

Understanding the Association Between Maltreatment History and Adolescent Risk Behavior by Examining Popularity Motivations and Peer Group Control

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Received: 19 May 2008 / Accepted: 23 July 2008 / Published online: 7 August 2008
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Abstract The purpose of the present study was to examine how peer group processes of pressure and control and individual motivations for popularity would add to, and moderate the relationship between, childhood maltreatment and risky behavior in adolescence. A total of 1558 youth (804 girls) from three high schools in Ontario, Canada (M age = 15.02 years, $SD = .86$) reported on their alcohol use, delinquent behavior, childhood experiences of physical and emotional maltreatment and neglect, peer group processes involving control and individual popularity motivations. Regression analyses showed that, beyond the significant contributions of childhood maltreatment, peer group control predicted risky alcohol use and delinquent behavior. Peer group control and popularity motivations exacerbated the negative effect of physical maltreatment on delinquent behavior. Boys' experiences of peer group control were more strongly linked to alcohol use and delinquent behavior than girls'. These results suggest that there is a significant window of opportunity during adolescence where the peer group context can exacerbate or buffer childhood experiences.

Keywords Peer group control · Peer pressure · Popularity · Childhood maltreatment · Adolescent risk behavior

Introduction

High risk behaviors during adolescence include substance use and abuse, violence and criminal behavior. Risk behaviors such as these generally begin in adolescence and form lasting behavior patterns (Irwin et al. 2002). Alcohol use, in particular, may serve as an entry point into other high risk behaviors because it influences involvement in unsafe sexual practices (Guo et al. 2002) and violence (Maney et al. 2002). Both familial origins, such as childhood maltreatment, and risky peer contexts have been implicated in the development of adolescent alcohol use and delinquent behavior, with most research examining these settings as independent entities. However, some studies suggest that peer effects outweigh or moderate parental contributions in the prediction of adolescent risk behavior (e.g., Arriaga and Foshee 2004). This may be because peer groups are dominant contexts for identity development in adolescence and group belonging inevitably involves some sort of commitment to group norms (Brown 1990). In this study, our goal was to determine if peer group processes involving control and pressure and individual motivations for belonging (i.e., popularity) would predict alcohol use and delinquency beyond experiences of childhood maltreatment and to examine the potential moderating role of these variables on maltreatment experiences.

A growing body of research has shown that a history of childhood maltreatment is associated with a myriad of poor behavioral, social, and psychological outcomes in childhood and adolescence (Kaplan et al. 1999). Adolescents with maltreatment histories are at increased risk for violence with peers and dating partners (Bolger et al. 1998; Wolfe et al. 2004) and numerous studies have documented a relationship between childhood abuse and later substance

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use/abuse and delinquency in adolescence and adulthood (Bensley et al. 2000; Hawkins et al. 1992). This connection is evident among children who have been victims of physical, sexual, and emotional maltreatment, as well as emotional neglect involving witnessing abuse in the home. The link between family history and risk behavior is most likely a result of a chaotic and dysfunctional home environment and resulting psychological and social maladjustment. The trajectory leading adolescents to engage in risky practices likely involves numerous family experiences but delinquent peer associates are almost always part of the equation, given that adolescent risk behavior rarely occurs alone. Peer groups are highly salient contexts during adolescence, and although they provide necessary social support, peer groups also shape adolescents' behavior. Studies have shown that peer groups influence school attitudes (Kindermann 1993), aggression (Espelage et al. 2003), delinquent behavior (Ellis and Zarbatany 2007; Kiesner et al. 2002) and substance use (Fisher and Bauman 1988; Mounts and Steinberg 1995).

Investigations that simultaneously examine contributions of parenting history and peer relationships to the development of risk behavior have shown that the influence of peers often moderates that of parents. Adolescents' day-to-day functioning occurs with members of their peer group and peer expectations may undermine or strengthen parental effects. Chen et al. (2005) showed that parental effects on adjustment were moderated by the peer group context. When peer groups demonstrated prosocial characteristics, effects of positive parenting on children's adjustment were enhanced, whereas antisocial and destructive group norms were shown to undermine effects of positive parenting and contribute negatively to children's adjustment. This relationship is also evident among children with significant maltreatment histories. In a sample of physically abused adolescents, Salizinger et al. (2007) showed that delinquency among friends moderated the relationship between early abuse and later violent delinquency. Abused youth with delinquent best friends were at greatest risk for delinquent outcomes. Positive relations can also buffer negative contributions of early family violence, as demonstrated by Linder and Collins' (2005) finding that high quality friendships predict positive conflict resolution with dating partners beyond maltreatment experiences. Finally, friends' involvement in violent relationships is a powerful predictor of adolescents' own relationship experiences, beyond contributions of childhood exposure to violence (Arriaga and Foshee 2004). Together, this research shows that the powerful contributions of parental maltreatment are either independent of or moderated by peer contexts in the development of risk behavior. There is less evidence in this research to suggest that peers mediate or completely account for these effects

(Salizinger et al. 2007), likely due to the long-lasting circumstances surrounding abuse.

While positive peer relationships can benefit social adjustment among maltreated youth, it has been consistently found that physical and emotional abuse is generally associated with unhealthy peer relationships (Bolger and Patterson 2001; Salizinger et al. 1993; Schwartz et al. 1997). Children who have been maltreated tend to have poor quality, unsatisfactory friendships (Parker and Herrera 1996) marked by aggression and coercion (Dodge et al. 1994; Wolfe et al. 1998). Moreover, maltreated children tend to show more ego-centric and impulsive responses when prompted with interpersonal hypothetical scenarios (Burack et al. 2006), characteristics that may hinder the development of high quality equalitarian peer groups. Although it is well-accepted that peer contexts become dominant socializing agents during adolescence, little is known about the characteristics of maltreated youth's peer groups.

Both social learning theory and attachment theory can be used to aid in understanding the peer group relationships that abused children typically experience. From a modeling perspective, children who have witnessed violence in the home or been victims of abuse themselves are likely to see control and dominance as a normative part of relationships and an effective means of problem-solving. Several studies have shown that maltreated children have more verbally and physically aggressive relationships with their peers (Bolger et al. 1998; Dodge et al. 1995). These children likely expect hostility and dominance from others (Bugental 1993). As such, maltreated adolescents may have a preference for dominance or control in conflict situations and tolerate (or seek out) these behaviors from their peers. Similar to abusive familial relationships, the peer groups of maltreated youth may emphasize control with clear expectations for behavior.

Attachment theory suggests that children who experience abuse from their caretakers will form a maladaptive internal working model of close relationships. Maltreated children have higher rates of insecure and disorganized attachments compared to their non-maltreated peers (Barnett et al. 1999). The pattern of attachment sometimes found among maltreated children involves a victim-victimizer relationship due to the power differential between child and caretaker. Attachment theory suggests that children are likely to engage in social contexts that match their representations of close relationships. Thus, the attachment model formed by teens with maltreatment histories is likely to be expressed with dominance and control in their peer groups, with clear leaders and followers.

Our understanding of the social motivations of maltreated children also suggests that they have strong motivations to establish popularity and be accepted by their peers. Insecure attachment relationships found among

maltreated children can lead to obsessive preoccupation with acceptance in social relationships (Lynch and Cicchetti 1991). These youth may exhibit their preoccupation with relationships in their desire to be emotionally connected and accepted by their friends (Lynch and Cicchetti 1991). Some research also suggests that abused children may learn to inhibit their anger and become compliant to others (Crittenden and Ainsworth 1989).

This combination of strong external group pressures (i.e., control) and high internal motivations for belonging may be extremely dangerous in deviant peer groups. Empirical work has shown that group influence is not equal (Ellis and Zarbatany 2007) and may result from processes such as peer pressure, control, manipulation, and social reinforcement (Brown et al. 1986). In addition, youths' fundamental need to belong (Baumeister and Leary 1995) may stimulate the desire for peer group membership and motivations to follow group norms (Tajfel 1972; Tarrant 2002). In qualitative interviews with teens about smoking uptake, teens reported that their behavior was primarily a result of striving to conform to the normative behavior of the peer group with which they identified (Stewart-Knox et al. 2005). Such explanations are consistent with social identity theory and self-categorization theory such that risk behavior provides a means to define group belonging (Tajfel 1972). Thus, adolescents with maltreatment histories may be at an increased disadvantage for risk behavior due to the presence of controlling group processes, popularity motivations and the fact that they are more likely to associate with similar antisocial peers (Dishion et al. 1991; Salizinger et al. 2007).

In summary, the present study was designed to determine if peer group processes involving control and individual popularity motivations would predict alcohol use and delinquent behavior beyond experiences of physical, emotional and neglectful childhood maltreatment and to examine the potential moderating role of control on these categories of childhood maltreatment. To date, little research has examined group processes in the prediction of adolescent's risk behavior. It is important to focus on more than the identity of adolescent's associates when examining peer influence because group processes may be strong predictors of risk behavior. In fact, peer group pressure and individual popularity motivations have been previously linked to increased risk behavior among adolescents (Santor et al. 2000).

Hypotheses

There were two main predictions in this study. Based on the theoretical and empirical knowledge about the social repertoire of maltreated children, we expected that children

with a history of maltreatment would belong to peer groups where dominance and control is normative. Peer group control may be expressed with well-defined group hierarchies and clear expectations for group sanctioned behaviors. Similarly, we expected that youth with maltreatment histories to act in specific ways to enhance their popularity. Thus, childhood maltreatment, involving physical maltreatment, emotional maltreatment and emotional neglect was expected to be related to higher peer group control and individual popularity motivations.

We also expected that peer group control processes and individual popularity motivations would predict alcohol use and delinquent behavior in addition to childhood emotional and physical maltreatment and emotional neglect. Moderating effects were also examined as we expected peer group control and individual popularity motivations would exacerbate the effects of parental maltreatment.

Method

Participants

A total of 1558 (804 girls) high school students from three schools in Southwestern Ontario participated (M age = 15.02 years, $SD = .86$). There were 515 students in grade 9 (265 girls), 548 students in grade 10 (291 girls), 477 students in grade 11 (242 girls) and 18 students (6 girls) in grade 12 (who were taking grade 11 classes).

The majority of students described themselves as White (78%; $n = 1219$), with Asian Canadians accounting for the second largest group (8%; $n = 128$) and all other groups ($n = 71$), including African Canadian, Hispanic, First nation, Arab comprising the remaining sample. The majority of students (73%; $n = 1136$) reported living with both mother and father and the next largest group (7%; $n = 113$), living with a step-parent. The remaining students reported living in single parent homes, with another relative, or another arrangement (other). Ethics approval was received from The Centre for Addiction and Mental Health Institutional Review Board.

Measures

Child Maltreatment

Adolescents' experiences of maltreatment were assessed with the Childhood Trauma Questionnaire (CTQ; Bernstein, Ahluvalia, Pogge, Handelsman 1997). The CTQ (short form) contains 28 items concerning the frequency (1 = "never true" to 5 = "very often true") with which the respondent experienced emotional, physical and sexual

abuse and emotional neglect “while you were growing up.” The scale has good convergent and discriminant validity (Bernstein et al. 1997). The sexual abuse subscale was not included in this analysis due to very low rates. Examples for each sub scale include: “I got hit so hard by someone in my family that I had to see a doctor or go to the hospital” (physical); “I believe that I was emotionally abused” (emotional); and “One of my parents (or step-parents) said hurtful or insulting things to my other (step-)parent” (neglect).

For the present study youth were classified as having no, low, moderate or severe experiences with each form of maltreatment on the basis of clinical cut-off groupings reported by Bernstein et al. (1997). Although this is a low-risk sample with little evidence of severe abuse, many children reported signs of maltreatment (emotional maltreatment: 65% none, 24% low, 7% moderate, 4% severe; physical maltreatment: 83% none, 9% low, 5% moderate, 3% severe; emotional neglect: 52% none, 29% low, 15% moderate, 4% severe).

Peer Group Control

To assess peer group processes 10 items were taken from several sources including measures of group control (5 items; Gavin and Furman 1989), leadership/hierarchy (4 items; Gavin and Furman 1989) peer pressure (2 items; Brown et al. 1986). Items are listed in the Appendix. Although these items reflect a range of peer group processes, there is an underlying premise of high peer group homogeneity and control. The combined scale showed good reliability ($\alpha = .80$). Students used a 5-point scale to indicate the response that applies to them (“never true” to “very often true”).

Individual Popularity Motivations

Adolescents’ motivation for peer popularity and associated control behavior included 12 items (Santor et al. 2000; e.g., “I’ve been friends with some people just because others liked them”; “I have done things to make myself more popular, even when it meant doing something I would not usually do”). Students were asked to rate each statement on a 5-point scale (“never true” to “very often true”). Reliability for this scale was .90.

Alcohol Use

Items asking about the frequency of alcohol use and binge drinking were taken from *National Longitudinal Study of Children and Youth* (NLSCY 2000–01). Youth were asked how often they had been drunk in the last 3 months (“never”, “a few times”, “once or twice a month”,

“1–2 days a week”, “3–5 days a week”, “6–7 days a week”) and how many days they consumed 5 or more alcoholic beverage in a row (“none”, “1 day”, “2 days”, “3–5 days”, “6–9 days”, “10–15 days”). Responses options were categorized from 0 to 6. Items from each question were combined to yield a single score for alcohol risk ($M = 2.20$, $SD = 1.41$).

Delinquent Behavior

We used 15 items to measure general delinquency including, weapon use, theft, school suspension, selling drugs, and physical violence. Youth were asked to report the frequency of these acts over the past three months ranging from “never (0)” to “10 (5) or more times”. Examples of items include “how often did you carry a weapon to school?”, “how often did you get suspended from school? “how often did you take something from a store without paying for it?”, “how often did you paint graffiti or signs on someone else’s property or in a public place?”. These questions were taken from the National Longitudinal Study of Adolescent Health Survey (ADD Health). Responses were averaged across the 15 items to yield a single index of delinquent behavior ($M = 1.30$, $SD = .42$). The scale showed high reliability ($\alpha = .92$).

Procedure

In the fall (2008), information sheets, consent and assent forms were distributed to all students in grade 9, 10 and 11 in three schools. The overall rate of parent consent ranged from 61% (one school, grade 10) to 77% (one school; grade 10) with an average consent rate of 73% across the nine grades (i.e., 3 grades and 3 schools). There were no significant differences between grades or male and female consent rates. Students completed the self-report survey in their classrooms under supervision by research staff and teachers, during a 1-h class period in the month of November.

Results

Correlations Among Variables

Correlations were computed among maltreatment scores, peer group control, and popularity motivations for each of the variables of interest and are presented in Table 2. Results indicated that there is significant overlap between delinquent behavior and alcohol use. There were also small but significant correlations between these outcome variables and peer group control and popularity motivations. Significant correlations among the maltreatment categories also suggest some overlap between these

experiences (particularly between physical and emotional maltreatment).

Grade and Gender Differences in Peer Group Control and Popularity Motivations

To check for gender and grade differences in group control and individual popularity motivations, a 3 (grade) \times 2 (gender) multivariate analysis of variance (MANOVA) was used. There were significant multivariate main effects for grade [Wilks's $\Lambda = .97$, $F(3, 1538) = 8.42$, $p < .001$], and gender [Wilks's $\Lambda = .99$, $F(2, 1538) = 3.32$, $p < .05$]. Peer group control scores differed significantly by grade [$F(3, 1538) = 10.13$, $p < .001$]. Tukey post hoc analyses showed that grade 9 students reported significantly lower group control scores ($M = 2.31$, $SE = .03$) than students in grade 10 ($M = 2.52$, $SE = .03$) and 11 ($M = 2.50$, $SE = .30$). There were also significant gender differences for peer group control [$F(1, 1538) = 6.23$, $p < .05$], with females reporting higher scores for group control ($M = 2.60$, $SE = .07$) than males ($M = 2.34$, $SE = .05$).

Maltreatment Differences in Peer Group Control and Popularity Motivations

We next examined the relationship between type of maltreatment, group control and individual popularity motivations using a 4 (maltreatment group) by 2 (peer control and popularity motivations) multivariate analysis of variance (MANOVA). Results showed significant main effect differences for emotional neglect [Wilks's $\Lambda = .98$, $F(3, 1421) = 2.54$, $p < .05$] and physical maltreatment [Wilks's $\Lambda = .98$, $F(3, 1421) = 4.80$, $p < .001$]. Peer popularity differed by emotional neglect group [$F = 2.50$ (3, 1421), $p = .05$]. However, Tukey post hoc analyses revealed significant differences for both popularity motivations and peer group control. Adolescents with severe emotional neglect reported significantly higher peer group control ($M = 2.50$, $SE = .07$) and popularity motivations ($M = 2.20$, $SE = .07$) compared to those with low emotional neglect ($M = 2.32$, $SE = .07$; $M = 2.01$, $SE = .06$, respectively).

Popularity motivations [$F(3, 1421) = 4.48$, $p < .01$] and peer group control [$F(3, 1421) = 8.62$, $p < .001$] also differed by physical maltreatment group. Adolescents with severe physical maltreatment reported significantly higher peer group control ($M = 2.70$, $SE = .12$) compared to those with no physical maltreatment ($M = 2.17$, $SE = .03$). Adolescents with severe physical maltreatment ($M = 2.18$, $SE = .11$) and low physical maltreatment ($M = 2.18$, $SE = .03$) reported significantly higher popularity motivations than those with no physical maltreatment ($M = 1.93$, $SE = .03$).

Predicting Alcohol Use and Delinquent Behavior

Two hierarchical linear regression analyses were computed to determine whether maltreatment, peer group control and popularity motivations predicted alcohol use delinquent behavior. All relevant predictor variables were centered following recommendations of Aiken and West (1991). For each regression analysis, the predictor variables were entered in four blocks; (a) gender and age (b) emotional maltreatment, physical maltreatment and emotional neglect (c) individual popularity motivations and peer group control and (d) all 6 two-way interactions between maltreatment and control and maltreatment and popularity motivations (e.g., emotional maltreatment \times peer group control; physical maltreatment \times peer group control, etc.). Interactions with gender and age were also tested. Non-significant interaction terms were subsequently removed from the equation. Three way interactions with age and gender were also tested but were not significant predictors and were also removed from the final equation. Significant interactions were analyzed according to the guidelines outlined by Aiken and West (1991). To understand the pattern of each interaction, separate regression lines were computed and plotted for individuals one standard deviation above (+1SD) and one standard deviation below (−1SD) the mean of the predictor.

The first regression model predicting alcohol use was significant, $F(9, 1366) = 15.14$, $p < .001$, and accounted for 10% of the variance in alcohol use. The final model is shown in Table 1. Alcohol use was predicted positively by physical maltreatment and emotional maltreatment. Beyond the contribution of childhood experiences, peer control was also a positive predictor of alcohol use (see Table 2). There was a significant interaction between gender and peer group control (see Table 2). This interaction showed that, for boys, there was a stronger effect of group control processes on alcohol use, compared to girls. When boys and girls had low levels of peer group control there was little difference in their alcohol use, but when there were high levels of peer group control, boys showed the most risky alcohol use (see Fig. 1).

The second regression model predicting delinquent behavior was also significant, $F(9, 1372) = 29.80$, $p < .001$, and accounted for 19% of the variance in delinquency. The final model is shown in Table 3. Delinquent behavior was significantly predicted by gender (boys), physical and emotional maltreatment and emotional neglect. Beyond the contribution of childhood experiences, peer control was also a positive predictor of delinquent behavior. There were four significant interactions in this regression model.

Interactions between physical maltreatment and peer group control and physical maltreatment and popularity motivations were significant (see Table 3). Both interactions were very similar (see Figs. 2 and 3), indicating that

Table 1 Zero-order correlations between maltreatment, peer control, popularity motivations, alcohol use and delinquent behavior

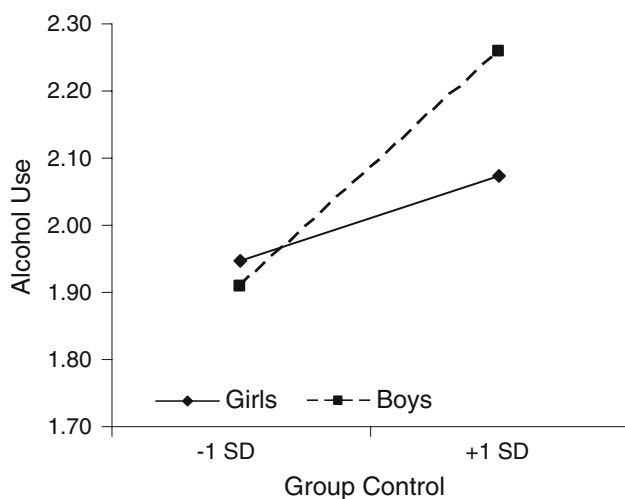
		1	2	3	4	5	6	7
1	Alcohol use	–						
2	Delinquent behavior	.49**	–					
3	Popularity motivations	.07*	.16**	–				
4	Peer group control	.15**	.23**	.46**	–			
5	Emotional maltreatment	.16**	.26**	.09**	.14**	–		
6	Emotional neglect	.06*	.14**	.04	.06*	.27**	–	
7	Physical maltreatment	.14**	.32**	.07*	.10**	.42**	.16**	–

Note: * $p < .05$, ** $p < .001$

Table 2 Hierarchical regression analysis predicting alcohol use from child maltreatment, peer control, popularity motivations and their interactions

	B	SE	β	R^2	ΔR^2	ΔF
Step 1				.04	.042	30.05***
Age	.00	.00	.02			
Gender	-.10	.06	-.05			
Step 2				.09	.044	21.97***
Physical maltreatment	.24	.06	.12***			
Emotional maltreatment	.20	.05	.12***			
Emotional neglect	.05	.04	.04			
Step 3				.10	.009	6.45**
Individual popularity motivations	.02	.06	.01			
Peer group control	.17	.06	.09**			
Step 4				.10	.005	3.22*
Gender \times group control	-.19	.09	-.05*			

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

**Fig. 1** Plot of the relationship between gender and peer group control in the prediction of risky alcohol use

peer group control and popularity motivations exacerbated the effect of maltreatment on delinquent behavior. When youth reported high levels of abuse and high levels of peer

group control/popularity motivations, adolescents showed the highest levels of delinquent behavior.

There was a significant interaction between emotional maltreatment and popularity motivations (see Fig. 4). This interaction showed that popularity motivations only predicted delinquent behavior when emotional maltreatment was low. When youth experienced high levels of emotional maltreatment there was higher levels of delinquent behavior, regardless of popularity motivations.

Finally, a significant interaction between gender and peer group control emerged in the prediction of delinquent behavior (see Fig. 5). As with the interaction predicting alcohol use, this interaction showed that, for boys, there was a stronger effect of group control processes on delinquent behavior, compared to girls.

Discussion

During adolescence, teens spend considerable time interacting in peer groups. Although theorists have argued that

Table 3 Hierarchical regression analysis predicting delinquent behavior from child maltreatment, peer control, popularity motivations and their interactions

	B	SE	β	R^2	ΔR^2	ΔF
Step 1				.01	.013	9.14***
Age	.00	.01	-.02			
Gender	-.10	.02	-.11***			
Step 2				.15	.134	71.62**
Physical maltreatment	.16	.02	.25***			
Emotional maltreatment	.08	.02	.15***			
Emotional neglect	.03	.00	.06*			
Step 3				.18	.030	24.85***
Individual popularity motivations	.03	.02	.04			
Peer group control	.09	.02	.15***			
Step 4				.19	.017	7.16***
Physical maltreatment \times peer control	.07	.02	.08**			
Physical maltreatment \times popularity motivations	.05	.02	.06*			
Emotional maltreatment \times popularity motivations	-.04	.02	-.06*			
Gender \times peer control	-.08	.03	-.07**			

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

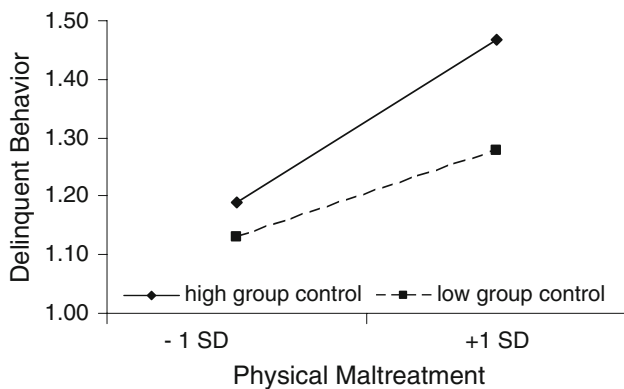


Fig. 2 Plot of the relationship between physical maltreatment and peer group control in the prediction of delinquent behavior

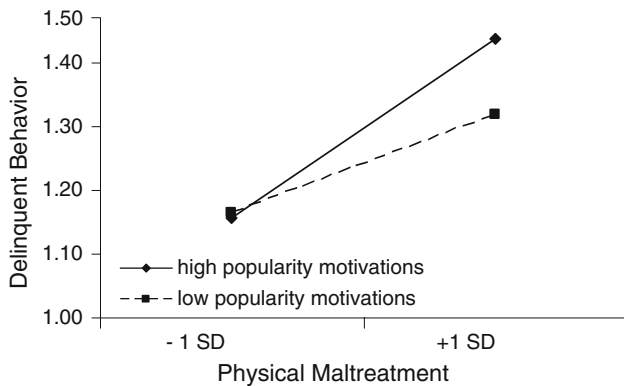


Fig. 3 Plot of the relationship between physical maltreatment and popularity motivations in the prediction of delinquent behavior

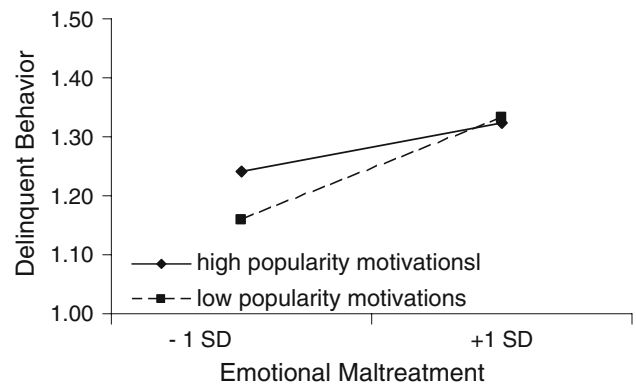


Fig. 4 Plot of the relationship between emotional maltreatment and popularity motivations in the prediction of delinquent behavior

peer group contexts have a profound effect on adolescent functioning (Brown 1990), few investigations of peer group processes have been explored. The present study demonstrates that peer group control processes support the development of risky alcohol use and delinquent behavior. Moreover, group processes are important beyond experiences of childhood maltreatment and exacerbate these early negative experiences. Individual motivations for popularity were not independently predictive of risk behavior but moderated physical maltreatment in the prediction of delinquency.

As expected, our results showed that adolescents with maltreatment histories were more likely to report experiences of peer group control compared to those with no history of abuse. These findings were evident among youth with experiences of physical maltreatment and emotional

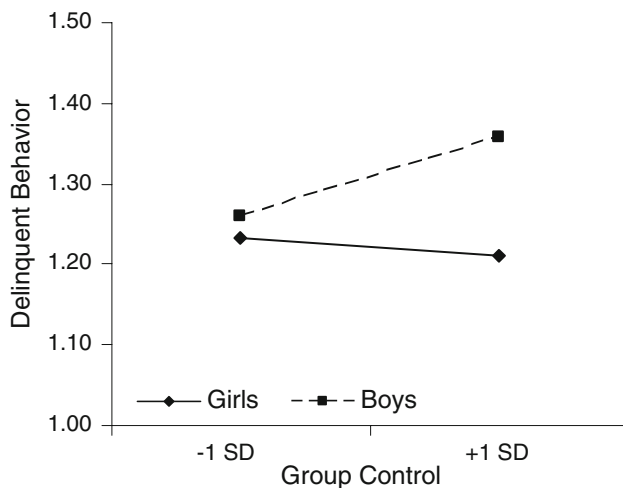


Fig. 5 Plot of the relationship between gender and peer group control in the prediction of delinquent behavior

neglect. Such results support our theoretical understanding of peer relationships among children who have experienced physical or emotional maltreatment. That is, children who have been victims of conflict and violence in the home, as well as those who have witnessed such acts, likely come to see controlling and dominant behaviors as normative aspects of close relationships. By modeling their early abusive experiences, these adolescents are likely to belong to peer groups that use control and pressure to ensure that group norms are enforced. There was also a significant difference between youth who had experienced physical maltreatment and those who had not in their reported popularity motivations. This difference supports our contention that maltreated children may be preoccupied with peer status, possibly ensuing from insecure attachment relationships. Previous research clearly indicates that parental maltreatment is associated with difficulty establishing healthy peer relationships. For example, maltreated children often attribute hostile intentions to their peers (Dodge et al. 1995) and generally display aggressive behaviors (Bolger et al. 1998). The present study extends such findings to adolescent peer groups. Maltreated children may lack important social skills to develop high quality, egalitarian group relationships. In adolescence, this can be particularly problematic when needs for group belonging are elevated and coercive processes may augment normative experimentation in risk taking behavior.

As shown in previous studies, childhood maltreatment has been identified as one of the key predictors for adolescent risk behavior (Herrenkohl et al. 2003). However, there are many factors that can either buffer or exacerbate the risk associated with child maltreatment. Maltreatment involving physical and emotional maltreatment and emotional neglect was associated with high levels of alcohol use and other delinquent behaviors, but the peer context

added to this effect. Youth who reported belonging to groups with high levels of peer control were more likely to engage in risk taking acts. It is likely that these processes may be intensifying an already risky context because youth with maltreatment experiences may coalesce on the bias of their shared rejection and antisocial behavior (Salizinger et al. 2007). Moreover, youth who reported engaging in behaviors to protect or enhance their popularity were likely to have greater delinquent behavior when they also experienced physical maltreatment. Individual differences in popularity and acceptance motivations may also intensify the adoption of group norms. In contrast to our historical understanding of peer acceptance, which is associated with favourable behavioral characteristics, the behaviors espoused by popular peer groups often involve deviant and aggressive behaviors (Rodkin et al. 2000; Rose et al. 2004). For example, Mayeux et al. (2008) found that popularity in grade 10 was a significant positive predictor of alcohol use and sexual activity by the time students were in grade 12. Youths' perceptions of behaviors that promote popularity are likely to include deviant, attention-gaining acts. Thus, regardless of one's actual popularity, motivations to be in the limelight may be directly related to risk behavior. Our research adds to these recent studies, by again, demonstrating the connection between popularity and risk behavior, at least when physical maltreatment is involved. Adolescence is a critical time for exploration and identity development, and youth who experience the most pressure to conform to others, whether internally or externally, are at greatest risk for rule-breaking behavior.

The present study also documents how group processes can exacerbate pre-existing familial risk factors. This relationship was most strongly evident in cases of adolescents' experiencing physical maltreatment. Adolescents with histories of physical maltreatment and high levels of group control and popularity motivations were most likely to engage in risky behaviors. The interaction between emotional maltreatment and peer group control showed that the peer group did not buffer or exacerbate such maltreatment experiences. It is interesting that peer group processes did not alter this pattern. Given the nature of questions asked and the low-risk sample used in this study, admissions of physical violence may signal the most dysfunctional, hostile and abusive households. Furthermore, there were fewer admissions of physical maltreatment compared to emotional maltreatment. In addition, physical abuse may be linked to parental alcoholism or substance use (Cohen et al. 2008). Thus, the particular combination of physical abuse with a high pressure peer context and strong popularity motivations perhaps yields the largest risk taking behavior. Previous studies showing moderating effects of friends' experiences have also documented the effect with physically abused youth (Salizinger et al. 2007).

The peer groups of physically abused youth may be different than the groups of youth with other maltreatment experiences. Given that these admissions may indicate the most severe experiences involving clear dominance, peer group members may be more homogenous in terms of expectations for control, as well as antisocial attitudes and behaviors, making peer group process even more powerful in the prediction or risky behavior.

In this study, we also found that boys may be at greater risk for alcohol use and delinquent behavior when they experience high peer group control, compared to girls. This may be the result of boys' greater tolerance and expectancies for risk behavior. Although girls report having more pressure and control in their peer groups, the type of behaviors that are encouraged by other peer group members may differ by gender. Boys and girls likely have different criteria for popularity (Xie et al. 2006). For example, much of the pressure that boys face involves acting tough and experimenting with substance use (Rodkin et al. 2000), whereas girls may face greater pressures in other avenues, such as physical appearance.

Despite the contributions of the present study, results must be interpreted with several limitations in mind. First, there are limitations with our measure of childhood maltreatment. Specifically, retrospective reports of child abuse may have somewhat limited reliability. Studies show that some adults who have clearly documented histories of child abuse deny any such history when reporting retrospectively (Femina et al. 1990). Moreover, having more information about the maltreatment being reported, such as the time and severity of abuse would have added to the information reported here. The youth in this sample also reported very low levels of abuse and the extent to which these results might generalize to high risk samples is not known. Secondly, the peer group information was collected only on the basis of self-reports. Actual group level perceptions were not collected for our measure of peer control or popularity, nor do we know the role of each participant in their peer group (leader vs. follower). Third, having data at more than one time point would allow us to track changes in adolescent risk behavior as a function of peer group processes. Finally, the moderate amount of variance accounted for in these models suggests that there are other significant predictors of alcohol use and delinquent behavior in adolescence. This was particularly the case for the model predicting alcohol use. While our deviancy measure captured risky behavior at many levels, including minor rule breaking (e.g., school suspension) and criminal offenses (e.g., selling drugs), alcohol use reflects just one expression of problem behavior. Parental and peer behaviors in these areas would likely add to both models as previous research has documented such effects (e.g., Chermack et al. 2000; Kiesner et al. 2002).

In summary, this study provides evidence regarding the importance of examining peer group behaviors and processes. This analysis examined high risk alcohol use and delinquent behavior as a function of parental maltreatment, peer group control and popularity motivations. The resulting picture emphasizes the importance of examining the context in which risk behavior is likely occurring. Although, the effects of parental maltreatment were clear, it would seem that experiences of control and peer pressure in adolescent peer groups and individual motivations for popularity moderate parental effects on adolescent adjustment. Intervention and prevention youth programming should be aware of this "window" of opportunity and maximize the positive benefits of peers by fostering healthy group relationships.

Acknowledgements This research was supported by a grant from The Ontario Mental Health Foundation. The authors wish to thank the school personnel and youth who participated in this research, and the many students who assisted with data collection.

Appendix

Peer Group Control Items

1. I've felt pressure from my group to do things I wouldn't normally do
2. I've felt pressure from my group to smoke, drink, or try drugs
3. It is obvious who the leaders are in my group
4. There are certain people in my group who make most of the group decisions
5. Some people in my group are more important than others
6. The opinions of some people in my group are listened to more than others
7. People in my group care a lot about how others in my group dress or look
8. People in my group don't like it when someone doesn't want to go along with the crowd
9. People in my group are bothered when someone in the group does something that we think is "uncool"
10. People in my group care a lot about the way in which others in the group act

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