 1988; Newcomb and Bagwell, 1995). Studying deviancy training specifically in the friendships of young children would contribute to the understanding of this phenomenon, given that previous studies have made no distinction between the deviancy training bouts occurring between friend and non-friend dyads.

The purpose of this study was to put to test a new approach to deviancy training that takes into account modeling and reinforcement processes, as well as children's provider and receiver roles, in the friendship contexts of young children.

Deviancy training was operationally defined as the demonstration and approval of deviant behaviors that a child provides and/or receives from a friend, and was examined in two semi-naturalistic experimental settings: a socio-cognitive task and a cheating task. Three scores for deviancy training were derived from these tasks: demonstration of aggression, demonstration of cheating and approval. We sought to: document the prevalence of these deviancy training processes among kindergarten children; and examine the unique contribution of target children's and their friends' behavior problems, assessed by teachers and peers, to received and provided deviancy training. We expected provided and received modeling and reinforcement to be present in preschool, and both children's behavior problems to equally contribute to the two deviancy training processes.

Method

Participants

The participants were from the longitudinal Quebec Newborn Twin Study (QNTS; Boivin *et al.*, 2013), a population-based study of 662 twin pairs (1,324 individual children) born between April 1995 and December 1998 in the Greater Montreal Area (Canada), and a convenience sample for the purpose of the present study. Twins were first assessed when they were five months old, and then every 12 months. Mother's mean age at birth was 30.41 years (SD = 4.8), and father's was 33.03 years (SD = 5.76). At the first assessment, 71.7 percent of families had a household income higher than CAN $30,000, the average household income being close to CAN $40,000. Among mothers, 12.9 percent did not finish high school, while 29.5 percent graduated from college (data were missing for 9.4 percent of mothers). Among fathers, 11.8 percent did not finish high school, and 28.1 percent graduated from college (data were missing for 16.1 percent of fathers). Families were mainly of European (84 percent), African (3 percent), and Asian (2 percent) descent. The first language was most often French (71.9 percent mothers, 72.3 percent fathers), or English (9.9 percent mothers, 8.8 percent fathers). With an average attrition rate of approximately 5 percent per year, a total of 394 twin pairs (788 individual children) participated in the age six data wave, when they were on average 6.04 (SD = 0.27) years of age (382 boys). Mothers of children from this data wave did not differ from the original sample with regard to level of education at recruitment. The average household income was higher, and father's level of education was also higher for participating than for non-participating children. However, children who did not participate in the tasks but were evaluated by teachers and peers did not differ in terms of behavior problems compared to those who did participate in the tasks.

Data collection

Data collection at age six included group administered peer nominations, teacher reports, and observational tasks. Parental consent was obtained for all target children and their friends. Data were collected during three visits to children's schools carried out each time by two research assistants who had been previously trained by the project coordinator. Peer nominations were first collected; children evaluated their classmates with respect to 23 behaviors, and indicated their best friend and two other close friends from a booklet of their classmate's photographs. Children's friends were labeled as either "mutual" (the friend chosen by the target child also chose him/her), or "unilateral" (the target child chose a friend who did not choose him/her). Teachers' ratings of the target children and their friends' behavioral characteristics are described below.

Two observational tasks were considered in this study. The tasks took place in a large net tent (12 feet long, six feet wide and six feet high) set up in the school's gymnasium and were recorded with a video camera mounted outside of the tent, and a microphone placed in the center of it. Each target child and his/her best available friend participated in each task together. Dyads were formed prioritizing first mutual friendships, then the order in which they were chosen. In all, 71 percent of dyads were composed of mutual friendships, 41.1 percent of them with the first friend chosen. The remaining 28.9 percent of dyads were composed of unilateral friends due either to logistic reasons (mutual friends were absent that day) or because no mutual friends were identified. All were same-sex dyads. The adequate implementation of the tasks was confirmed during coding and any videos with anomalies were not considered for the analysis.

Socio-cognitive task. This task measured the dyad's conflict resolution strategies. Children were asked to imagine that they were looking at a book when another child came and took it away from them. The target child was asked first what they would do, followed by the friend. After both answered, they were told the child refused to give back the book and then started calling them names. Children were again asked what they would do following the same sequence.

The coding of these behaviors was done by two research assistants after a 20-hour training that produced a preliminary accord. The coders were blind to the hypothesis of the study. Children's behaviors were coded in a first viewing, and children's reactions to their friends' responses in a second one. Answers were categorized as aggressive or non-aggressive. Reactions were categorized as: positive affective, behavioral approval, and verbal approval. As shown in Table I, the coding yielded a demonstration score, that is when a child gives an aggressive answer in the presence of his friend; and an approval score, that is when after an aggressive answer was given by one child, the other approves. Coding reliability was established for 43 tasks and the intercoder reliability ranged from $\kappa = 0.66$ to 1.

Table I Deviancy training items and scores

Items	*Description*	*Scores*	
		Received	*Provided*
Demonstration of aggression	Aggressive response: verbally or physically aggresses	Received demonstration of aggression (RDA): the friend gives an aggressive response first	Provided demonstration of aggression (PDA): the target child gives an aggressive response first
Demonstration of cheating	Cheating: moves towards the screen, or cheats	Received demonstration of cheating (RDC): the friend cheats first	Provided demonstration of cheating (PDC): the target child cheats first
Approval of aggression	Positive affective: smiles, laughs, excited voice and movement Behavioral approval: nods, gives a "high-five" Verbal approval: says yes, repeats response approvingly, elaborates	Received approval (RA): the friend reacts positively to the child's aggressive solution; the friend reacts positively towards the child's cheating	Provided approval (PA): the target child reacts positively to the friend's aggressive response; the child reacts positively towards the friend's cheating
Approval of cheating	Positive affective: smiles, laughs, excited voice and movement		

Cheating task. Dyads were asked to play a memory game as a team, and were told they were playing against another dyad. First, the research assistant showed them several animal figures for five seconds, and then hid them behind a screen. The research assistant then asked them to name the animals by memory, and after a first try, left them alone for 90 seconds telling them she was going to see how many animals the other dyad remembered. The research assistant told them not to cheat during this time. Upon her return, children were asked to name the animals they remembered again. Children's behavior during their time alone was also coded by two blind and trained research assistants as follows: cheating behaviors and positive affective reaction to cheating (see Table I). Coding reliability was established for 42 cheating bouts and the intercoder reliability ranged from $\kappa = 0.66$ to 0.99.

Three deviancy training scores were derived: demonstration of aggression, demonstration of cheating, and approval. All scores were considered as being received and as being provided by children, as described in Table I.

Demonstration of aggression. Received demonstration of aggression was coded from the socio-cognitive task and included all aggressive responses given by the target child's friend before any aggressive response was given by the target child. Provided demonstration of aggression included all aggressive responses given by the target child before any aggressive responses were given by the friend. Each score had three levels: (0) no aggressive responses; (1) an aggressive response to one question; and (2) an aggressive response to both questions. Data were available for 765 children.

Demonstration of cheating. Received demonstration of cheating was coded from the cheating task and included all cheating behaviors displayed by the target child's friend before any cheating behavior was displayed by the target child. Provided demonstration of cheating by the target child included all cheating behaviors displayed by the target child before any cheating behaviors were displayed by the friend. Each score had two levels: (0) no cheating behaviors; and (1) cheating behaviors (Data for 783 children).

Approval. Approval was coded from both tasks. Received approval included all positive reactions (smiles, laughs, excited voice) expressed by the friend after an aggressive response, or a cheating behavior was displayed by the target child. Provided approval by the target child included all positive reactions expressed by the target child after an aggressive, or a cheating behavior was displayed by the friend. Each score had three levels: (0) no approval; (1) approval in one task; and (2) approval in both tasks (data for 764 children).

Behavior problems. The behavior problems score was constructed by combining teacher reports and peers' nominations of aggression. Teachers rated the target child's and the friend's aggression, oppositional behavior and conduct problems using items from the Child Social Behavior Questionnaire (Tremblay *et al.*, 1991), reporting whether the child never (0), sometimes (1) or often (2) displayed the behavior. For the target child, we used seven items of aggression ("sought to dominate others," "physically attacked others"), three of oppositional behavior ("refused to obey," "did not seem to repent after a bad deed"), and five of conduct problems ("stole things," "damaged or broke things of others"). For friends we used fewer items to reduce the teacher's workload. Peer nominations of aggression were measured with four items ("which children fight the most," "which children say not to play with others"). Correlations between all items ranged between $r = 0.30$ and $r = 0.71$ (all $ps < 0.00$). A mean was calculated from these items after they were transformed to z scores. Between all items, Cronbach's $\alpha = 0.82$ for children, and $\alpha = 0.85$ for friends. Data on 774 target children and 640 friends were available for analyses.

Statistical analyses

The Full Information Maximum Likelihood (FIML) estimator was used to address missing data. FIML estimates parameters and standard errors based on all available data, without imputing missing values (Graham, 2009). FIML has been shown to provide reliable estimates when the missing at random (MAR) assumption is met, and robust ones when it is not (Graham, 2009).

We first documented the prevalence of deviancy training and its association with behavior problems. We then examined the relative contribution of both children's behavior problems to

each deviancy training score by conducting regressions on all deviancy training scores using the same model: sex, child's behavior problems, and friend's behavior problems. To address the possible non-independence of twins' within-pair responses, we used the robust maximum likelihood estimator in the statistical package MPlus 5.2 (Muthén and Muthén, 2007), which corrects the standard errors of the parameters for dependency.

Results

Demonstration of aggression was received at least once by 25.9 percent ($N = 199$), and twice by 4 percent ($N = 31$) of target children. Demonstration of cheating was received by 22.3 percent ($N = 175$) of target children. Demonstration of aggression was provided at least once by 28.6 percent ($N = 219$) of target children, with 11.1 percent ($N = 85$) providing it twice. Demonstration of cheating was provided by 24.5 percent ($N = 192$) of target children.

Concerning approval of aggression and/or cheating, no deviant behavior was displayed by 38.1 percent ($N = 202$) of target children; 28.9 percent ($N = 222$) displayed a deviant behavior but did not receive approval, while 33 percent ($N = 253$) displayed a deviant behavior and did receive approval. Put together, 70.2 percent ($N = 475$) of target children displayed a deviant behavior, and 53.26 percent of those received approval.

On the providing side, 38.2 percent ($N = 296$) of target children's friends did not display a deviant behavior; 27 percent did ($N = 209$), for which target children did not provide approval; and 34.8 percent ($N = 269$) of friends displayed a deviant behavior for which target children did provide approval. In all, 61.7 percent ($N = 478$) of friends displayed a deviant behavior, and target children provided approval for 56.3 percent of them. Means and sex differences of demonstration and approval scores are presented in Table II. Boy's means were significantly higher than girls' in all demonstrating and in received approval scores. No sex differences were found in provided approval scores.

As shown in Table III, small but significant correlations were found between the deviancy training scores and behavior problems. Target children's behavior problems were associated with received approval for aggression and/or cheating, but not with received demonstration of aggression, nor received demonstration of cheating. On the other hand, friends' behavior problems were correlated with all three received aspects of deviancy training by target children. Significant but small correlations were also found between target children's and friends' behavior problems.

Behavior problems and demonstration of aggression

Linear regressions were conducted to test the unique contribution of both children's behavior problems on received demonstration of aggression. The model accounted for 5.1 percent of the variance ($p < 0.01$). Only friends' behavior problems made a significant independent contribution to the model ($\beta = 0.106$, $p < 0.01$).

Another linear regression was conducted to test the contributions of children's behavior problems to provided demonstration of aggression. The model explains 5.5 percent of the variance ($p < 0.01$). Children's own behavior problems had a significant contribution to the

Table II Means and sex differences of demonstration and approval scores

	RDA *Min (0), max (2)*		*PDA* *Min (0), max (2)*		*RDC* *Min (0), max (1)*		*PDC* *Min (0), max (1)*		*RA* *Min (0), max (2)*		*PA* *Min (0), max (2)*	
Mean (SD)	0.34 (0.55)		0.51 (0.69)		0.22 (0.41)		0.24 (0.43)		0.95 (0.84)		0.97 (0.85)	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
	0.23 (0.49)**	0.45 (0.59)**	0.38 (0.62)**	0.65 (0.73)**	0.20 (0.40)**	0.24 (0.42)**	0.22 (0.41)**	0.26 (0.44)**	0.74 (0.83)*	1.16 (0.79)*	0.72 (0.83)	1.23 (0.80)

Notes: RDA, received demonstration of aggression; PDA, provided demonstration of aggression; RDC, received demonstration of cheating PDC, provided demonstration of cheating; RA, received approval; PA, provided approval. $^{**}p < 0.01$; $^{*}p < 0.05$

Table III Correlations between deviancy training scores and behavior problems

	1	2	3	4	5	6	7
1. RDA							
2. RDC	0.032						
3. RA	0.049	0.213**					
4. PDA	−0.161**	0.051	0.281**				
5. PDC	0.076	−0.397**	0.373**	0.061			
6. PA	0.225**	0.380**	0.594**	0.207**	0.173**		
7. Children's BP	0.012	−0.059	0.214**	0.121**	0.183**	0.148**	
8. Friends' BP	0.158**	0.276**	0.114**	0.001	−0.063	0.206**	0.147**

Notes: RDA, received demonstration of aggression; RDC, received demonstration of cheating; RA, received approval; PDA, provided demonstration of aggression; PDC, provided demonstration of cheating; PA, provided approval; BP, behavior problems. **$p < 0.01$; *$p < 0.05$

model ($\beta = 0.147$, $p < 0.01$). Friends' low levels of behavior problems also contributed, albeit modestly ($\beta = -0.078$, $p < 0.05$).

Behavior problems and demonstration of cheating

The logistic regression for received demonstration of cheating resulted in a model accounting for 13.6 percent of the variance ($p < 0.01$). Only friends' behavior problems contributed significantly to the model ($\beta = 0.331$, $p < 0.01$).

The model resulting of the logistic regression for provided demonstration of cheating accounted for 7.2 percent of the variance ($p < 0.01$). Only children's behavior problems contributed significantly ($\beta = 0.218$, $p < 0.01$).

Behavior problems and approval

Linear regressions were conducted to test the contributions of children's behavior problems on received approval. The model explained 7.5 percent of the variance ($p < 0.01$). Only target children's own behavior problems contributed to the model ($\beta = 0.260$, $p < 0.01$).

A significant 9 percent of the variance in provided approval was explained by the model ($p < 0.01$). Both children's behavior problems contributed significantly to the model ($\beta = 0.148$, $p < 0.05$; $\beta = 0.138$, $p < 0.01$).

Discussion

We sought to evaluate modeling and reinforcement in early deviancy training through a dyadic, bi-directional, approach that differentiates provider and receiver roles in a semi-naturalistic experimental context involving friendship dyads. Specifically, the contributions of sex, target children's and friends' behavior problems to each provided and received deviancy training process were examined. The results provided preliminary support for the relevance of both modeling and reinforcement in early deviancy training.

Prevalence of deviancy training

Results show that modeling and reinforcement were similarly prevalent in our sample. Prevalence was slightly higher for providing demonstration of aggression than for receiving it. However, frequencies were similar between providing and receiving demonstration of cheating and approval. This difference in prevalence could be due to the way deviancy training was measured. Given that only the first aggressive answers were considered demonstrations, and target children were the first to answer, target children had more opportunities to demonstrate aggressive responses than their friends. In contrast, both children had equal opportunity to cheat.

Target children's behavior problems were correlated to friends' behavior problems, consistent with the view that children with disruptive tendencies tend to befriend each other. Behavioral homophily is a phenomenon clearly documented during adolescence, but still in doubt when referring to preschool children. This is likely due to the fact that preschool children have less developed social skills, a smaller pool of peers from which to select friends and playmates, and their dependence on parents for access and organization of playing contexts (Howes, 1996). However, our results clearly document the presence of behavioral homophily with respect to aggressive behaviors among preschool children.

Differences were found between boys' and girls' participation in deviancy training. Boys received and provided demonstration of aggression and cheating more than girls. For approval, boys received more approval than girls, but both provided approval as often, showing that even if girls displayed less aggressive and cheating behaviors, they approved them as often as boys did. Sex differences were found for all deviancy training scores, except for demonstration and approval of cheating. As in Snyder *et al.*'s (2008) study, these results suggest that the contributions of behavior problems to deviancy training is of similar nature for both sexes, but stronger for boys.

Behavior problems and deviancy training

Our approach to deviancy training showed consistency as both children's active demonstrating roles were associated with their own behavior problems: target children's behavior problems were associated to provided demonstration, and friends' behavior problems were also associated with received demonstration. Consequently, children who showed behavior problems were more likely to expose their friends to a model of deviancy.

However, children's behavior problems did not contribute to their receiver roles of demonstration, while friends' behavior problems did, possibly indicating that in the early stages of deviancy training, children can participate in friendships where they are exposed to deviant models, without manifesting deviant tendencies. This discrepancy between the providing and receiving sides could reflect the normative quality of the sample, as the overall level of behavior problems and of affiliation between deviant peers were low. As shown by Coie and colleagues, at-risk contexts produce larger cliques with high concentrations of deviant peers, while low-risk contexts distribute deviant peers more evenly in different social groups (Coie *et al.*, 1998). Hence, our study adds to previous studies on deviancy training based on at-risk samples, by showing that this phenomenon can be generalized to young disruptive and non-disruptive children from a community sample. Therefore, modeling among disruptive and non-disruptive children could be one of the processes through which deviant behavior first appears. It may also be particularly salient with young children in normative contexts, despite a weaker tendency for behavioral homophily compared to adolescents, and a social environment providing less deviant peers overall.

Similarly, approval showed a pattern where both disruptive friends and mixed friends can reinforce each other's deviant behaviors. Target children's behavior problems contributed to received and provided approval, suggesting that children displaying behavior problems are more likely to both be reinforced and reinforce deviant behaviors, in tune with previous studies (Snyder *et al.*, 2005). But target children also received approval even if their friends did not present high levels of behavior problems. These results are in line with the social learning perspective, which states that both differential reinforcement of deviant behaviors and imitation resulting from exposure to peers' behaviors or values are responsible for the learning of deviant behavior (Burgess and Akers, 1966; Bandura, 1973). Accordingly, the reinforcement of deviant behaviors provided by non-deviant children might be a result of their previous exposure to deviant norms and behaviors, and could represent a first sign that deviant behavior is being learned. We can therefore suggest that whether, and how modeling plays a role in deviancy training may be more easily tested with young children before deviant behaviors are consolidated.

Limits and contributions

Our study has a number of limitations that should be taken into account when interpreting the results. First, deviancy training was only assessed at one point in time. Observations at

different times and in various contexts would have provided a more comprehensive view of deviancy training, including the possible impact of deviancy training on children's later behavior problems. Future studies should include repeated measures of deviancy training preferably of the same friendship dyads, and provide a variety of situational tasks where deviancy training could emerge. Also, direct observations of children's deviant behaviors in natural interactions would have been useful to validate the measures collected through the observational tasks. A few studies have managed to obtain these observations in the playground context, albeit for much smaller samples (Craig *et al.*, 2000; Hawkins *et al.*, 2001). Our reliance on a unique measure of deviancy training may, in turn, explain the small effect sizes linking children's behavior problems to the individual indices of deviancy training collected during the observational tasks. In fact, small effects ought to be expected given the limited power of specific observational tasks and individual indices of deviancy training to reveal more than a small portion of children's behavioral repertoire. Although modest, the associations between children's behaviors during the tasks and the evaluation of their behavioral profile by teachers and peers were clearly and meaningfully significant, thus supporting their validity.

In conclusion, this study provided preliminary support for a multifaceted deviancy training construct, with several advantages compared to previous studies: it depicted friendship dyads in a structured, yet semi-naturalistic context, added modeling processes, and identified receiver and provider roles. Specifically, we shed light to the deviancy training processes that could be taking place between mixed friendship dyads in early childhood, an original contribution that advances our understanding of social interactions among young children. Designers of peer-oriented programs that can prevent deviancy training can also benefit (Dodge *et al.*, 2007), producing interventions that consider the potential deviancy training taking place in mixed friendship dyads.

Implications for practice and theory

- Theory on deviancy training should systematically include modeling processes as one of the learning mechanisms involved.
- Both receiving and providing reinforcement and modeling of deviant behaviors should be considered when studying deviancy training.
- Deviancy training can take place between disruptive and non-disruptive peers in early childhood and may be one of the motors in the development of conduct problems in non-disruptive children.
- Peer oriented prevention programs targeting the development of antisocial behavior should consider the deviancy training taking place in mixed friendship dyads, devising ways in which the prosocial behaviors can take over the training rather than the deviant behaviors.

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