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**PEER PROCESSES AND BULLYING:
NATURALISTIC OBSERVATION ON THE PLAYGROUND**

PAUL D. O'CONNELL

A thesis submitted to the Faculty of Graduate Studies
in partial fulfilment of the requirements
for the degree of
Doctor of Philosophy

Graduate Programme in Psychology
York University
North York, Ontario

April, 1999.

Key words: BULLYING, AGGRESSION, PEERS,
DOMINANCE, OBSERVATIONS, CHILDREN



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by Paul O'Connell

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ABSTRACT

The purpose of this research was to examine the peer processes that occur during episodes of bullying on the school playground. These processes were examined within a social learning theory perspective, while also drawing on emotional contagion theory, an ethological approach to studying dominance hierarchies, and dynamic systems theory. Fifty-three segments of videotape that contained a peer group viewing bullying on the school playground were examined. Peers were coded for actively supporting the bully, passively watching the bullying, and for actively supporting the victim. Also coded were the levels of affect, aggression, and distress of bullies, victims, and peers, throughout each episode. On average, four peers viewed the schoolyard bullying, with a range from two to 14 peers. Averaged across all episodes, peers spent 53% of their time passively viewing bullying, 25% of their time actively supporting victims, and 22% of their time actively supporting bullies. Older boys were more likely to spend time helping the bully, and less likely to spend time helping the victim, than were younger boys, or girls of either grade level. Sequential analyses were used to examine, over time, peer influence on bully affect and aggression ratings.

Peer active support for the bully was related to subsequent decreases in bully negative affect ratings, and increases in aggression ratings. Other types of peer interaction with the bully or victim (i.e., passively watching the bullying, intervening to help the victim) were not associated with changes in bully affect or aggression ratings. Chi-square analyses indicated few relationships between the number of peers present and intervention on the victim's behalf. Regression analyses of peer social status indicated a relationship to intervention on the victim's behalf: overall, the trend was for less disliked children to intervene more, while more disliked children were less likely to intervene. Taken together, the data suggest that peers are often aware of playground bullying, but may feel powerless to effectively intervene. The viability of a dynamic systems framework for examining peer influences on playground bullying is considered, and the results of the study are discussed with regard to possible intervention strategies.

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INTRODUCTION

Youth violence is seen currently as an increasing problem for society. Aggressive behaviour in childhood is predictive of aggressive behaviour in later life (Farrington, 1993), which suggests that efforts to decrease violence should focus on understanding the developmental roots of aggression, and on early intervention.

The purpose of this research was to examine the ecology of bullying, one type of childhood aggressive behaviour. Children's interactions on the school playground were videotaped and used as a naturalistic source of data. The particular focus of the present study was the role of the peer group in the process of aggressive interactions.

Bullying

Bullying is defined as negative actions -- physical or verbal -- that have hostile intent, are repeated over time, and involve a power differential. Bullying may involve one or more perpetrators and recipients (Olweus, 1991). Besag (1989) and Crick (1995) extended the definition to include more subtle psychological elements of aggression. Besag stated that bullying can occur as a result of overly competitive

approaches to academics, sports, or social interaction where the intent is to make others feel inferior or to cause distress. Crick's definition incorporated "relational aggression" -- that is, various forms of social manipulation that covertly cause distress to a victim (e.g., gossiping, spreading rumours, or encouraging others to exclude a person).

Prevalence of bullying

The problem of bullying is pervasive. In a series of recent surveys of over 4,700 Canadian elementary and middle-school children, 38% reported being bullied at least "once or twice" during the term; 15% reported being bullied "more than once or twice" during the term. The reported prevalence of perpetration is almost as high: 29% reported bullying others "once or twice" during the term; 6% reported bullying others "more than once or twice" during the term (O'Connell et al., 1997).

Peer involvement

Peers are often involved in bullying incidents, either as witnesses or active participants. Craig and Pepler (1997), in examining coded playground observations, found that peers were involved in some capacity in 85% of bullying episodes; however, peers intervened in only 11% of bullying episodes. This relative lack of intervention by peers may reinforce

bullies, who are likely to interpret peers' non-intervention as condoning bullying.

Similar patterns were found in classroom observations of bullying (Atlas, 1994). Peers were involved in 85% of bullying episodes, and were rated as actively joining with the aggressor in 32% of the episodes. Peer interventions occurred in 12% of the episodes.

When asked to report on bullying and victimization, children's responses are somewhat ambiguous. On the one hand, children seem concerned about bullying: 83% of Canadian children stated that bullying made them feel either "a bit" or "quite" unpleasant; 41% indicated that they "try to help" the victim when they observe bullying; and 11% indicated that other peers "almost always" tried to stop bullying when they saw it. On the other hand, 31% of students admitted that they "could join in bullying someone they don't like". The older the child, the less likely they were to say that they would offer support to victims (O'Connell et al., 1997).

Slee and Rigby (1992) reported similar findings from their survey of 685 Australian children. Although the majority of children of all ages reported support for victims, this support was significantly greater from children under the age of 12 than from older children. There was a substantial

minority of children who had little or no sympathy for victims (19% of boys, 14% of girls). Factor analysis revealed three interpretable attitude factors. The first factor involved the tendency to reject victimized children. The second factor involved the tendency to justify bullying, including enjoying the spectacle of bullying. The third factor, in contrast, involved items indicating the desire to support victims.

Thus, children's reports reflect an awareness of bullying episodes and a stated interest in helping victims; however, reported levels of prosocial intervention seem to overestimate actual behaviour.

The reasons for this discrepancy between children's stated intentions and their observed behaviour are unclear. It may be that social desirability influences questionnaire responses. Children know that adults expect them to support each other; however, it may be difficult to follow through with this intention on the school playground. Another possibility is that children lack a clear understanding of the process of bullying and effective strategies with which to counteract bullying. Yet another possibility is that children are discouraged from intervening by peer processes that tend to maintain the status quo. This thesis examines the final postulation.

To date, little is known about the potentially important role of peer processes in bullying episodes. Aggressive peer group interactions may establish behaviours that provide aggressors with short-term reinforcement and gratification, but are maladaptive in the long-term. Cairns and Cairns (1991) have identified critical socialization processes in the peer group that potentially promote aggression for all who are involved (bullies, victims, and peers). Aggressive children tend to affiliate with others who are aggressive, thereby increasing the likelihood of future delinquency and antisocial behaviour. Victims of serious violence have been found to be at risk for perpetrating violence themselves (APA report, 1993). For example, Craig (1993) found that almost half of those who were characterised as victims were also observed engaging in bullying behaviour. Finally, witnesses to violence may become desensitized to it and, ultimately, more likely to become involved in it (Berkowitz, 1962).

The present study relied on observations of playground bullying to understand the multiple influences on peer involvement in bullying. Boivin and Vitaro (1992) state, "Direct observations at the network level are needed to clarify the patterns and processes through which aggressive and non aggressive children interact with the members of their

respective networks" (p. 17). The peer processes that need to be examined include the escalation of normative levels of aggression into bullying episodes; the mechanisms that encourage or discourage peer involvement; whether interventions are effective in defusing aggressive incidents; the process by which the bully's dominance is reinforced and/or the victim's role is substantiated; the role of affective arousal; and the outcome of interactions, particularly in cases where peer processes reinforce bully and/or victim status.

The role of the peer group in the process of bullying interactions was considered principally within a social learning theory framework, although other relevant theories were used to support this framework: emotional contagion theory; dominance hierarchies, within an ethological perspective; and dynamic systems theory. Each of these theoretical viewpoints, its potential application to the study of children's aggression, and the literature that is relevant to playground bullying and peer processes is reviewed below.

It should be noted that the research directly examining peer processes on the school playground using observational methods is limited; therefore, reference will be made to related studies as necessary (e.g., research with

preschoolers, experimental studies, and observational studies of children's behaviour in non-school settings).

Social learning theory

Social learning theory has provided a strong foundation for understanding the development of aggressive behaviour (Walder et al., 1990). Within the specific framework of bullying, Olweus (1993) describes a series of social learning processes that may promote bullying within the peer context: social contagion effect, weakening of inhibitions against aggression, diffusion of responsibility, and development of stable reputations. The empirical literature that illustrates each of these social learning processes is reviewed below.

Social contagion effect. The social contagion effect refers to the spreading of aggressive behaviours from one individual to another through the processes of observational learning and modelling of aggressive behaviour. Bandura (1971) demonstrated, through his well-known "bobo doll" experiments, that children who observe actors performing aggressive behaviours learn to perform similar behaviours. This is particularly true when the aggressive model is similar to the observer, as in the case of a playground bully and a peer observer.

In research with younger children, evidence of social contagion comes from the work of Patterson (e.g., Patterson, Littman, & Bricker, 1967; Patterson, 1963). Patterson and his colleagues (1967) found that aggressive preschoolers elicited counterattacks (reciprocal aggression) from a number of their victims. Indeed, the nursery school was seen as a training ground for aggression, where "acquisition of aggressive behaviours was in large part a function of frequency of victimization" (p. 26). Similarly, Patterson (1963) found that younger siblings were adept at learning to initiate assertive and aggressive behaviours by modelling the behaviours of older siblings.

In observations of classroom aggression, Cairns and Cairns (1994) noted some elements of social contagion. Aggressors were most likely to begin a second attack within five minutes of the first, and peer interveners were potential targets for attack. Thus, peers may be drawn into the aggression as secondary victims of bullies.

Peers may also assert themselves aggressively without being directly provoked by bullies. Ginsburg (1980) examined third through fifth grade boys' interventions against playground aggressors, and found that approximately two-thirds

of the interventions consisted of attacking the aggressor from the rear. The most common method of helping the victim was to jump on the back of the aggressor.

Craig and Pepler (1995) examined peer involvement in videotaped playground bullying episodes, using a sample of aggressive and non-aggressive children from grades 1 through 6. Approximately half of peer interventions on the victim's behalf were aggressive in nature.

In general, naturalistic observations of aggressive behaviour, both in the school and in the home, have supported the notion of aggression being modelled, accelerated, and maintained by peers. Within the context of bullying, social contagion may be bidirectional. Bullies' aggression may draw peers into the interaction. Conversely, peer participation may strengthen bullies' behaviours. For the present research, the reinforcing role of peer response was considered as a potential process in maintaining bullying interactions.

Weakening of inhibitions against aggression. The second social learning process, the weakening of inhibitions against aggression, occurs when peers observe the lack of negative consequences for the bully. In fact, in many cases, bullies will receive positive reinforcement (e.g., instrumental gain, or gains in status) for their aggressive behaviour, leaving

peers with the impression that bullying is not only acceptable but advantageous.

Research on playground aggression indicates that peer involvement in aggressive episodes serves to promote the aggression. In one study of naturally occurring playground behaviour, Ginsburg and Miller (1981) examined third-child intervention in fighting by dyads of boys, ages 8 to 11. The authors, using hidden videotape recording equipment, showed that a relatively small number of children intervened. These interveners, however, often had hostility redirected at them by the dominant fighter, thus expanding the number of children involved in the playground aggression.

DeRosier, Cillessen, Coie, and Dodge (1992) also found evidence of peer involvement in aggression resulting in increased levels of conflict. They examined peer group reactions to aggressive dyads by using a contrived play groups paradigm. Twenty-two structured play groups were filmed, each comprising five or six boys, ages 7 to 9. Groups that took the victim's side in conflicts were found to have higher levels of post-aggression conflict. Consistent with Ginsburg and Miller's (1981) findings, it seems that peer intervention aimed at helping the victim may, paradoxically, have the

unintended effect of accelerating either the intensity, the duration, or both aspects of the aggressive behaviour.

Diffusion of responsibility. The third social learning process is diffusion of responsibility. When a group is involved in bullying, each member may feel a lower level of individual responsibility compared to when acting alone. The social psychological research into this phenomenon provides insight regarding children's inaction when faced with playground bullying.

Diffusion of responsibility has been extensively studied with adult populations by Darley and his colleagues (Darley & Latane, 1968; Latane & Darley, 1968; Darley, Teger, & Lewis, 1973). These experiments, using a variety of realistic deceptions, led participants to believe that they were overhearing or witnessing actual emergency situations (e.g., an epileptic seizure, an accident in the next room, and smoke entering the testing room). Participants were less willing to become involved in these seemingly dangerous situations if they were led to believe that many peers were participating in the experiment. They were also less likely to become involved if other observers (confederates) behaved nonchalantly. In the former situation, responsibility was thought to be

diffused among each observer to the point of individual inaction. In the latter situation, the ambiguous nature of the emergency raised the subject's concerns about disapproval for reacting inappropriately to the situation.

The bystander experimental literature has been carried out almost exclusively with adults. The one exception is a study by Staub (1970) which examined children's reactions to simulated emergency situations. Children from kindergarten and grades 1, 2, 4, and 6 were allowed to overhear a staged accident in the next room, followed by one and a half minutes of a child crying and asking for help (actually an audiotape). Observers rated whether the children attempted to help the victim, get the researcher, or did nothing. Children were later debriefed and asked why they did what they did.

Staub found a curvilinear relationship for intervention. Both kindergarten and grade 6 children were less likely to intervene than were children from the middle grades (grades 1, 2, and 4). However, the kindergarten children were more likely to intervene when with a partner, while the grade 6 children were less likely to intervene when with a partner. Staub hypothesized that the kindergarten children needed mutual support to feel secure enough to intervene, while the

grade 6 dyads were inhibited by fear of adult or peer disapproval for possibly inappropriate behaviour.

Staub's experiment creates a situation that demands prosocial behaviour and might be viewed as analagous to the dilemma of bullying in a playground setting; however, several differences in the dynamics of the two settings should be noted. In Staub's (1970) experiment, the distressed child was unknown to the study participant. This situation is unlikely on the playground, where peers are generally acquainted with both the bully and victim. Familiarity with the bully and victim is likely to influence peer actions. For example, there may be an impetus to help the victim if the victim is a friend; however, a victim with a well-established negative reputation might elicit little sympathy. Peer impulses to intervene may be also be constrained by fear of reprisal from the bully. Furthermore, in Staub's experiment, the researchers made explicit the fact that no adults were attending during the experiment. This situation does not apply on the school playground, where there is constant adult supervision and a clear set of rules for conduct is usually established. On the playground, the responsibility among students is diffused, and no clear mandate exists for students

to intervene in bullying. Students, perhaps optimistically, expect teachers and other school personnel to be in authority.

Development of stable reputations. The final feature of Olweus' social learning perspective on bullying is that people who are frequently involved in bullying will develop increasingly stable reputations. Over time, bullies develop the reputation of enforcer or protector; victims develop the reputation of someone who deserves punishment. This reputational process leaves the victim more vulnerable to the other social learning processes described above.

In a comprehensive longitudinal study of aggressive behaviour from childhood through adulthood, Cairns and Cairns (1994) found that social clusters tended to affiliate selectively on the basis of several demographic and behavioural variables. Of the behavioural variables, aggressive behaviour was the strongest within-group similarity during childhood and adolescence. Thus, aggressive children tend to form friendships with other aggressive children. Over time, aggressive clusters tend to consolidate as deviant peer groups through processes such as reciprocal socialization and internal synchrony. "Reciprocal socialization" is the tendency of people to adopt the behaviours, attitudes, and values of others with whom they have recurrent interactions.

"Internal synchrony" refers to the development of group norms for acceptance into social clusters, and the development of novel behaviours within those clusters. This process leads to increasingly rigid boundaries for social groups (Cairns & Cairns, 1994). Cairns and his co-researchers (1997) state that these increasingly cohesive aggressive groups can become dominant in social networks.

In classroom observations by Cairns and Cairns (1994), aggression was found to be of short duration, and typically ended after about five "turns" (aggressive behaviours with responses). Perpetrators were relatively few. The authors state that, "in virtually all studies of problem behaviour in the classroom, a small proportion of students have been found to cause most of the problems" (p. 77). Hostile acts were not always reciprocated immediately, however, because targets of aggression often ignored the provocation. Cairns, Santoyo, and Holly (1994) attribute the lack of escalation to external constraints -- in this case, the relatively high level of supervision in the classroom.

In contrast, the playground environment provides relatively few constraints on behaviour. If bullies cluster on the school playground with similarly aggressive peers, with relatively few constraints in the environment, and a clear

power differential as a central element of bullying, it is perhaps not surprising that roles become entrenched, and victims receive little assistance from peers.

Using playground observations, Ginsburg (1980) found that the majority of peer interventions against aggressors entailed physically attacking the aggressor. Similarly, Craig and Pepler (1995) examined peer involvement in videotaped playground bullying episodes and found that peers behaved aggressively half of the time when intervening to help victims.

These findings lend support to the notion of peer clustering due to a propensity for aggressive behaviour. It is possible, therefore, that the majority of active responses to bullying (i.e., both joining the bully and "helping" the victim) may increase the overall level of aggression during the episode.

In summary, social learning conditions may affect the course of playground bullying incidents in several ways. By passively onlooking, peers might unintentionally give social reinforcement to the bully who is positively reinforced if no intervention takes place. Conversely, with no intervention, the "successful" bully demonstrates to peers that aggression can be performed without fear of consequences. Repeated

exposure to aggressive interactions may lead peers to become desensitized to the negative aspects of this form of aggression, thus increasing the chance of bullying being modelled. If unchecked, these conditions might give rise to a social contagion effect in which bullying spreads through the peer group much like an infectious disease. Finally, with practice and over time, the aggressive interactions are likely to become entrenched.

Emotional contagion theory

Interpretation of the peer processes that occur during bullying episodes can be enhanced by focussing on the exchange of affect during bullying episodes. Emotional contagion theory (Hatfield, Cacioppo, & Rapson, 1994) examines the manner in which emotion is communicated and transferred from one party to another. Examples can be seen in primate behaviour, mother-infant interactions, and incidents of mass hysteria and crowd behaviour. The authors note power differentials similar to the dynamics of bullying. Dominant figures are more likely to pass on emotional states to subordinates, and are less likely to attend to the emotional states of those they consider secondary (Hatfield et al., p. 175).

To date, this paradigm has not been applied to research on bullying in school-aged children. The present research attempted to examine some of the hypotheses that follow from an emotional contagion perspective. For example, it might be expected that dominant aggressive children (i.e., bullies) on the playground would have a greater influence than other children on their peer group's affective valence. In general, it is possible that viewing bullying episodes would increase the arousal level of some peers and have a disinhibiting effect on aggressive behaviour in the group. In one study of group dynamics, DeRosier and her colleagues (1992) examined conditions before and following aggressive episodes. They found that prior high activity level, negative affect, and competition were positively associated with aggressive incidents that followed the initial aggressive episode. This finding suggests that a number of variables may combine and interact to maintain aggression once it has started. The transmission of affective arousal appears to be one component that encourages aggression to continue.

Gender differences in peer responses to bullying

To date, the majority of researchers into children's aggressive behaviour have focussed on boys. Bjorkqvist and

Niemela (1992) offer two potential reasons for this bias: (1) Physical aggression, which is more typical of boys than girls, is easier to observe and discuss and is, therefore, a more obvious object of study; and (2) the majority of researchers have been male, and may have found the stereotypic physical form of male aggression easier to understand.

In the past several years, however, researchers have paid more attention to girls' aggressive behaviour. Crick (1993) proposed that children, when attempting to inflict harm on peers, do so in ways that best interfere with the goals that are valued by their respective gender peer groups. Boys tend to have extensive, activity-based playgroups. The conflictual behaviour of boys, therefore, often involves direct physical aggression, yelling, and assertions of status and dominance (Cairns & Cairns, 1994). In contrast, girls' playgroups tend to be more intimate and focused on conversation. Girls may, therefore, be more likely to use relational aggression that involves hostile acts where the perpetrator often remains anonymous -- for example gossiping, and manipulating others to exclude a victim (Lagerspetz et al., 1988).

Recent questionnaire research by Crick and Grotpeter (1995), found that relational aggression is significantly more likely to occur among girls, while direct physical and verbal

aggression is more likely to occur among boys. If these varying types of interactions (relational and direct bullying) can be reliably coded on school playground observations, the reactions of the peer group to each type of bullying can also be examined. It is possible that type of aggression (i.e., direct vs. indirect) might vary according to gender while the peer processes that influence peer response may not vary by gender. The present study attempted to differentiate direct and relational aggression as a means of examining gender differences in playground bullying.

Age differences in peer responses to bullying

The propensity to use various types of aggression may vary not only by gender but also by age. Bjorkqvist and her colleagues (1992) suggest that physical, verbal, and indirect relational aggression are developmental phases that partly follow and partly overlap each other. The ability to manage subtler forms of aggression are likely related to advances in language and perspective-taking abilities. Thus, the ability to use relational aggression, and the ability of peers to recognize and respond to it, may increase with age.

In one study that examined developmental differences in causes of fighting on the school playground, adults identified retaliations for teasing, retaliations for unprovoked

assaults, and disagreements over game rules as causes of aggression (Boulton, 1993). For younger children, the escalation of playfighting led to real aggression; for older children retaliations to teasing preceded aggressive interactions. Teasing is a more subtle, verbally based form of aggression than playfighting; thus, these findings trace a developmental progression from overt to more covert forms of playground aggression.

Because the ability of peers to recognize and respond to more subtle forms of aggression are likely to progress developmentally, the current research examined peer responses to different types of bullying from a developmental perspective. Bullying was examined with regard to peer group responses at two developmental levels.

Ethological methodology

Ethologists study the adaptive functions of dominance hierarchies in various species through unobtrusive observations in naturalistic settings (Blurton-Jones, 1972). The ethological research on dominance hierarchies in primates is of particular relevance to the study of bullying. Researchers have demonstrated that clearly established dominance roles act to maintain order in primate communities.

For example, Goodall (1971) described the process of a male chimpanzee vying for dominance by charging at the other male chimpanzees; the newly subordinated males demonstrate their submission through soft "pant-grunts" and grooming of the victor (p. 113). Certain behaviours in schoolchildren might serve a comparable function (e.g., deferring a "turn" at a game, or distributing recess snacks only to dominant peers).

Other primate researchers have demonstrated the existence of social dominance networks through the reliable observation of behaviours such as eye contact and grinning. De Waal (1989) describes grinning in rhesus monkeys as the most reliable indicator of low status in social situations. De Waal (1992) suggests that primate dominance hierarchies often serve constructive regulatory functions that result in lower overall levels of aggression. The present research examined bullying behaviour as a form of aggression that is used to assert power or dominance.

Dominance hierarchies and playground bullying.
Ethological methods have been used to examine social dominance, which emerges as an early stable dimension of children's peer group social organization. According to Strayer (1982), dominance hierarchies are evident during the preschool years. Within preschool groups, however, a well-

defined social hierarchy does not seem to reduce aggression as it does in primate groups. Strayer explains this difference by noting that in preschool groups, unlike in primate groups, the development and organization of social structures depends on a wide range of external socio-cultural factors (e.g., the ethos of parents, day-care teachers, the larger culture, the amount of variation in the peer group, and the amount and type of adult supervision). Thus, the communicative function of well-defined roles in a social hierarchy (e.g., "I can hit you, but you may not hit me") may not be fully developed in preschool children, but may develop over time and in certain situations (e.g., in the relatively unsupervised playground environment in which school-aged children participate).

Just as playground bullying behaviours are thought to communicate messages to the peer group about dominance and submission, peer responses to bullying are also likely to serve a communicative function. Peer responses to bullying can include watching without acting, joining in on the bully's side, and attempting to intervene on the victim's behalf. It is likely that peer status is related to these behaviours. For example, peers with high social status might be able to intervene with little risk of being targeted themselves. A successful intervention might even enhance social status.

When peers do intervene, they convey the message that the bully is *not* too powerful to be challenged, and/or that the aggressor is *not* justified in his or her behaviour.

In contrast, the high risk of an unsuccessful intervention for a low-status peer might mitigate involvement. Inaction by peers may indicate to the bully that he or she is justified in his or her behaviour, or that the victim is deserving of abuse. In either case, peer non-responsiveness in the face of aggression would confirm or enhance the bully's dominance.

Finally, peers might enhance their own social status with relatively little risk by joining with the bully. Given the power differential that is inherent in bullying behaviour, active supporters of the bully may gain status through alignment with the aggressive perpetrator.

Ginsburg and Miller (1981) found that the few children who intervened in playground aggression held positions of high social status within the peer group. This finding suggests that interveners are, at some level, aware of their high standing in the playground social hierarchy and feel relatively immune to the consequences of acting against an aggressor. Similarly, Salmivalli and her co-researchers (1996), using questionnaire data, found that children with high

sociometric status were more likely to report that they would intervene to help a victim of bullying behaviour.

Taken together, these findings suggest that children on the school playground do have an awareness of their social position, that costs and benefits of involvement in bullying are considered, and that only high-status children are likely to feel secure enough (i.e., safe enough) to intervene on behalf of victims. For low-status children, the risk of negative repercussions (e.g., being targeted by the bully, being ostracized by other peers) likely outweigh the possible benefits of intervention. In the present research, sociometric data were available for a subsample of children, permitting a preliminary analysis of the social status of children who chose to intervene. The effects of peer intervention were also examined with regard to the subsequent change in bully aggression ratings, and the affective valence following intervention.

Dynamic systems theory

No single theory is adequate to describe the multiple and complex processes that unfold when groups of children are involved in bullying and victimization. Therefore, in an attempt to integrate the theoretical foundations described

above, peer processes related to bullying were considered using a dynamic systems perspective as an organizing heuristic.

Non-linear dynamic systems theory, sometimes referred to as chaos theory, originated in the natural sciences (e.g., biology, physics, and computer science). The theory attempts to describe states of coalescence and disequilibrium in interactive systems.

Dynamic systems theory is usually used to model biological systems or chemical processes; however, it also has been useful in describing social phenomena, and is increasingly applied to human behaviour and the social sciences. For example, Straus (1973) applied dynamic systems to describe a theory of violence between family members. Clauset and Gaynor (1984) constructed a model of classroom dynamics, using variables such as student achievement, teacher expectations, and teacher effort, to differentiate between academically effective and ineffective schools. The authors concluded that a catalyst for school change might be introduced, citing, for example, "a strong, dynamic principal, a cadre of highly motivated teachers, or strong parental pressure" (Clauset & Gaynor, 1984, p. 315).

The dynamic systems approach has, therefore, been useful in generating models that have heuristic value. Such models can be used to generate and clarify further research questions. Dynamic systems theory might also be useful in analyzing and modelling children's playground behaviours. The model would attempt to explain how seemingly unrelated and uncoordinated behaviours of children in a group can coalesce and become increasingly organized around a singular goal of bullying (Pepler et al., 1998).

In the case of playground interactions, for example, one aggressive instigator might quickly draw in a number of confederates. The presence or absence of specific characteristics within an aggressive sequence (e.g., high affective arousal or a threshold number of onlookers) might influence whether the sequence escalates or subsides.

A dynamic systems perspective was used conceptually in the present study. In subsequent studies, with advanced analytic techniques, it may be possible to use this approach to model the onset, course, and decline of playground bullying episodes.

Summary of theoretical approaches

Peer processes can be examined through a variety of theoretical models. Each perspective offers unique

contributions to the study of peer processes and playground bullying. For example, a social learning approach involves a fine-grained analysis of social interaction by focussing on small, manageable samples of behaviour (e.g., dyadic behaviour). The application of emotional contagion theory leads to a focus not only on behaviour but on the affective contingencies involved in playground bullying. The examination of dominance hierarchies using ethological methods has high ecological validity. While the task of analysing subtle naturally occurring social interactions can be arduous, the process is seen as justified by the potential value of the information obtained. Finally, a dynamic systems heuristic can be useful in conceptualizing aspects of each of these theories in an all-encompassing model that might account for many types of behaviour.

Summary of the literature review

From the above, a picture begins to emerge of the numerous factors that operate on the school playground during bullying episodes. An examination of peers' involvement in bullying suggests that their very presence, regardless of any action or inaction, may encourage further aggressive behaviour. Peers who view bullying but do not intervene may communicate several different messages: that bullies are too

powerful to oppose, that peers view the interaction to inform and protect themselves, or -- most unfortunately -- that victims deserve their abuse.

The research on diffusion of responsibility suggests that young children (kindergarten age) might be unwilling to intervene due to lack of mutual support, while older children (grade 6) may remain uninvolved for fear of peer disapproval. These interpretations should be made cautiously, however, because of the difficulty in comparing experimental with naturalistic data. In particular, the peer group context and history might influence individual behaviour, while this situation would not apply in an experiment.

It seems likely, from the limited evidence available, that peers who are powerful (i.e., have high social status) are able to intervene with more success, while weaker, low social status peers are less likely to be successful. Furthermore, unsuccessful interventions are more likely to result in accelerated levels of aggression.

Gender and age differences in peer responding to playground bullying also need to be assessed as part of the complex playground interaction. Therefore, it is important to consider the numerous, interacting influences within the peer group which may lead to a contagious environment of aggression.

Summary of the introduction

Bullying is a highly problematic behaviour that needs to be examined in the context of its natural environment. To date, no researchers have examined the peer processes that surround bullying and victimization on the playground. Therefore, peer group processes that support or discourage hostile interactions are not well understood. Research on naturally occurring interactions at the level of the peer group will have greater ecological validity than previous research, which has tended to focus on dyadic interactions (e.g., Ginsburg et al., 1981) or on group interactions in experimental environments (e.g., DeRosier et al., 1991).

The above review has identified several theoretical models that may be applied to studying the ecology of children's aggressive behaviour. A dynamic systems perspective may be useful as a heuristic to integrate these theoretical models. Increasing our knowledge about children's peer processes in bullying and victimization episodes is essential to inform future intervention strategies and help to design more effective anti-bullying programs.

Objectives and Hypotheses

The overall goal of this research is to examine how playground bullying is supported by the peer group. An examination of the influence of sex and grade level will be made for each hypothesis. Specific questions and related hypotheses are as follows:

1.0 To what extent does bullying occur during the videotaped playground interactions?

1.1 How many of the videotaped bullying interactions involve a peer group (defined as two or more peers)?

1.2 How many peers are present? This will be answered by determining the range and average number of peers involved during the bullying episodes.

2.0 To what extent is the peer group involved in the escalation, continuation, and de-escalation of aggression in bullying episodes?

2.1 For what proportion of each bullying episode do peers passively observe or actively encourage the aggression (i.e., through nonintervention and joining with the bully, respectively)?

2.2a What effect does peers' passive observation of the bullying have on the bully's affect?

2.2b What effect does peers' passive observation of the bullying have on the bully's aggression?

2.3a What effect does peers' active joining in the bullying have on the bully's affect?

2.3b What effect does peers' active joining in the bullying have on the bully's aggression?

3.0 To what extent does peer intervention (on behalf of the victim) relate to increases or decreases in the affect and the severity of aggression?

- 3.1a What effect does peers' intervention against the bullying have on the bully's affect?
- 3.1b What effect does peers' intervention against the bullying have on the bully's aggression?
- 4.0 Are peer interventions influenced by other factors?
 - 4.1 Is the number of peers related to the likelihood of intervention?
 - 4.2 Is the social status of peers, relative to bully social status, related to the likelihood of intervention?
 - 4.3 Is the social status of peers, independent of bully social status, related to the likelihood of intervention?
- 5.0 To what extent do bullies actively elicit support, and how successful are their attempts?

Description of data and testing of hypotheses

The data in the present study will first be dealt with descriptively. Simple statistics will be presented regarding the frequency of bullying that involves a peer group, and regarding the proportions of time that peers were observed in various behaviours (objectives 1.1, 1.2, & 2.1).

For each of the questions and hypotheses described above, the data analysis will include an examination of the influence of school, sex, and grade level. This procedure will be adhered to unless characteristics of the dataset do not allow for analysis at these levels.

Several hypotheses derive from social learning theory. These are: 1) that peers' passive observation of, or positive reinforcement of, aggression will increase the probability of

further aggression and heighten bully negative affect (hypotheses 2.2a, 2.2b, 2.3a, and 2.3b), and 2) that negative sanctions from peers will decrease the bullies subsequent negative affect and probability of further aggression (hypotheses 3.1a & 3.1b, respectively). These possible outcomes will be tested via sequential analysis (Bakeman & Quera, 1995).

A hypothesis derived from the ethological perspective is that the social status of peers will be related to the likelihood of intervention. An examination of the social status of peers and the amount of intervention they engage in will be tested with a regression model (hypotheses 4.2 and 4.3).

Social learning theory suggests that bullies will actively solicit support and be relatively successful in obtaining it (hypothesis 5.0). This prediction will be tested using sequential analysis (Bakeman & Quera, 1995).

These hypotheses will be examined through the examination of videotapes of naturalistic interactions on elementary school playgrounds. The data relevant to these objectives will be obtained from a larger sample of videotapes through a screening process, the coding of sequential pattern changes, and a global rating coding strategy (See Appendix A for details).

METHOD

Participants

Participants were drawn from a three-year study of bullying and victimization at two Toronto area elementary schools. Administrators at the two schools agreed to participate out of concern over the problem of bullying and victimization. The two schools were similar in that both were located in inner-city neighbourhoods in Toronto. Students came from ethnically diverse backgrounds at both schools, however there were more English-as-a-second-language (ESL) students at School A. Socio-economic status (SES) ranged from lower to middle-class at both schools; School B had a somewhat higher SES than school A. At school A, approximately 75% (12 out of 16) of the grades 1 through 6 classrooms at school A were included in the study each year. At school B, 85% (11 out of 13) of the grades 1 through 6 classrooms at school B were included in the study each year. Classrooms were selected based on the need for a representative number of children from each grade level. In one instance (at school B, during year three), a class was omitted from the study because the teacher declined participation.

In the large study, children from grades 1 to 6 provided self-report information on bullying, victimization, and school climate. Participants also completed sociometric ratings of peers. All parents gave informed consent, while children gave assent, prior to their participation in the study.

In each of the three years of the study, a subsample of approximately 120 children was drawn from the full sample for the purposes of videotaping (see Table 1 for year-by-year figures). This sample was stratified in order to include approximately equal numbers of males and females in each of four categories: bullies, victims, bully/victims, and comparison children.

Categories were determined by two or more agreements on self, peer, and teacher nominations of bully/victim status (see below). Children who were videotaped while playing with members of the target sample were included in the coding of bullying episodes for the present study. Data in the present study were drawn from all three years of videotaping.

Measures

The subsample of children who were targeted as candidates for videotaping (i.e., children identified as bullies, victims, bully/victims, and comparison children) was derived

Table 1**Bully and victim status in the videotaped sample, by time and gender**

	Year 1		
	Males	Females	Total
Bully	14 (4.5%)*	5 (1.6%)	19 (3.1%)
Victim	20 (6.4%)	17 (5.6%)	37 (5.7%)
Bully-victim	11 (3.5%)	11 (3.6%)	22 (3.6%)
Comparison	45 (14.4%)	40 (13.2%)	85 (13.8%)
Unclassified	222 (71.2%)	230 (75.7%)	452 (73.5%)
	Year 2		
	Males	Females	Total
Bully	12 (4.7%)	8 (3.0%)	20 (3.8%)
Victim	11 (4.3%)	11 (4.1%)	22 (4.2%)
Bully-victim	10 (3.9%)	8 (3.0%)	18 (3.4%)
Comparison	27 (10.5%)	30 (11.2%)	57 (10.8%)
Unclassified	196 (76.6%)	212 (78.8%)	408 (77.7%)

	Year 3		
	Males	Females	Total
Bully	7 (2.6%)*	5 (1.9%)	12 (2.2%)
Victim	7 (2.6%)	9 (3.4%)	16 (3.0%)
Bully-victim	4 (1.5%)	1 (.5%)	5 (1.1%)
Comparison	35 (13.0%)	18 (6.8%)	53 (9.9%)
Unclassified	217 (80.4%)	232 (87.5%)	449 (83.9%)

* Percentages are expressed within gender and year.

from the following measures, completed by all children in the participant classrooms. Children in the younger grades were individually administered measures, while the older grades received classroom administration.

Self nominations. Self nominations were derived from a Bully/Victim Questionnaire, based on Olweus (1989). Two items ("How often have you bullied since the beginning of the school year?", and "How often have you bullied in the last five days?" were combined to determine self-nominations for bullying. Four items ("How often have you been bullied since the beginning of the school year?", "How often have you been bullied in the last five days?" How often do you spend recess alone?", and "How often does it happen that other kids won't let you join in what they're doing?") were combined to determine victimization status. Scores were summed and standardized within class and gender. The cut-off for a self-nomination as a bully or victim was set at a standard score of .75 or higher. A child with .75 or higher standard scores on both bullying and victimization was considered to be a self-nominated bully/victim. Children with standard scores between -.25 and -1.0 (i.e., they rated themselves as involved in bullying and victimization less than the average student) were categorized as comparison children.

Peer nominations. Peer nominations for each student were obtained through the Modified Peer Nomination Inventory (MPNI), using a "class play" format (Perry, Kusel, & Perry, 1988; Masten, Morison, & Pellegrini, 1985). Students were asked to pretend their class was putting on a play, and to nominate classmates that could "best play the part of" a given behaviour descriptor. The descriptor items on the MPNI contained seven aggression, seven victimization, and distractor items. Peer nominations were summed and standardized within class and gender. Children who received a .75 or higher standard score on bullying or victimization were considered as peer nominated for the respective category. A child with .75 or higher on both bullying and victimization was considered to be a peer-nominated bully/victim. Children who had standard scores between $-.25$ and -1.0 were considered to be comparison children (i.e., they were rated by peers as involved in bullying and victimization less than the average student).

Teacher nominations were assessed using a Nomination Form. Teachers were asked to nominate any children in the class who fit behaviour descriptors which defined bullies, victims, and bully/victims.

In summary, the bully, victim, and bully-victim categories were determined by two or more agreements on self, peer, and teacher nominations of bully/victim status.

A sample of comparison children, matched on grade and gender with the bullies, victims, and bully-victims, was randomly selected from those children who were self- and peer-rated as relatively uninvolved in bullying and victimization.

Observation procedure

The observations were made using a focal individual sampling technique (Altmann, 1974). Selected children, as described above, were the focus of the filming. However, their interactions with non-focal children were also analysed in the present study. Focal children were asked to wear a waist pouch containing a wireless FM transmitter. In order to decrease the salience of the transmitter, all other children in the target child's classroom were asked to wear a placebo pouch which was outwardly identical to the wireless microphone pouch. All children who wore the pouches assented to the procedure. Approximately 3% of the children refused to wear the pouches over the course of the filming.

Filming was done by trained research assistants. Video cameras and microphone receivers were placed at strategic points on the playground which allowed for the greatest

filming range with minimal moving of the camera. Each of the focal children was filmed for a period of approximately 10 minutes at each observation phase, during unstructured free play at recess or lunchtime. A comprehensive description of the observational methodology is given in Pepler and Craig (1995).

Filming schedule. The collection of videotape data occurred twice each year - winter and spring - for the three year duration of the study. Videotaping at these six data collection periods lasted for a two week period at each school, thus allowing students time to acclimatize to the filming process.

In total, one hundred and twenty five hours of video and remote audio recordings of playground behaviour were collected. These data comprise six collection periods, during the winter and spring of three school years. A sample of approximately 120 children were used each year. The same children were followed over time whenever possible, however sampling with replacement was used as children became unavailable for the study (e.g., they left the school to attend junior high school, moved away, or were transferred to a classroom that was not a part of the study).

Screening and coding procedures

Screening of aggression. In the first step of coding, all 125 hours of playground tape were screened by two trained undergraduate researchers to select those segments that included aggressive behaviours. The researchers also recorded the duration of the segment, and any other relevant technical information (e.g., whether sound or picture quality was poor). Aggression was defined as the intent to inflict injury, pain, or harm on another person, whether physically, verbally, or through covert forms of attack. One important task of this initial screening was to differentiate true aggression from "rough-and tumble" play (See Appendix A for detailed descriptions of the screening process and coding scheme).

One quarter of the tapes were coded by both raters, in order to establish the amount of agreement between the two. Percent agreement averaged .84. This figure surpasses the minimum acceptable level for percent agreement of .80 (Bakeman, 1996).

Screening of bullying. The second step involved identifying and coding those segments that contained bullying. Bullying was defined as any episode of aggression in which the aggressor, or aggressors, had power over the victim or victims. The two trained undergraduate researchers rated

power differential on a 5-point scale, based on the relative advantage that the aggressor(s) had over the victim(s). Interrater reliability for this coding was .82.

Coding of bullying in a group context. Step three involved identifying and detailed coding of those segments that contained bullying interchanges in a group context. For the purpose of the present study, a peer group was defined as two or more witnesses to the bullying. Witnesses were defined as peers who viewed the bullying for a minimum of five seconds. Thus, the third screening of the videotape data selected those segments that contained a bully, victim, and two or more peers.

For this stage of the screening process, coders reached consensus rather than obtaining interrater reliability due to concerns about technical limitations in the videotaped data. Although there was no disagreement over the number of peers involved, the question of whether a segment was of sufficient technical quality for coding was frequently an issue. Therefore, coders viewed technically questionable segments together to reach agreement about whether the sound and picture quality were sufficient to include the segment for coding.

Detailed coding of the technically adequate tapes entailed using three types of codes for each of the bully, victim, and peers: (1) sequential event codes; (2) sequential affect codes, and; (3) interval aggression and distress ratings. Each of these is described below. For detailed definitions of codes, see Appendix A (coding manual).

In order to examine the unfolding of events, over time, during bullying episodes, sequential event codes were used to continuously rate the behaviours of each actor as they occurred on the videotape segment. This coding scheme was mutually exclusive and exhaustive, meaning that behaviour codes could not overlap and they provided a complete record (i.e., only one code pertained at any given time, and the coding left no behaviours unaccounted for). Codes varied according to the person being rated. For bullies, the behaviours of interest were those domineering and aggressive acts that initiated and sustained the bully-victim interaction. Therefore, bully codes included "physical or verbal attack of victim", "indirect attack of victim", "bully encourages peer attack", "bully onlooking during aggression", "bully desists (ceases attack)", "no bullying", and "bully off-camera." In the case of victims, the intent was to examine the reactions to being attacked, and the coping style

of the victim. Victim codes therefore included "victim retaliates", "victim defends self", "victim submits", "no victimization", and "victim off-camera". For peers, the critical behaviours of interest were whether peers offered reinforcement to the bully (actively or passively) or joined with the victim. Thus, peer codes included "peer joins bully", "peer joins victim", "peer onlooks", "peer desists (ceases attack)", "no bullying occurring", and "peer off-camera".

Changes in the affective valence that develop over the course of bullying episodes were also of interest. Therefore, sequential affect codes continuously rated the emotional valence of each actor over time, as changes in affect occurred on the videotape segment. Affect was coded on a seven-point scale, with four indicating neutral affect, one indicating highly positive affect, and seven indicating highly negative affect. In addition, a code of nine indicated that the actor was off-camera. These codes were also mutually exclusive and exhaustive. Thus, codes could not overlap each other, and a continuous stream of ratings were made from the beginning to the end of each segment for each actor.

Two other concerns of the present research were whether levels of aggression tend to rise following a bullying

episode, and whether the victim's distress level is related to the likelihood of peer intervention. To explore these hypotheses, aggression and distress ratings were made for each participant at ten second intervals. These ratings were made on a five-point scale, where a rating of one indicated no occurrence of aggression or distress, and a rating of five indicated extreme aggression or distress. Coders rated the highest level of aggression or distress that occurred during each ten second interval. Aggression was defined as physical or verbal actions that had hostile intent, and behaviour descriptors were given for each of the five levels of aggression. Distress was defined as physical or verbal signs of anxiety, nervousness, discomfort, or hysteria. Behavioural descriptors were given for each level of distress rating (see Appendix A).

Sequential analysis

The present coding scheme provided a wide range of data that could be used for sequential analyses. The dataset was both comprehensive and complex, comprising events, event affect, and aggression and distress ratings for each of the persons present during bullying (bullies, victims, and multiple peers). For the purposes of this study, the focus of the sequential analyses was peer influences on the bully.

Although numerous other analyses could be conducted, they were beyond the scope of the present study.

The sequential analyses were made using the Sequential Data Interchange Standard (SDIS, version 2.0) and Generalized Sequential Querier (GSEQ, version 2.0) computer programs (Bakeman & Quera, 1995). The SDIS program provided a standard set of conventions for structuring several types of time-based data. Events and event affect were recorded as they occurred (i.e., were of variable duration), and formed a continuous stream of data for each participant. Global ratings of aggression and distress were recorded at 10 second intervals throughout the duration of each bullying segment.

The GSEQ program allowed for the subsequent analysis of data files that were entered in SDIS format. GSEQ analysis options that were used included simple and conditional frequencies of time-lagged behaviours, and the analysis of events co-occurring with given behaviours. The GSEQ program was used to process the time-based data into summary form, and to export this data to the Statistical Package for the Social Sciences (SPSS, Norusis, 1994) for further analysis.

Reliability

A small portion of the coding of bullying in a group context was completed by three coders, while the majority of

coding was done by two coders. Interrater reliability was calculated only for the two coders that completed the most coding. Agreement between the two independent videotape raters was calculated for 25% of the data. A kappa statistic (Cohen, 1960) was used rather than a simple calculation of percent agreement because the kappa statistic corrects for chance agreement among raters.

Interrater agreement on both events and their timing had to be considered due to the temporal nature of the data. A five second tolerance for temporal agreement was established in order to account for slight variations in recording among coders. Kappa for event codes (i.e., behaviours), averaged across all actors (bully, victim, and peers) and episodes, was .69. According to Fleiss (1981) kappa statistics of .40 to .60 can be considered fair, while .60 to .75 are good, and over .75 are excellent. Table 2 outlines agreement using the kappa statistic for each of the behaviour codes.

Interrater agreement on global ratings of aggression and distress during the episodes were also summarized using the kappa statistic. The average kappa for aggression ratings (averaged across all codes - bully, victim, and peer - and episodes) was .69. For distress ratings, the corresponding kappa statistic was .63. Interrater reliabilities for the aggression and distress ratings are summarized in Table 3.

Table 2**Interrater agreement on event coding**

Event Code	Kappa	Spearman r
Bully codes		
Non-bullying behaviour	0.70	0.70*
Attacks victim	0.78	0.79
Attacks victim indirect	0.76	0.76
Encourages peer attack	0.66	0.70
Bully onlooking	0.74	0.74
Bully desists	0.60	0.61
Bully codes total	0.73	0.61
Victim codes		
Non-victimization	0.57	0.57
Retaliate	0.71	0.71
Defend (protest/withdraw)	0.56	0.56
Submit	0.67	0.67
Victim codes total	0.63	0.60

Peer codes

Non-involved	0.80	0.80
Join bully	0.71	0.71
Observe bully	0.68	0.68
Join victim	0.69	0.69
Peer desist	0.66	0.66
Peer codes total	0.72	0.76

Note: * All correlations are sig. ($p < .001$).
n for event codes = 13 videotape segments (23% of sample)

Table 3
Interrater Agreement on Event Affect, and Global Ratings of Aggression.

Event affect	Kappa	Pearson r
Bully ratings	0.44	.63*
Victim ratings	0.42	0.65
Peer ratings	0.61	0.84
Global ratings	Kappa	Pearson r
Aggression		
Bullies	0.70	.91*
Victims	0.61	0.83
Peers	0.75	0.87

Note: * All correlations are sig. ($p < .001$).
 n for event affect codes = 13 videotape segments (23% of sample)
 n for global ratings = 16 videotape segments (28% of sample)

RESULTS

Frequency of bullying and aggression

With the initial screening of all videotape data, 609 segments of playground videotape were examined to identify segments containing aggression for further study. This procedure identified 427 aggressive episodes. It should be noted, however, that an aggressive episode might comprise only a small portion of the 10 minutes, on average, of each filmed segment, and that more than one aggressive episode could occur on a single segment of videotape (see Appendix A, Peer Coding: Part I - Screening Process, for details).

For the purposes of the present research, a second phase of screening identified bullying behaviour that included a peer group (two or more witnesses to the bullying). The screening of the data eliminated the following: aggressive interactions where no power differential existed (i.e., aggression occurred, but no bullying); "rough and tumble" play; and bullying segments with fewer than four people present (the minimum criteria for inclusion were one bully, one victim, and two peer witnesses). In each of these subcategorizations, a portion of segments was uncodeable for technical reasons (e.g., poor picture quality, missing sound).

Each step in the data reduction is further described below. Table 4 summarizes the subcategorization of the 427 videotape segments that contained aggression.

Aggression without bullying occurred in 28% of tape segments (121/427). Examples of this include physical or verbal aggressive exchanges that were evenly matched (i.e., no power differential existed).

Rough and tumble play occurred in 25% of the tape segments (106/427). These segments involve pretend aggression where both parties appear to consent to participate. Characteristics that differentiate this behaviour from true aggression include participant's "laugh-playface" (Blurton Jones, 1972), the avoidance of serious physical contact, and the exchange of dominant and submissive roles among participants (Smith & Boulton, 1990).

Rule negotiation was a relatively infrequent category; 4% of segments (17/427) involved exclusion of children from play due to game constraints or citation of rules.

Bullying was considered to have occurred in 43% of the aggressive episodes (183/427). Of these 183 bullying videotape segments, 43% (78/183) were eliminated for technical reasons. Technical difficulties included poor sound and/or

Table 4**Subcategorization of 427 aggressive videotape episodes**

	Bullying	Aggression	Rough & Tumble	Rule negotiation
Technically adequate segments				
Group size adequate (2+peers)	57 (31%)*	65 (54%)	75 (70.5%)	11 (64.5%)
Group size inadequate (<2peers)	48 (26%)	16 (13%)	11 (10.5%)	1 (6.0%)
Technically inadequate segments				
Group size adequate (2+peers)	40 (22%)	37 (30.5%)	18 (17%)	4 (23.5%)
Group size inadequate (< 2 peers)	38 (21%)	3 (2.5%)	2 (2%)	1 (6.0%)
Totals	183 (43%)	121 (28.3%)	106 (24.8%)	17 (3.9%)

*Percentages are calculated within subcategories, with the exception of the "Totals" row.

Bullying refers to physical or verbal aggression with a power differential.

Aggression refers to physical or verbal aggression with no power differential (i.e., no victim).

Rough and tumble refers to pretend/play aggression.

Rule negotiation refers to arguments or exclusion based on negotiation of game rules.

Technically inadequate segments had poor sound and/or picture quality (e.g., missing sound, sound distortion, actors off camera, picture out of focus)

picture, and segments where gossip occurred and the victim was not present. The latter categorization, which represents 42% of the bullying segments that were uncodeable for technical reasons (33/78), will be subsequently discussed as a study limitation, because the videotape methodology was seldom capable of fully capturing this type of bullying.

Bullying segments were accepted only if 4 or more actors were present (a bully, victim, and at least two peers) because the focus of this research was on the role of the peer group. This criterion eliminated 47% of bullying segments (86/183).

Non-independence of segments. The 57 segments selected for detailed analysis were examined for the identities of the bullies. Four segments were identified where a bully was present for a second time (i.e., there were four bullies who bullied in two videotape episodes each). Random selection was used to eliminate one of the two segments for each of the over-represented bullies. This procedure resulted in a final sample of 53 segments that were used in the present analysis.

It was possible that further non-independence existed because of peers appearing in more than one segment of videotape. Bullies were chosen as the criterion for determining independence, however, because of their central

role in the aggression, and because it was not possible to identify all peers present during bullying episodes.

In summary, the data screening identified 183 out of 427 aggressive segments as containing bullying (43% of all aggressive videotape segments). The screening out of bullying segments that did not contain two or more peers, or that did but were technically inadequate, resulted in a sample of 57 segments of playground bullying. Four of these segments were eliminated due to over-representation of bullies. The remaining 53 tape segments were analysed in the present study.

Descriptive statistics for the coded bullying segments

A variety of descriptive statistics are presented in order to describe the role of the peer group in bullying episodes (Objective 1.0).

Number of peers present. The question "How many peers are present" (Objective 1.2) was addressed by determining the range and average number of peers involved. Across all coded videotape segments selected for the present study, the average number of peers involved (i.e., students other than bullies or victims) was 4.3. The number of peers present ranged from 2 to 14. It should be noted, however, that the minimum number of peers present (two) was determined by the inclusion criteria for the videotaped segments. At school A the average

number of peers present was 4.8 (range from 2 to 14), while the average number of peers present for school B was 3.9 (range from 2 to 9). A t-test comparing the number of peers present at the two schools indicated no significant differences between the two schools.

Duration. The duration of the coded episodes averaged 79.8 seconds, with a range from 7 seconds to 720 seconds. At school A the segments averaged 51.1 seconds (ranging from 7 to 128 seconds); at school B the segments averaged 105 seconds (with a range from 15 to 720 seconds). The greater average length of segments at school B is accounted for by several segments of extreme length (e.g., 720, 338, and 266 seconds). The longest segment at school B was eliminated for the purpose of comparing the bullying segment lengths at the two schools. This procedure reduced the mean segment length at school B to 85.7 seconds. An independent samples t-test indicated that there was a significant difference between the segment lengths at the two schools ($t = -2.14, p. <.04$).

Relationship between participants and segment length. The relationship between the number of peers present and the length of the bullying episode was assessed through a Pearson product-moment correlation. At school A, a significant positive relationship was found between the number of

participants and duration of episodes ($r = .40, p < .02$). At school B, the removal of the 720 second outlier had an impact on the correlation between segment duration and number of peers. With the outlier included, the correlation was positive and significant; with it removed, the correlation was positive but non-significant ($r = .22$).

Grade level and gender of peers. The present exploratory study made no specific predictions about the directions of influence of grade level and gender on the course of playground bullying. Grade and gender differences were, however, examined for each hypothesis. Table 5 presents data on the characteristics of individual peers, categorized according to school, grade level, and gender.

Chi-square tests were used to examine whether there was a relationship between age and sex of the peers involved in bullying episodes at the two schools. At school A, the proportions were found to be significantly different ($X^2(1, N = 126) = 7.96, p < .01$). Young boys were the most frequently represented in the peer groups, while young girls were the least frequently represented. At school B, the proportions were not significantly different ($X^2(1, N = 93) = .21$). Although the statistical test was not significant, young boys again were the largest group of peers present.

Table 5**Number of peers involved by school, grade level and gender**

School A			
	Boys	Girls	Total
Grade level			
Younger	44	14	58
Older	35	33	68
School B			
Grade level			
Younger	39	29	68
Older	13	12	25
Total	121	98	219

Characteristics of the peer groups. The mean number of peers present and the gender of the peer groups were examined by categorizing each of the 53 segments as "boys only", "girls only", or "mixed". The following criteria were used to determine the gender categorization. Groups that were exclusively one gender were labelled "boys only" or "girls only". All other groups were labelled "mixed", with one exception. When one gender represented 80% or more of the group, and the peers of the other gender were not directly involved in the bullying (e.g., were peripheral onlookers), the group was labelled according to the dominant gender. This classification more faithfully represented the dynamic of these peer groups. A crosstabulation of these data is presented in Table 6.

School was omitted from the statistical analysis because low frequency, or empty, cells would have resulted. Mixed grades were also omitted from statistical analysis because there were no girls in mixed grade levels, and only one group of boys in mixed grades. A two by three between-groups analysis of variance was performed on the number of peers involved. Independent variables were grade level (younger and older) and peer group gender (boys, girls, and mixed).

Table 6
Description of Videotaped Episodes (N=53): Mean Number of Peers Involved, by Peer-Group Gender and Grade Level

	Grade level			Total
	Younger (grades 1-3) (n, s.d.)	Older (grades 4-6)	Mixed grades	
Peer-group gender				
Boys	3.2 (15, 1.8)	3.6 (7, 2.5)	3.0 (1, --)	3.3 (23, 1.9)
Girls	2.7 (4, 0.5)	2.0 (2, 0.0)	---	2.5 (6, 0.5)
Mixed	4.4 (11, 1.5)	5.3 (9, 2.8)	8.3 (4, 3.9)	5.4 (24, 2.8)
Total	3.6 (30, 1.7)	4.3 (18, 2.7)	7.2 (5, 4.1)	4.2 (53, 2.5)

Note: Only episodes with 2 or more peers were included in the analyses.

The dependent variable "number of peers involved" was positively skewed and was log transformed to improve the distribution (Tabachnick & Fidell, 1989). Kurtosis and skew were not significantly different from the normal distribution following this procedure.

The ANOVA on peer group size revealed a main effect for gender, $F(2, 42) = 4.4$, $p < .03$. There was no effect of grade

level on number of peers involved. Post-hoc analyses revealed that mixed groups were significantly larger than both boys and girls groups.

Peers' time budget. Each peer's use of time during the bullying episode was examined as a further descriptive statistic. For each episode, the amount of time that each peer was coded as passively observing or actively reinforcing the bully was calculated, as was the amount of time each peer actively reinforced the victim. These times were then expressed as a percentage of the total bullying segment length. The average of these figures was calculated, across all segments combined, as a global indicator of whom peers reinforced during the bullying episodes (i.e., passive reinforcement of the bully through observation, active reinforcement of the bully, or active support for the victim).

For both schools combined, peers, on average, passively observed the bully (watched without intervening) for 53% of each bullying segment. On average, peers actively reinforced the bully (verbally or physically encouraged) for 21.8% of each bullying episode. Peers actively reinforced the victim (intervened, discouraged aggression) for 25.2% of each bullying episode. Typically, peers would become engaged as

the bullying increased in severity and duration; few peers lost interest or disengaged while a bullying episode was at its height.

In many cases, peers were present for only a portion of the entire videotape episode. In these cases, peers' activities were calculated as a proportion relative to the amount of time that they were present in the videotaped bullying segment. It is possible that some peers were onlooking from just beyond the range of the camera. In these cases the reinforcement (likely passive reinforcement, because no contact with the bully and victim occurred), would be underestimated. In spite of this underestimation, passive observation of the bully remains the largest proportion of reinforcement found on the tapes (i.e., behaviour that permitted the bullying to continue).

At school A, peers, on average, passively observed the bully (watched without intervening) for 50.8% of each bullying segment. On average, peers actively reinforced the bully (verbally or physically encouraged) for 25% of each bullying episode. Peers actively reinforced the victim (intervened, discouraged aggression) for 24.2% of each bullying episode.

At school B, peers, on average, passively observed the bully (watched without intervening) for 55.9% of each bullying

segment. On average, peers actively reinforced the bully (verbally or physically encouraged) for 17.6% of each bullying episode. Peers actively reinforced the victim (intervened, discouraged aggression) for 26.5% of each bullying episode. These data are summarized in Table 7.

Table 7

Peers' time budget by school

	School A	School B	Total
Reinforce Bully	25.0%*	17.6%	21.8%
Attend to Bully	50.8%	55.9%	53.0%
Intervene with Victim	24.2%	26.5%	25.2%

* Percentages are calculated within school

Peers' time budgets were further examined by three one-way ANOVAs. It was not possible to use a multivariate approach for these analyses because the independent variables were linearly related (i.e., the values of the dependent

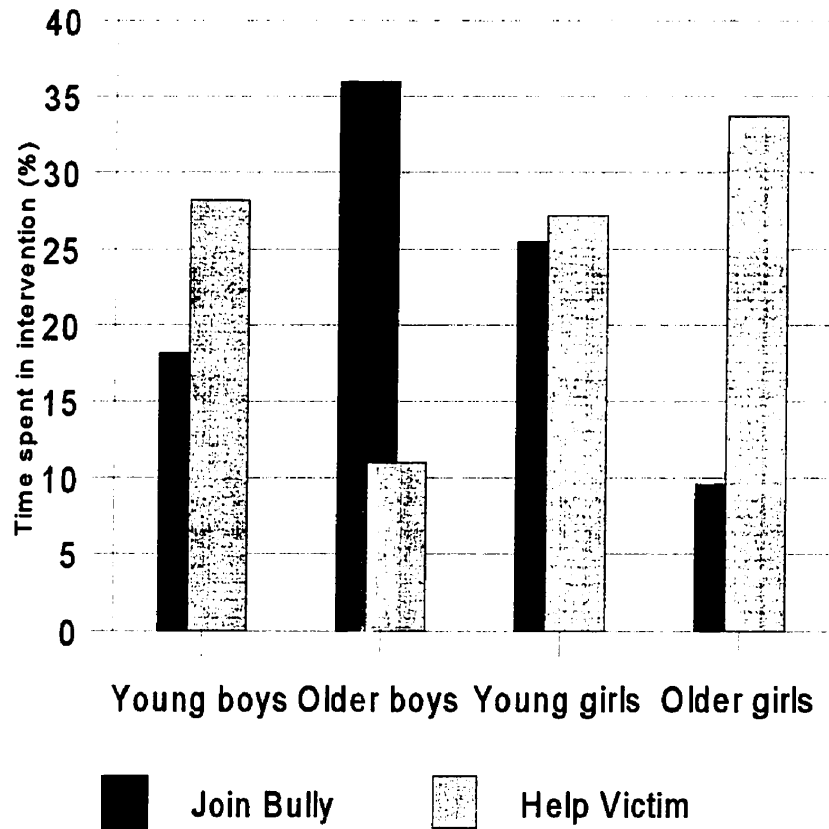
variables, summed, were always equal to one). Each ANOVA used school, peer gender, and grade level as independent variables, while the three dependent variables were "time spent passively observing the bully", "time spent aiding the bully", and "time spent intervening on the victim's behalf." The variables "time aiding the bully" and "time intervening on the victim's behalf" were negatively skewed and were square root and log transformed to improve the shape of the distribution.

The analysis of variance with time spent in passive viewing of bullying as the dependent variable was non-significant. There were no discernible differences based on school, peer gender, or level. In contrast, the ANOVA on frequency of joining the victim revealed a two-way interaction for level and gender, $F(1,211) = 4.4, p < .04$. Post-hoc analyses revealed that older boys were significantly less likely to spend time joining with the victim than younger boys, or girls of either grade level.

The ANOVA on frequency of joining the bully also revealed a two-way interaction for level and gender, $F(1,211) = 6.5, p < .02$. Post-hoc analyses revealed that older boys were significantly more likely to spend time joining with the bully than younger boys, or girls of either grade level. These data are shown in Figure 1.

Figure 1

Peer time spent in joining bully and helping victim, by grade level and gender



A second examination was made of peer behaviours in response to bullying with peer intervention coded as a dichotomous variable. This analysis examined whether peers had any involvement in intervention on behalf of victims ("yes" / "no"), rather than the duration of their interventions. It was possible that a different pattern of peer behaviours might be found by examining intervention as a discrete category. These data are summarized within each peer category (i.e., by school, gender, and grade level) in Table 8.

Overall, 93 peers out of the total 219 (42%) were involved in interventions to help victims. A chi-square test was used to examine whether the proportion of interventions was the same for each grade and sex of peer. At school A, the proportions were found to be significantly different ($\chi^2(3, N = 126) = 9.57, p < .03$). Similar to the previous analysis, interventions were least likely when the peer was an older boy. In contrast, the greatest number of interventions were made by younger girls. At school B, the chi-square test revealed no significant differences in the proportions of interventions ($\chi^2(3, N = 93) = 3.57, n.s.$).

Table 8

Peer intervention versus non-intervention in bullying, by school, grade level, and gender

School A					
	Age and sex of peer				Total
	Young boy	Young girl	Older boy	Older girl	
Intervention					
Yes	19* (43%)	9 (64%)	7 (20%)	14 (42%)	49 (39%)
No	25 (57%)	5 (36%)	28 (80%)	19 (58%)	77 (61%)
Total	44	14	35	33	126
School B					
	Age and sex of peer				Total
	Young boy	Young girl	Older boy	Older girl	
Intervention					
Yes	20* (51%)	15 (52%)	3 (23%)	6 (50%)	44 (42%)
No	19 (49%)	14 (48%)	10 (77%)	6 (50%)	49 (58%)
Total	39	29	13	12	93

* Percentages are within school, and age and sex of peer

Sequential analysis of the coded segments

There were three possible ways that peers could join in the bullying interaction (i.e., through passively watching the bully, actively helping the bully, or actively helping the victim). Each of these three types of joining were examined separately to see whether they were associated with subsequent changes in bully affect and aggression ratings. These analyses met objectives 2.1a and b (passively observing the bully); 2.2a and b (actively joining the bully); and 3.1a and b (actively helping the victim).

Calculation of lags using GSEQ. The procedure of calculating the pre- and post- scores for bully affect and aggression ratings was similar regardless of the particular type of peer and bully joining. In each case, the GSEQ program (Bakeman & Quera, 1995) was used to sample bully affect and aggression ratings at lags of minus and plus five seconds before and after a peer joined the bully.

Calculation of difference scores. A difference score was calculated for each of the pre- and post-joining bully affect and aggression ratings. Pre scores were subtracted from post, so that positive values in the difference score indicated increases in affect or aggression. The six difference scores

which resulted (i.e., one affect and one aggression difference score for each of the three types of joining) were normally distributed and did not require transformation.

Regression procedure. A series of six standard multiple regression analyses were conducted to examine the influence of peers' joining bullying interactions on two dependent variables: bully affect ratings and bully aggression ratings. Each of the six regression analyses used dummy coding to examine school, grade level (younger or older), the peer's gender, the bully's gender, and the interaction of peer and bully gender.

It was necessary to adjust the regression analyses to account for the nesting of multiple peers interactions within a single set of bully actions. Recall that there were 219 peers interacting within 53 examples of bullying behaviour. On average, four peers interacted with each bully's set of behaviours. Therefore, peer behaviours in each segment were constrained by a single set of bully behaviours. In order to correct for this problem, each of the regression analyses was performed using a robust standard error that nested peer actions within bully behaviours. This data modification was made using the program STATA (Stata Press, 1997).

There was some concern regarding the adequacy of the sample size given the ratio of cases to independent variables. According to Tabachnick and Fidell's (1989) criterion, however, the "... minimum requirement to have at least 5 times more cases than IVs" was met (p. 129).

Sequential effects of peer passively observing the bully.

1) Changes in Bully Affect (Objective 2.2a). The regression of the change score for bully affect (comparing pre and post) on peer's passive observing the bully revealed no significant relationship between peers' passive observation and subsequent bully affect.

2) Changes in bully aggression ratings (Objective 2.2b). The regression of the change score for bully aggression on peers' passive observation of the bully revealed no significant effect of peers' passive observing on subsequent bully aggression ratings.

Sequential effects of peer actively joining the bully.

1) Changes in bully affect ratings (Objective 2.3a). The regression of pre- and post-joining bully affect ratings on peers' active joining with the bully revealed a significant overall regression, $F(5,28) = 4.31, p < .01$. Of the individual predictor coefficients, only the interaction of

peer grade level and gender contributed significantly to the prediction of change in bully affect. These data are summarized in Table 9.

Table 9

Multiple regression of bully affect change scores on peer active joining, school, grade level, and gender

Variables	B	Robust SE	T	Sig. T
School	-0.11	0.15	-0.77	
Grade level	-0.38	0.21	-1.82	
Peer gender	0.09	0.16	-0.54	
Bully gender	-0.4	0.25	-1.63	
Level*Peer Gender	0.51	0.23	2.2	0.036
Intercept	0.12	0.23	0.53	

$R^2 = 0.11$

The scores for change in bully affect ratings were compared across the four grade level and peer gender combinations (younger boys and girls; older boys and girls). Post hoc analyses revealed that bullies' change in affect differed significantly depending on whether they were actively joined by younger boys or girls; in the former case negative affect increased by a small amount, while in the latter case

negative affect decreased by nearly one point on the rating scale. The difference between these two groups was significant at the $p < .05$ level. These data are represented in Figure 2.

2) Changes in bully aggression ratings (Objective 2.3b). The regression of pre- and post-joining bully aggression ratings on peers' active joining with the bully revealed a significant overall regression, $F(5,34) = 6.06, p < .001$. Individual predictor coefficients that made significant contributions to the prediction of change in bully aggression ratings included the grade level by peer gender interaction, and the peer gender by bully gender interaction coefficient. These data are summarized in Table 10.

The scores for change in bully aggression ratings were compared across the four bully gender and peer gender combinations (boy bully, boy peer; boy bully, girl peer; girl bully, boy peer; girl bully, girl peer). Post-hoc analysis revealed that increases in bullies' aggression ratings occurred most following a female peer joining with a male bully: this increase was significantly different from the boy

Figure 2
Change in bully negative affect following peer active joining,
by peer sex

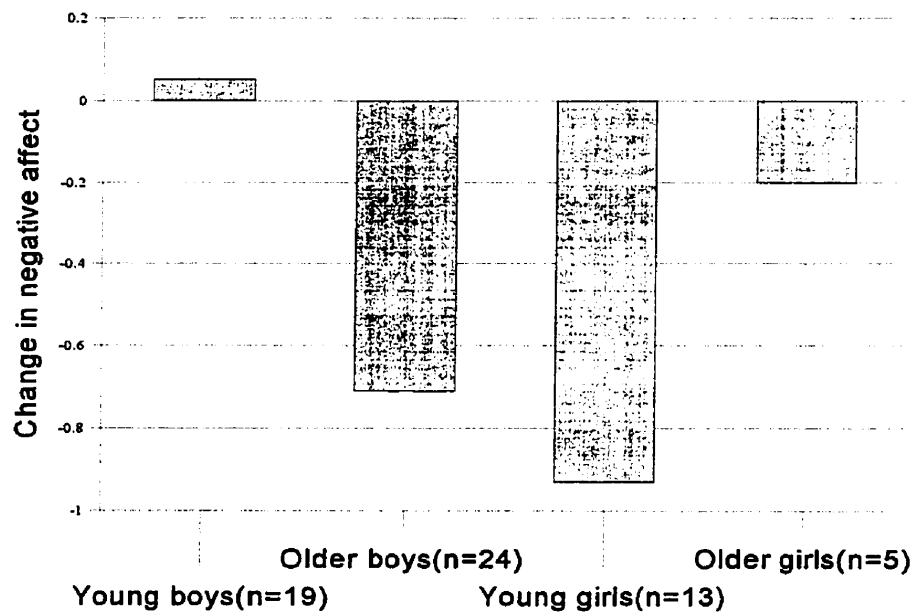


Table 10

Multiple regression of bully aggression change scores on peer active joining, school, grade level, and gender

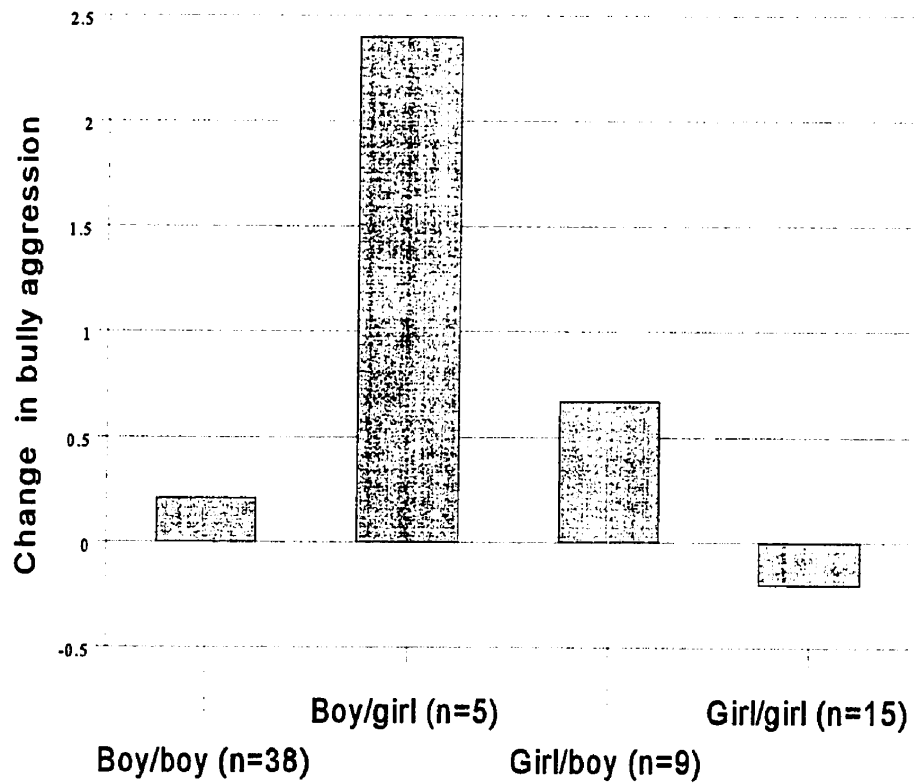
Variables	B	Robust SE	T	Sig. T
School	-0.21	0.13	-1.54	
Grade level	-0.25	0.13	-1.92	
Peer gender	0.29	0.15	1.88	
Bully gender	0.23	0.2	1.16	
Level*Peer Gender	0.72	0.28	2.51	0.018
Bully gender*Peer Gender	-1	0.26	-3.87	0.001
Intercept	0.32	0.12	2.58	0.015

R² = 0.24

bully, boy peer group and the girl bully, girl peer group ($p < .01$). It should be noted, however, that the number of girl peers actively joining with boy bullies is small ($n=5$). Therefore, this interpretation is made cautiously. These data are shown in Figure 3.

Figure 3

Change in bully aggression rating following peer actively joining, by gender of bully/peer dyad



Sequential effects of peer actively joining the victim.

1) Changes in Bully Affect (Objective 3.1a). The regression of the difference score comparing pre- and post-bully affect on peer's actively joining with the victim revealed no significant relationships between the predictor variables and bully affect.

2) Changes in bully aggression ratings (objective 3.1b). The regression of the difference score for pre- and post- bully aggression ratings on peer's actively joining with the victim showed no significant relationships between the predictor variables and bully aggression ratings.

Number of peers and peer intervention. The relationship between size of the peer group and the occurrence of peer interventions was examined through a standard logistic regression (dependent variables were entered simultaneously) (Objective 4.1). Time spent in intervention was recoded into the dichotomous variable "Intervention," with two levels ("yes", "no"). The size of the peer group, which ranged from 2 to 14, was dichotomized into "small" (2 to 4 peers) and "large" (5 to 14 peers). The resulting data are shown as a crosstabulation in Table 11.

Table 11**Crosstabulation of peer group size with peer intervention**

Group size	Intervention		Total
	Yes	No	
Small (2-4)	39	54	93
Large (5-14)	54	72	126
Total	93	126	219

A standard logistic regression analysis of the data shown above indicated no statistically significant relationship between size of the peer group and likelihood of peer intervention. Although the model chi-square was significant ($X^2(4, N = 219) = 13.96, p < .01$), gender and grade level were the factors which significantly distinguished interventions. These data are summarized in Table 12.

Table 12**Logistic regression of intervention on school, grade level, gender, and group size**

Variables	B	SE B	Wald	df	Sig.
Peer group size	0.09	0.29	0.1	1	
Grade level	-0.85	0.3	7.8	1	.005
Gender	0.73	0.29	5.9	1	.014
Grade level * Gender	0.73	0.6	1.4	1	
Constant	-0.37	0.15	5.9	1	.015

$R^2 = 0.09$

Intervention in groups of extreme size. A further examination was made of the relationship between the size of the peer group and the likelihood of peer interventions using groups from the extreme ends of the distribution. Groups with extremely small or large numbers of peers ("very small", n=2 peers; "very large", n=8 through 14 peers) were generated, as shown in Table 13.

Table 13**Crosstabulation of peers in extreme peer group sizes with peer intervention**

Group size	Intervention		Total
	Yes	No	
Very small (n=2)	20	20	40
Very large (n=8-14)	30	18	48
Total	50	38	88

A standard logistic regression was performed using the dichotomous variable intervention ("yes, "no") as the dependent variable, and using three predictor variables (gender, level, and size of the peer group). The three predictor variables, each with two levels, were combined to form a new predictor variable with eight levels. This allowed for comparisons among the resulting subgroups. One significant difference was immediately noticeable in the younger-girls-small-group data; the four girls in this group made no interventions, resulting in a cell with no variance. Because this cell was unique descriptively, it was omitted

from the regression analysis. In contrast, the younger-girls-large-group data revealed the highest proportion of intervention; this group was used as the reference group for comparisons in the logistic regression. These data are summarized in Figure 4.

The model chi-square was significant ($X^2 (6, N = 88) = 18.9, p < .005$). Comparison of younger girls with other groups revealed that younger girls in large peer groups were significantly more likely to be involved in intervention than older boys - regardless of the size of the boys peer group. Taken together, the data for younger girls indicate an interaction on likelihood of intervention: there were no interventions in the younger-girls-small-peer-group data, while the younger-girls-large-peer-group had the most number of interventions. The regression results are summarized in Table 14.

Figure 4

Mean likelihood of intervention, by gender, grade level, and size of the peer group

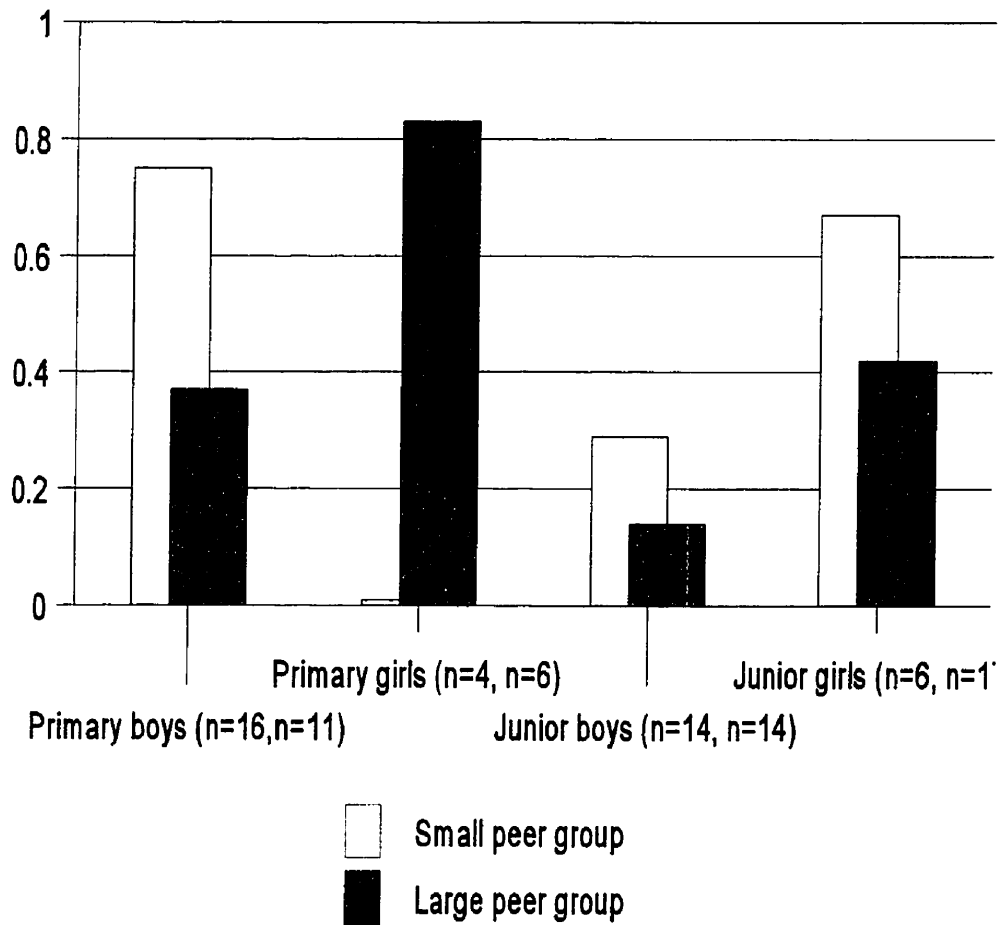


Table 14

Logistic regression of intervention on extreme group size, gender, and level (comparison group = younger girls, large group)

Variables	B	SE B	Wald	df	Sig.
Overall			15.1	6	0.02
Pri. boys, small grp.	-0.5	1.23	0.17	1	
Pri. boys, large grp.	-2.2	1.26	2.95	1	
Jr. boys, small grp.	-2.5	1.24	4.11	1	0.04
Jr. boys, large grp.	-3.4	1.33	6.48	1	0.01
Jr. girls, small grp.	-0.9	1.39	0.43	1	
Jr. girls, large grp.	-1.9	1.2	2.67	1	
Constant	1.6	1.09	2.15	1	

$R^2 = 0.24$

Intervention and gender of the bully and peer dyad.

A final consideration regarding peer intervention was whether the gender composition of the bully and peer dyad influenced the frequency of peer intervention. These data are presented in Table 15.

Table 15

Frequency of Peer Intervention on Victim Behalf, by Bully/Peer Dyad Type

	Bully/peer dyad composition				Total
	Boy/boy	Boy/girl	Girl/boy	Girl/girl	
Intervention					
Yes	45* (43%)	23 (58%)	4 (18%)	21 (44%)	93 (42%)
No	60 (57%)	17 (42%)	22 (82%)	27 (56%)	126 (58%)
Total	105	40	26	48	219

* Percentages are within bully/peer dyad type

A chi-square test was used to examine whether the proportion of interventions was the same for each bully/peer dyad. The proportions were found to be significantly different ($X^2(3, N = 219) = 11.54, p < .01$). Interventions were least likely when the bully was a girl and the peer was a boy. In contrast, the greatest number of interventions on behalf of victims were made when the bully was a boy and the peer was a girl.

Sociometric status and peer intervention

The hypothesized relationship between peer social status and likelihood of intervention was examined through two sets of analyses.

In the first set of analyses, the relative social status within each peer and bully dyad was examined in relation to the duration of intervention (hypothesis 4.3). A difference score for liking and disliking was computed for each peer-bully dyad using standardized classroom sociometric ratings of social preference (Coie et al., 1982). The sample size was small (n=51) because difference scores could only be computed when both a peer and bully were reliably identified in an interaction. For the "like" sociometric variable, bully "like" scores were subtracted from the peer "like" scores, thus providing a measure of how much each peer was liked above the liking expressed for the bully. For the "dislike" sociometric variable, bully dislike scores were subtracted from peer scores, thus providing a measure of how much each peer was disliked beyond the disliking expressed for the bully. Two regression analyses were conducted. The first used differences in liking as a predictor variable, while the second used differences in disliking. Each analysis also used

gender and grade level as dummy variables. The outcome variable was duration of peer intervention, a measure of the amount of time that each peer spent in aiding a victim. This variable was expressed as a proportion of the total duration of each episode to make it comparable across videotape segments of varying lengths. Thus, intervention could range from 0.0 for no time spent in intervention to 1.0 for full time spent in intervention. The liking and disliking scores were normally distributed and required no transformation, while peer intervention was log-transformed due to a positive skewness in the distribution.

No statistically significant relationships were found between the relative social status of peer and bully and the frequency of peer intervention when the "like" variable was used as a predictor variable.

The second regression analysis, which used "dislike" as an independent variable, had data entered in three blocks. First, the main effects of dislike, gender, and grade level were examined. None of the main effects were significantly related to peer intervention. In the second block, all two-way interactions were examined and found to have no significant relationship to peer intervention. In block three, the three-way interaction of dislike, gender, and grade

level contributed significantly to the predictive power of the model: R^2 increased from 14% to 24% in this model (F change = 5.34, $p < .03$).

Two significant correlations emerged: For younger boys and older girls, high "dislike" scores relative to the bully were correlated with lower amounts of time spent in intervening on behalf of victims. Table 16 summarizes the correlations between the predictor and outcome variables, while Table 17 describes the multiple regression that used "dislike" as a predictor variable.

There was a significant three-way interaction of peer "dislike" score (relative to the bully) by peer level and peer gender ($p < .05$). This interaction is represented in Figure 5.

Younger boys and older girls who were disliked were less likely to spend time intervening on a victim's behalf than either younger girls or older boys. In contrast, the values for older boys and younger girls showed no association between being disliked and the amount of time spent intervening on behalf of victims.

Table 16
Correlations between peer and bully sociometric difference scores and amount of intervention, by gender and grade level of peer

Gender	Grade Level		Dislike	Like	Intervene
Boys	Younger (n=18)	Dislike	--	-0.31	-.481*
		Like		--	0.288
		Intervene			--
	Older (n=13)	Dislike	--	-.793**	0.127
		Like		--	0.007
		Intervene			--
Girls	Younger (n=8)	Dislike	--	-.848**	-0.233
		Like		--	0.196
		Intervene			--
	Older (n=12)	Dislike	--	-.586*	-.549*
		Like		--	0.217
		Intervene			--

* Correlation is significant at the 0.05 level (one-tailed)

** Correlation is significant at the 0.01 level (one-tailed)

Table 17

Multiple regression of peer intervention on dislike, grade level, and gender

Variables	B	SE B	Beta	T	Sig. T
Dislike (DLK)	-0.02	0.01	-0.69	-2.34	0.024
Grade level (GL)	-0.01	0.015	-0.19	-0.99	
Peer gender (PG)	-0.02	0.016	-0.32	-1.58	
GL*PG	0.01	0.024	0.15	0.58	
DLK*GL	0.01	0.011	0.63	2.14	0.037
DLK*PG	0.02	0.012	0.39	1.44	
DLK*GL*PG	-0.04	0.017	-0.6	-2.31	0.025
Intercept	0.04	0.01		4.51	0.000

$R^2 = .24$

The second analyses of peer social status and intervention used peer social status as a predictor but omitted a consideration of bully status (hypothesis 4.4). This strategy allowed a larger number of cases to be examined (n=74) because inclusion in the analysis was not dependent on having both peer and bully sociometric ratings. Two regression analyses were conducted, using liking and disliking scores, respectively, as predictor variables. Each of the analyses also used school, gender, and grade level as dummy variables. The dependent variable was peer intervention, a measure of the amount of time that a peer spent in aiding a victim, expressed as a percentage. The peer intervention score was log-transformed due to a positive skewness in the distribution.

This regression analysis did not reveal statistically significant relationships between the social status of the peer and the frequency of peer intervention. This was true whether the "liking" or "disliking" variables were used as predictor variables. Table 18 contains correlations between peer like and dislike scores, and amount of time spent in intervention.

Figure 5

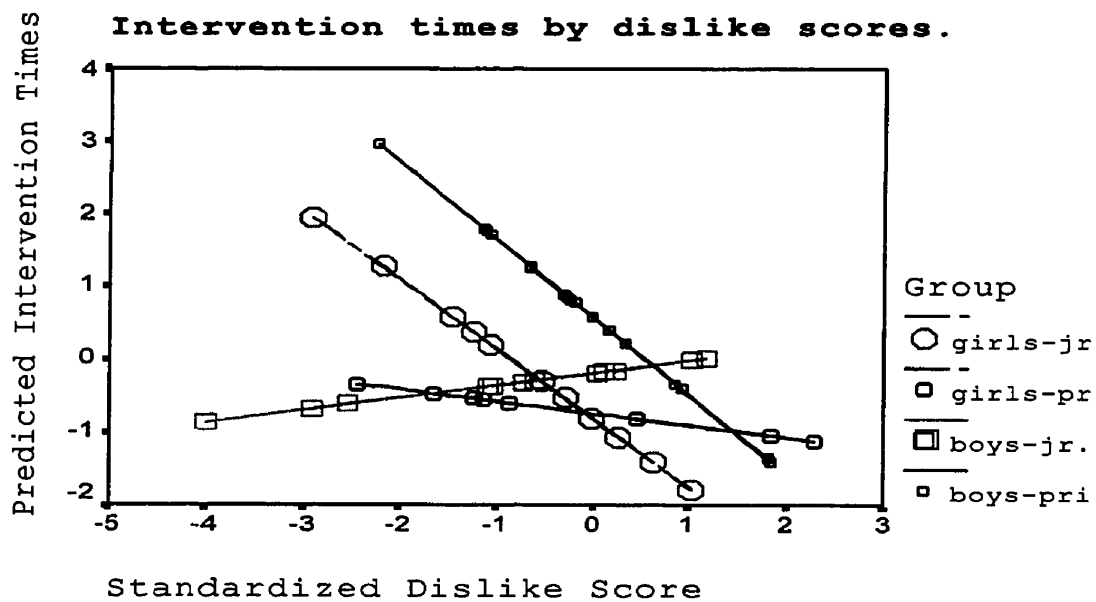


Table 18

Correlations between peer sociometric scores and amount of intervention, by gender and grade level of peer

Gender	Grade Level		Dislike	Like	Intervene
Boys	Younger (n=27)	Dislike	--	-.471**	-0.279
		Like		--	0.09
		Intervene			--
	Older (n=16)	Dislike	--	-.685**	0.041
		Like		--	0.301
		Intervene			--
Girls	Younger (n=14)	Dislike	--	-.491*	-0.16
		Like		--	0.258
		Intervene			--
	Older (n=17)	Dislike	--	-.582**	0.217
		Like		--	-0.041
		Intervene			--

* Correlation is significant at the 0.05 level (one-tailed)

** Correlation is significant at the 0.01 level (one-tailed)

A final analysis of the hypothesized relationship between sociometric status and peer intervention was conducted using dichotomous variables and a non-parametric statistical analysis. Amount of time spent in intervention was dichotomized to form a new variable (intervention "yes" or "no"). Standardized classroom sociometric ratings of liking and disliking were used to categorize students as popular, average, neglected, rejected, or controversial (i.e., rated by different classmates as being both popular and unpopular) (Coe et al., 1982). Thirty eight children were classified using this procedure; the remainder did not fall into any category. The children in these sociometric categories were then dichotomized as popular/controversial (comprised of popular, average, and controversial children) and unpopular (comprised of neglected and rejected children). A chi-square analysis indicated no significant relationship between social status category and the likelihood of intervention. These data are summarized in Table 19.

Table 19**Peer sociometric categorization by intervention**

	Peer Intervention		
	No	Yes	Total
Neglected/rejected	3	9	12
Popular/average/controversial	11	15	26
	14	24	38

Peer responses to bully requests to join in bullying

The reaction of peers to requests from the bully to join in the aggression was examined using logistic regression (hypothesis 5.0). The standard regression model included an interaction term for sex and level that was removed after it was found to be non-significant. The reduced model used four predictor variables, each with two levels, in the equation: school, gender, level, and bully requests peer to join ("no", coded 0; "yes", coded 1). Two levels were used for the outcome variable "peer affiliation"; peer joins victim (coded

"0") and peer joins bully (coded "1"). The model chi-square was significant (X^2 (4, $N = 159$) = 20.6, $p < .001$). The regression results are summarized in Table 20.

Table 20

Logistic regression of peer affiliation on school, level, gender, and bully request

Variables	B	SE B	Wald	df	Sig.
School	0.56	0.37	2.3	1	
Level	-0.39	0.37	1.1	1	
Gender	1.07	0.37	8.5	1	.003
Bully request	-1.56	0.47	10.8	1	.001
Constant	0.43	0.52	0.7	1	

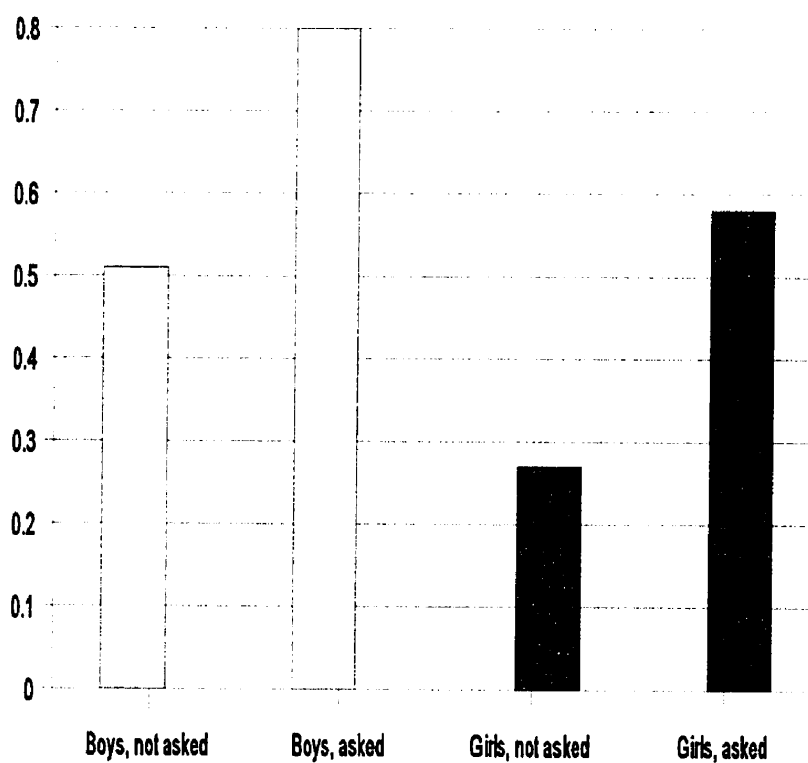
$R^2 = 0.16$

There were two significant main effects. Bully request was significant in predicting peers' behaviour; peers were more likely to join with the bully (i.e., were likely to have scores closer to 1 than 0) in response to requests from the bully to join. Gender of the peer was also predictive of whether they would join with the bully or victim. Boys were more likely to join the bully, while girls were more likely to

join with the victim. The means for these data are presented in Figure 6.

Figure 6

Mean likelihood of joining with the bully, by bully request and gender



Summary of the results

The overall goal of this research was to examine how peer group behaviours influenced playground bullying. A first step in this process was to identify the percentage of bullying episodes that contained a peer group. The bullying episodes were taken from a larger sample of videotaped aggressive playground behaviours.

Description of the videotaped bullying segments. Fifty three percent of the videotape segments that contained bullying (97 out of 183) also involved a peer group of two or more children. Segments with only one child as a peer observer were eliminated from further analysis.

The average duration of a bullying episode was one minute and 20 seconds. There was, however, considerable variability in the duration (bullying lasted anywhere from 7 to 720 seconds). There were four peers, on average, in each of the bullying segments. The size of the peer group was related to the duration of the bullying episode (although the correlation was significant at only school A): Longer episodes had more peers involved. The peer groups tended to be same-aged and same-gendered. Boys' groups were slightly larger than girls'

groups, while mixed groups were significantly larger than either boys' or girls' groups.

Peer behaviours during bullying. Peer behaviours were examined during the bullying episodes and placed in one of three mutually exclusive and exhaustive categories. Peers passively watched bullying 53% of the time, actively joined with the bully 22% of the time, and actively intervened with victims 25% of the time.

The peer behaviours "passive watching" and "actively joining the bully" were considered to be behaviours that maintained bullying. Taken together, during 75% of the time, peers' actions provided a positive message to the bully. Active joining with the bully was most likely to come from older boys: Older boys were also less likely to support the victim than other peers.

Influence of peers on bullies. To further examine the influence that peers had on bullying episodes, sequential analyses were made of peer behaviours coupled with subsequent changes in bully affect and behaviour. Peers' passive watching of bullying had little effect on the bully's subsequent affect or aggression. In contrast, peers' actively joining the bully was followed by a shift in the bully's

affect towards the positive, and increases in the bully's aggression. In other words, bullies were coded as more positive in their affect and more aggressive following active support from a peer. Finally, peers helping of the victim had no effect on the bully's subsequent affect or aggression, according to the sequential analyses.

Peer group size and intervention. An examination was made of the relationship between peer group size and the likelihood of peer interventions against bullying. It was expected that peers in smaller groups would be more likely to intervene than those in larger groups. There was, however, no relationship found between the size of the peer group and the likelihood of intervention when all of the bullying segments were considered simultaneously.

An exploratory analysis compared episodes with extremely small peer groups (two peers) to those with extremely large peer groups was also conducted. In this analysis, older boys in both large and small groups were found to be less involved in interventions than younger girls in large groups. Therefore, no clear relationships emerged between the size of the peer group and the likelihood of peers interventions.

Intervention and gender of peer and bully dyad. The likelihood of intervention was influenced by the gender of the peer and bully dyad: Girls were likely to intervene on behalf of victims against a boy who was bullying, while boys were unlikely to intervene against a girl who was bullying.

Peer social status and intervention. The influence of peer social status on the likelihood of peer intervention against bullying was examined. It was expected that popular peers would be more likely to intervene against bullying, while unpopular peers would be less likely to intervene. When the relative social status of the peer and bully were compared, it was found that unpopular peers were less likely to offer support to victims. This was true for all unpopular children except older boys; unpopular older boys were unique in having a (non-significant) tendency to become involved in intervention on behalf of victims.

Bully solicitation of peer support. A final question was whether bullies actively solicited support from peers, and how successful these requests were. When bullies asked peers for support in aggressing against victims they were more likely to receive support than when they did not ask. This was the case regardless of gender.

In summary, the above findings represent an initial and exploratory analysis of the processes that occur on the schoolyard during playground bullying. Peers are involved in the processes, both actively and passively, however they tend not to be helpful in reducing bullying. Three-quarters of peers' time was spent in behaviours that did not support the victim, while one-quarter of their time was spent in behaviours that assisted the victim. Some gender and age differences did emerge: Older boys were generally more involved in supporting the bully than other peers.

DISCUSSION

The present study examined peers' roles in the processes that unfold during playground bullying episodes. The discussion is divided into the four following areas: 1) consideration of the findings in light of the previous theoretical and empirical literature; 2) implications for interventions against playground bullying; 3) the limitations of the present research; and 4) future directions for research in this area.

Integration of findings with previous literature

The results of the present study indicate that peer processes have an important relationship with the course of playground bullying. These findings can be interpreted in terms of the theoretical models and research literature that were outlined in the introduction of this thesis, beginning with an interpretation from a social learning perspective.

Social learning theory and peer involvement. The social learning paradigm directs our attention to peers' observational learning of aggression and their demonstration of this learning through modelling of the bully's aggression.

In the present data, there is considerable support for peers' observational learning of bullying. First, the

correlation between the number of peers present and the length of the bullying episode suggests that bullying behaviours both attract and maintain an audience. Bandura (1977) notes that observational learners are most likely to imitate aggression when the model closely resembles the observer. The peer groups in the present study tended to comprise same-gender and same-age children; this composition likely increased the likelihood of peers' modelling of aggressive behaviours. Many researchers have noted that same-sex and same-age organization is usual among children's play groups (e.g., Boulton & Smith, 1993; Blatchford, 1994; Cairns & Cairns, 1994), therefore in the present research, bullying tended to be demonstrated in conditions that were optimal for modelling.

Peers spent 22% of their time in actively joining with the bully (i.e., verbally or physically helping the bully). This relatively high proportion of time spent actively reinforcing the bully can be understood if we acknowledge that the playground context is ripe for modelling; the bully is powerful, teachers and peers seldom intervene, and peers can share in the bully's status and power by becoming accomplices. Thus, the playground context mimics the conditions that Bandura (1977) described as optimal for allowing the modelling of aggression.

On the other hand, peers also spent 25% of their time in joining with victims. Although this prosocial behaviour is a positive sign, it should be noted that peer behaviours which actively attempted to defuse or end bullying occurred in a minority of peers' time.

Another piece of evidence for observational learning on the playground is that peers influenced bullies most directly when they actively joined with the bully, either physically or verbally. Active joining by peers led to increases in ratings of bully aggressiveness, a sign that the bully is encouraged by the peer support. This reciprocally reinforcing process between bullies and peers who join them likely results in a playground climate where bullying is normalized, peers often simply choose to observe aggression, and relatively few peers intervene. Future analyses of the dataset could also examine changes in peer affect and aggression ratings as a function of joining with the bully. This type of analysis would provide direct evidence of peer learning as a result of bully aggression.

Diffusion of responsibility. Peers were passively involved in watching bullying episodes for the majority of their time (53%). This finding suggests that constraints on

bystander behaviour may operate on the school playground as they do in other situations.

Previously, researchers examining this phenomenon have suggested two contributing factors, each of which are relevant to the findings of the present study. First, Darley and his colleagues (1968) suggest that the presence of a group discourages a sense of individual responsibility in bystanders. In the present study, peer groups comprised, on average, four peers and the bully and victim. Although few relationships were found between the size of the peer group and the likelihood of intervention, the present research design eliminated a substantial number of bullying segments in which the audience consisted of a single peer. These segments may have had a greater likelihood of peer intervention than episodes in which responsibility is diffused among a greater number of peers. Latane and Darley (1970) consistently found that individuals who believed they were acting alone (i.e., without other witnesses) were more likely to assume responsibility in response to "emergency" experimental manipulations.

A second explanation of bystander behaviour is that individuals in larger groups avoid involvement out of fear of

peer disapproval for inappropriate involvement (Darley et al., 1968; 1973). In the present study, there were some tenuous relationships between group size, age, gender, and time spent in intervention. Younger girls in large groups were more likely to spend time intervening. This finding concurs with Staub (1970), who examined children at all ages of elementary school, and found that younger children were more likely to intervene when in the context of a peer group.

In the present study, older children of both genders were relatively unlikely to intervene, regardless of the size of the peer group. Staub (1970) also found this effect in his experimental examination of bystander behaviour in children, and attributed this behaviour to older children's increased sensitivity to peer disapproval.

In summary, the research on bystander behaviour by Darley and his co-researchers (1968; 1973) suggests that prosocial responding by onlookers is inhibited by both diffusion of responsibility and fear of peer disapproval. On most school playgrounds, aggression and pretend-aggression are frequent occurrences (Boulton, 1993), prosocial responding is infrequent (Craig & Pepler, 1995; Hawkins et al., 1998), and peer responsibility for recognizing and reducing aggression is

not clearly established (Hazler, 1996). Taken together, these factors are likely to discourage peers' from acting against bullying.

Another possible interpretation, however, is that students may *defer* responsibility for intervention to teachers and other school staff. Deferral of responsibility seems likely in the absence of clear expectations that students have a role to play in stopping bullying (e.g., by informing teachers, by not reinforcing the bully through attention).

Emotional contagion within the peer group. Bullying was found to draw peers into active participation for 22% of peers' time. This joining, in turn, led to decreases in the bully's negative affect. The bully's emotional response is likely a reaction to the active encouragement from peers. For the bully, peer joining indicates support, collusion, and strengthening of the aggression-based dominance hierarchy.

On a broader level, reciprocal positive reinforcement between peers and bullies is likely to initiate a cycle of feedback that maintains both the aggression and the arousal of all participants. Arousal and excitement, on both the part of the peer and the bully, might be the psychological processes that underlie this feedback loop.

Gender differences in peer responses to bullying. An overview of the data indicates several gender differences in peer responses to bullying. Boys appeared more frequently in the bullying episodes, and were more involved in supporting bullying on the school playground than were girls. There may be two reasons for this finding. First, boys do report greater involvement in overt bullying (Farrington, 1993; Pepler et al., 1993). Secondly, the present methodology was probably biased in favour of selecting bullying interactions among boys. Physical and direct verbal bullying are more typical of boys than girls, and these behaviours are more salient in naturalistic observations than such subtler forms of bullying as verbal manipulation or gossip.

On the other hand, boys, regardless of whether they were over-represented on the videotapes, behaved in ways that encouraged bullies as compared with girls. Among the older children, boys tended to actively support the bully, whereas girls were more likely to help victims. Other researchers have found similar gender differences in self- and peer-reported behaviours when children witness bullying (Salmivalli et al., 1996).

Although not statistically significantly different, segments of bullying that involved boys-only tended to be larger than girls-only groups. Thus, the extensiveness of boys' playgroups relative to girls', which Boulton and Smith (1993) note is generally found in research on playground behaviour, was not found in the present bullying episodes. The size of boys' and girls' peer groups in bullying is one area for further investigation. In the case of older boys, members of their relatively large peer groups were more likely to spend their time joining with the bully, and less time helping the victim than younger boys, or girls of either grade level.

Some interesting patterns were evident in the mixed-gender groups. Mixed-gender groups were larger than the single-gender groups, and older mixed-gender groups were larger than younger mixed-gender groups. These findings perhaps reflect the fact that gender segregation becomes less rigid with age (Cairns & Cairns, 1994). The present study, however, raises concerns that boys may place particular importance on the *display* of dominance in these large, mixed-gender groups. The analysis of bully aggression ratings indicated that boys who were bullies increased their

aggression substantially after being joined by a girl peer. Girls who were bullies also increased their aggressiveness after being joined by a boy peer, but much more modestly. As Daly and Wilson (1994) note "much dangerous and violent behaviour by young men functions as social display facilitated by the presence of an audience to impress" (p. 278). The currently observed behaviours in older elementary school boys may represent precursors to such later public displays of aggression.

In contrast, girl bullies decreased their aggressiveness after being joined by a same-sex peer. This deceleration may indicate that girls' bullying is less sustained by active reinforcement from other girls, and may reflect the undervaluing of overt bullying by peers who are girls.

With regard to peer interventions on behalf of victims, boy peers were least likely to intervene against girl bullies, while girls peers were most likely to intervene against boy bullies. These gender differences in responding to aggression can be interpreted in light of the traditionally encouraged gender roles for boys and girls. Girls might feel somewhat safer in intervening against a boy because of the traditional admonitions against boys attacking girls. The latter dynamic,

in reverse, might explain why boys were very unlikely to intervene against a female bully. Cairns and his co-researchers (1988) describe this phenomenon as a chivalry code between boys and girls.

Girls, regardless of age, were generally more likely to engage in behaviours that helped victims than were boys. They were also less persuaded by bullies who directly requested others to join in the aggression than were boys. These findings might be interpreted as demonstrating that girls are socialized to be less overtly aggressive than boys (Maccoby, 1994) and are perhaps more sensitized than boys to the emotional needs of others (Zahn-Waxler, 1993). Taken together, these socialization processes might be reflected in more prosocial responding by girls than boys.

Age differences and peer responses to bullying. In the present study, older boys and girls differed in their responses to playground bullying. With age, boys were more likely to join in bullying and less likely to help the victim. Researchers who have examined questionnaire data have found similar developmental trends, although the interaction with gender was not found in these studies. With increasing age,

peers indicate that they are more likely to join in bullying, and less likely to support victims (Slee & Rigby, 1992; O'Connell et al., 1997).

The finding of increased time spent in intervention by older girls suggests that reactions to witnessing bullying may become more gender-typed with age. It is possible, however, that girls' prosocial reactions were specific to the overt physical bullying examined in the present study. With age, girls may increasingly reject this type of aggression, while increasingly valuing more subtle means of aggression (e.g., gossip, exclusion) (Bjorkqvist et al., 1992).

Dominance hierarchies and playground bullying. The data examined in this thesis were ethological in that they were collected in a naturalistic setting with a relatively unobtrusive methodology. These naturally occurring examples of playground bullying presented a unique opportunity to examine the dominance hierarchies that were apparent on the school playground.

In the current study, peers spent 75% of their time in ways that did not help the victim. Fifty-three percent of their time was spent in simply viewing the bullying, while 22% of their time was spent in aiding the bully; 25% of peers' time was spent in attempts at helping the victim. The fact

that such a large proportion of peer time was spent in "unhelpful" behaviour is, however, understandable if considered in terms of the adaptive function.

Watching the bully, which peers did the majority of the time, is a behaviour that keeps peers informed about the distribution of power on the school playground, and perhaps helps them to remain out of aggressive incidents. This finding concurs with Salmivalli and her colleagues (1996), who found through self and peer reports that peers' most common function during bullying was either to provide an audience for the bully or to "do nothing" (p.4).

Joining the bully might increase a peer's status within the peer group. While participating in bullying is identified by most school children as an undesirable behaviour, Salmivalli and her co-researchers (1996) found that sixth-grade children underestimated their own participation in active bullying relative to peers' estimates of their behaviours.

Aiding the victim, which occurred during 25% of peers' time, is a behaviour that might have resulted in the peer also being victimized. In the present study, disliked peers spent little time in intervention against relatively popular bullies. This finding reinforces the notion that dominance

hierarchies do play a role during playground bullying. Ginsburg and Miller (1982) found the corollary of this: Peers who were popular relative to bullies were able to intervene with less likelihood of becoming victims themselves.

For peers, there are costs and benefits to becoming involved in bullying: joining the aggressor could easily (i.e., without much risk) increase the peer's social status, while an unsuccessful intervention on behalf of a victim could lead to the intervener being bullied. Despite this risk, some peers were more likely than others to intervene on behalf of victims. It is possible that some peer interventions occur because interveners may gain status from taking on the role of "peacemaker". Sharpe and Cowie (1994) report that the provision of peer counselling has positive effects for counsellors (e.g., increased feelings of adequacy). To date, however, these evaluation studies have not specifically examined bullying problems as the focus of peer counselling.

While much of the peer participation occurred in the form of joining the aggressor, bullies were able to elicit even higher levels of support from the peer group by directly requesting it. Peers were more likely to join with the bully when requested to do so. This suggests that dominance hierarchies are understood by the peer group, and that peers

realize the adaptive advantages of siding with the dominant peer (e.g., they may protect themselves from attack, or gain status through alignment with a powerful figure) (Strayer, 1992).

Elements of bullying dominance hierarchies and peer relationships that need to be further explored are the mechanisms through which peer reputations are established, maintained, and altered. For instance, is social status by itself a factor that enables some peers to act prosocially with little fear of negative consequences? Perhaps the high status peers are those who are more socially competent, able to perspective take, and therefore more skilled in assessing and intervening in bullying.

Playground bullying as a dynamic system

Dynamics systems theory was proposed as an organizing heuristic with which to view the peer processes that occur during playground bullying. A dynamic systems approach could encompass a number of findings in the present study.

First, the correlation between the length of the bullying segment and the number of peers involved suggests that bullying does function as a positive attractor for peers.

Peers were drawn into the exchange, whether as observers, children who joined the bully, or children who helped the victim.

Secondly, the majority of peers' time was spent in simply attending to the bullying without becoming actively involved. Peers' presence, however, likely added stability to the interaction, thereby helping to establish the frame, or pattern of interactions, for bullying (Pepler, et al., 1998).

Thirdly, affect shifted in a positive direction as bullies were actively joined by peers, suggesting that excitement and energy build up during the exchange. As peers joined the interaction, it is likely that affect became part of a cycle of feedback between the bully and the actively involved peers.

Finally, bullies' aggression ratings also increased following active joining by peers, indicating cohesion and escalation on a behavioural level. Peers' aggressive behaviours, whether verbal or physical, became coordinated with those of the bully.

Taken together, the processes outlined above indicate that dynamic change occurs at multiple levels during playground bullying (e.g., at individual, dyadic, and peer group levels). A dynamic systems approach is useful in

conceptualizing how a pattern of self-organization occurs around the bullying event (Barton, 1994).

There are also some ways in which playground bullying and peers' reactions are not adequately represented within a dynamic systems framework. One difficulty is that the present data comprised small samples of behaviour that existed within a larger context (e.g., within the school culture). Bullying interactions are generally not limited to single episodes, but build over time and through repetitive cycles. In the present study, it was not possible to examine the broader context in which bullying developed.

Barton (1994) warns of two other difficulties with applying the dynamic systems paradigm to psychological questions. The first of these is knowing which factors are most relevant to the phenomenon being examined. In the present study, peer behaviours were the focus of attention for their hypothesized effects on playground bullying. Although the results indicate that peers do have important influences on bullying behaviours, there are many other possible influences that were not examined (e.g., school climate, playground ecology, teacher monitoring). The second, and related, caution is that playground interactions are interconnected and complex; therefore, any attempts at

modeling these interactions will have to isolate relevant variables well enough to eliminate a "sea of noise" (p. 10).

Despite these limitations, a dynamic systems heuristic highlights the complexity of playground interactions, and helps to focus our attention on the many factors that need to be considered when planning interventions, as described in the next section.

Intervention against playground bullying

The present study highlights the necessity of considering the peer group when attempting to ameliorate the problem of bullying on the schoolyard. Effective interventions against bullying, however, will need to be multi-level, focusing on the community (parents and other community members), the school (teachers, support staff, administrators), the classroom, the peer group, and the individuals (bullies and victims). Implications for interventions involving the peer group are detailed below, followed by a brief review of how peer interventions can work with other essential elements of intervention at the community, school, classroom, and individual levels.

Heighten peer empathy for victims. One important aspect of anti-bullying approaches is the use of the group to

heighten empathy toward the victim. Given that 83% of children in Canadian surveys stated that bullying made them feel either "a bit" or "quite" unpleasant (O'Connell et al., 1997), intervention strategies that teach peers to attend to their discomfort may be effective. A heightening of awareness of the negative aspects of bullying might encourage peers who spend their time in passively viewing bullying to increase their active opposition to bullying.

Peers who tend to actively join with bullies might also benefit from empathy training. In addition, some training about playground dynamics might help these peers understand how arousal and disinhibition lead them to do things that they wouldn't normally do.

The "No Blame Approach" (Maines & Robinson, 1992) uses teachers or other adults as advocates on behalf of the victim. The adult obtains the victim's story and relays it to the peer group, with the goal of enhancing concern for the victim and engaging the group in problem-solving. The authors report success in approximately 95% of cases, based on a limited amount of pilot data.

Focus on the entire peer group. The present observations draw attention to the importance of including the entire peer group in anti-bullying interventions. Although it might be intuitive to focus on the most active participants in bullying episodes (i.e., the bully, victim, and active joiners or interveners), the present study has shown that peers spend a large proportion of their time passively observing during playground bullying. Through their passive observations they may be inadvertently reinforcing the bully and giving the message that they approve of his or her actions. Bystanding children, who often claim that they "aren't doing anything", can be taught that their inaction is potentially a reinforcing behaviour. When the peer group is able to stop being an audience, the bully's attempts to gain dominance go unnoticed, therefore, the peers' reinforcement of the bully is removed.

Existing anti-bullying methods, such as the No Blame Approach (Maines & Robinson, 1992) and the Method of Shared Concern (Pikas, 1989), make the peer group culpable, and stress that the group can have an influence on bullying episodes. The two methods differ in their approach, however.

In the former method, teachers work with the entire group wherever possible. In contrast, Pikas' method initially relies on individual interviews, and gradually builds toward a group meeting to resolve the problem.

Provide appropriate intervention skills. Peers who are likely to intervene on the victim's behalf can be taught appropriate methods of helping. Recall that Ginsburg (1980) found that two-thirds of boys' interventions consisted of jumping on the back of the aggressor, while Craig and Pepler (1995) found that approximately half of peer interventions on the victim's behalf were aggressive. It is important that peers' interventions not be hostile or aggressive because this type of response perpetuates aggression and may elicit a counter attack that places the intervener at risk of becoming the next victim.

Boulton (1994) recommends that students who witness bullying do one of two things: Confront the bully directly, or, if this is not feasible, report the incident to an adult. Other clinicians concur that adults may have to be involved in order to redress the power imbalance inherent in bullying (e.g., Garrity et al., 1994; Hazler, 1994).

Interventions targeting peer processes will need to vary according to developmental level. For example, strategies

such as "Ha Ha, So?" are appropriate for very young children (Garrity et al., 1994), "Peacemakers" is geared towards children in middle grades (Johnson & Johnson, 1996), and peer counselling strategies might best be used by middle and upper level children (Cowie, 1994).

It should be noted that the use of peer counsellors in bullying situations remains controversial. Although Sharpe and Cowie (1994) report that peer counselling programmes are generally valued by students, teachers, and parents, evaluation studies have not specifically examined bullying problems as the focus of peer counselling. Critics argue that peer counselling programs require sustained and intensive supervision, raise serious ethical issues (e.g., regarding breaches of trust among students), and inappropriately delegate adult responsibilities to students (Sharpe & Cowie, 1994). Bullying situations often may involve power imbalances that peers cannot be legitimately expected to rectify.

Several factors need to be considered in developing peer intervention strategies to counter bullying. First, children must be given a mandate to help change entrenched patterns of bully, victim, and peer behaviours. Secondly, children will only have the confidence to intervene when their attempts are

supported by adults who consistently take action when bullying occurs and follow-up with continued intervention if needed.

Peer interventions and the whole-school context. Peer intervention strategies can best be promoted in the context of whole-school anti-bullying initiatives. Whole-school approaches to countering bullying involve all members of the school community (students, teachers, parents, and administrators) in the development of clear rules and consequences that discourage all forms of aggression (Sharp & Thompson, 1994). A whole-school policy may also include initiatives that help ameliorate schoolyard bullying, such as increased playground monitoring (Sharp, 1994; Boulton, 1996; Schafer & Smith, 1996), and changes to the physical environment of the playground (Higgins, 1994; Pepler & Craig, 1995).

With a whole-school policy in effect, children know that adults will follow through and protect interveners when bullying occurs. Whole-school anti-bullying policies should be initiated during elementary school and continue to support students throughout all levels of the school system.

In summary, we need to recognize the central role that peers have in the maintenance and course of playground

bullying. Peer interventions can include teaching children empathy for victims, providing consequences for those who witness bullying but do nothing, and teaching appropriate interventions. While a focus on changing the functioning of the peer group is necessary, this in itself will not be sufficient to reduce bullying. Peer interventions that effect change at the peer group level must be supported within a whole-school approach that simultaneously operates at the community, school, classroom, and individual levels.

Limitations of the present research

It is necessary to consider the present results within the context of the study limitations. This study was part of a larger research project that evaluated anti-bullying efforts at two schools over a three-year period. The aims of the larger study differed from the present study. One important difference is that this study, due to the relatively small sample size, treated the videotaped bullying segments as cross-sectional data and omitted considerations of year-to-year effects. Given that the purpose of the larger study was to evaluate anti-bullying intervention efforts, rates of bullying might have been expected to decline over the three-

year period of data collection. The present analysis strategy was insensitive to this type of change.

Although the observational data provide insights into peer processes that are not available through questionnaires, there are also limitations to this type of research. First, some children were self-conscious about wearing microphones: this was particularly true of older children, suggesting that the methodology is more appropriate for younger children. A related concern was that the methodology allowed us to capture overt forms of bullying; indirect bullying, such as gossip, was less likely to be identified. Although indirect bullying was observed, it was not coded for the present analyses if the victim was not visible.

The level of precision required by the coding scheme allowed for the examination of only 57 out of 99 segments for technical reasons. Despite this limitation, there appeared to be no systematic bias in the type of segment that was eliminated, with the already noted exception of indirect bullying.

Another concern is that some non-independence existed in the data because four of the 57 episodes contained a bully who

was also involved as a bully in another episode. Duplicate episodes were randomly removed from the analyses, resulting in a final sample of 53 videotape segments, containing 219 peers. Non-independence of bullies was chosen as a criterion for elimination because the bully is the central, initiating figure in bullying episodes. There may have been further non-independence due to peers appearing in more than one segment of videotape. With the quality of filming, however, it was not possible to identify all peers present during bullying episodes.

The resulting sample of playground bullying segments was not large. In some analyses, the unequal number of males and females may have constrained the results, for example by reducing the likelihood of finding significant gender differences. Furthermore, the limited number of identified peers also reduced statistical power in some of the analyses (e.g., the analysis of sociometric status and time spent in intervention).

One final caveat concerns the interrater reliability for the affect ratings of bully behaviours. These ratings had a

Kappa of .44. While acceptable, this level of agreement could have been substantially higher. The relative lack of agreement suggests that affective states were particularly difficult to rate using unstructured observational data.

Despite these limitations, the observational data that were coded remain a valuable source of naturalistic information about peer group involvement in bullying episodes, and represent an important step beyond self-reports and other questionnaire data in understanding the dynamic processes in bullying.

Future directions for research

The coding of data in the present study generated several types of data from multiple participants. Events, event affect, and global ratings of aggression and distress were coded for bullies, victims, and peers. While the present study examined a number of peer effects, we plan to continue to analyse the dataset in future. For example, other sequential analyses could address the behavioural style of victims in relation to peers' responses or the influence that peers have on the victim's subsequent aggression and distress.

Another set of sequential analyses could examine the influence of victim behaviours on the bully's aggression and distress. The results of the current study will provide a basis for more elaborate sequential analyses of the data in the future.

The coding scheme and interpretations of behaviours in the present research were formulated by adults. Peer perceptions of bullying and victimization episodes should be incorporated as a potentially critical source of information regarding the peer processes that unfold on the playground. These perceptions could be obtained through the use of videotaped episodes or vignettes. Questions that need to be asked of peers include larger conceptual issues such as "what constitutes bullying", and "how would you categorize peer responses", to more subtle attitudinal questions, such as whether peer inaction is based on fear of reprisal, diffusion of responsibility, or contempt for the victim. Boulton (1993) notes that adults and children do not always agree on what behaviours constitute aggression, therefore it is essential to use multiple informants, including peers' input, to attempt to clarify definitions.

An extended longitudinal study that uses an observational methodology would be an ideal method for examining changes in peer reactions to bullying over time. One question is whether peers' responses to bullying become less variable over time, with less intervention on behalf of victims and more joining in bullying. The present cross-sectional methodology, together with survey results, suggest that this is likely the case. It is possible, however, that gender interacts with age in determining responses to bullying.

Any undertaking to follow groups of peers over an extended period of time would require a large sample because cohorts of children would tend to dissipate over time. One possible way of alleviating this problem would be to choose the population from a restricted environment (e.g., a rural setting, or an independent school, where populations of school children tend to remain stable). Although using this type of setting might reduce generalizability of the results, it would at least make the study viable.

Another interesting question for future research would be whether a single peer is more likely to intervene than peers

who are in groups. The present study compared peers in small groups with those in larger groups and found few effects. Consideration of the literature on bystander intervention, however, suggests that lone observers would be willing to intervene (Latane & Darley, 1970). This prediction might depend on developmental level, as suggested by Staub (1970).

A comparison of peers' side-taking behaviours during aggressive incidents that are not bullying might also prove useful. The present study focussed on peer behaviours during bullying episodes, where a clear power differential existed. It is possible that peer processes are similar in aggressive episodes that do not have a power differential; however, there may also be some important differences. For example, dominance hierarchies would likely be less well-established in purely aggressive exchanges and therefore have an unclear influence on peers who observe.

Future research efforts could consider the effects of bullying on the victim. For example, does the victim's distress rating increase when peers actively join with the bully? Further, what is the sequential effect of peers intervening through joining with the victim? This peer

behaviour might be expected to result in less distress for the victim, and also might be related to higher aggression ratings from the victim (i.e., the victim might feel encouraged to counter-attack).

Conclusion

In summary, these analyses of observational data confirm that peers are substantially involved in playground bullying, either as active participants or as bystanders who are unable or unwilling to act prosocially. During bullying episodes, approximately 50% of peers' time is spent in passive observing which does not support the victim. The remainder of peers' time is divided between joining the bully and helping the victim.

Effective interventions that involve the peer group will need to have two components. First, it is important to raise peers' awareness of individual responsibility and increase empathy for the victim. Secondly, it is necessary to provide effective intervention strategies for children and to encourage them to withstand the aggressive dynamics within the peer group. In combination, these strategies might mobilize the silent majority to act against playground bullying.

Interventions targeting the peer group in anti-bullying programs must be reinforced by simultaneous broader systemic initiatives. Whole-school approaches which involve students, teachers, school administrators, and parents, might successfully challenge existing social attitudes and conditions that tolerate, and inadvertently promote, bullying and victimization within the peer context.

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Appendix A - Coding manual

**NATURALISTIC OBSERVATION OF BULLIES/VICTIMS
AND PEER PROCESSES IN THE SCHOOLYARD**

Coding Manual

Paul O'Connell¹ (1995)

with adaptations from

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Part A General Information:

The purpose of coding these playground tapes is to describe both the frequency and type of interactions that occur between aggressors, victims, and peers. This will be done using the following four coding strategies:

Peer Coding: Part I - Data Screening.

The first portion of coding involves viewing all videotapes in order to select segments where aggression occurs. This screening process will determine: whether aggression is present; whether there is a power differential; the size of the peer group.

Peer Coding: Part II - Contextual Information.

This portion of the coding involves: identifying, where possible, each of the involved children, the gender and ethnicity of each individual, and the physical location of each aggressive episode.

Peer Coding: Part III - Coding of Sequential Data.

This involves rating the behaviors of the involved individuals over the duration of the incident (Bakeman & Querra, 1995). The coder indicates whenever specific changes occur during the segment. This process of rating behavior is somewhat molar, with a focus on identifying sequences of behavior over time using lag sequential techniques.

Peer Coding: Part IV - Global Ratings.

The fourth, and final, coding strategy is one of global ratings. Weinrott et al. (1981) recommend this procedure as a useful adjunct to naturalistic observation procedures. Coders are asked to rate, using 5 point Likert scales, their OVERALL impressions of behaviors and emotional states. These ratings will be made for each participant (i.e., bullies, victims, and peers), within each 10 second interval.

Each of the preceding coding strategies are outlined in detail after the following general definitions.

Part B Definitions

Aggression

Negative actions that occur when one party intentionally inflicts, or attempts to inflict, injury, pain, or discomfort upon another party. Negative actions can be carried out physically, verbally, or through gestures (i.e. making faces or rude gestures). In contrast with bullying, **aggressive behaviors do not involve a power differential**. The analysis of videotapes will include aggressive exchanges.

Bullying

"A person is being bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more persons" (Olweus, 1991, p. 413).

Negative actions occur when one party intentionally inflicts, or attempts to inflict, injury, pain, or discomfort upon another party. Negative actions can be carried out physically, verbally, or through gestures (i.e. making faces or rude gestures).

Bullying implies that there is an imbalance of power or strength in the interaction. The person exposed to the negative action has difficulty defending himself/herself against the person(s) who is harassing. The power imbalance may be demonstrated through a larger group victimizing a smaller group, or a group victimizing a single individual. It may also be demonstrated through such things as individual's use of body stance, tone of voice, and physical size.

Direct Bullying

There are two types of bullying: direct and indirect. Direct bullying involves open attacks on the victim(s) and may be either verbal or physical. Some examples include: kicks, slaps, swearing, hitting, name calling to their face, malicious teasing, and rude gestures.

Indirect Bullying

Indirect bullying is more covert and subtle than direct bullying. It involves negative actions in an asymmetrical power relationship, but takes the form of social isolation and exclusion. A second form of indirect bullying is aggression directed towards a victim who is not present. Examples are spreading nasty gossip, or exclusion from a game.

Exclusion

Exclusion occurs when the victim asks to participate and he or she is either given a negative response or ignored. Exclusion may also occur because of game constraints (e.g., teams are evenly matched, or "no more joiners" has been previously established. In these situations exclusion should not be coded as bullying.

Working Definitions

Bully: the individual who inflicts direct or indirect acts of bullying onto the victim(s). The bully is clearly the leader in the episode. It is possible to identify simultaneous bullying by more than one actor, however there is usually one clear instigator.

Victim: refers to the individual(s) who is/are exposed to the negative actions of the bully(ies). There must be a definable power differential between the bully and the victim. There may be more than one victim per episode.

Peer Onlooker: refers to a child who is involved through observing the bully/victim interaction. **Onlookers are within 10 feet and clearly watching the episode for a minimum of five seconds.** They can begin to watch at any time during the episode but must sustain an interest for a minimum of five seconds. In general, define members of the **peer group** through physical proximity to the aggressive incident, coupled with onlooking behavior.

Peer Coding: Part I - Data Screening Process

Criteria for Initial Screening of Videotapes

The goal of the initial screening of the videotapes is to identify all episodes that contain aggression. In addition, coders rate the power differential between actors in order to determine whether an aggressive episode involves bullying and victimization. Coders will record this information on the "Screening Form" at the end of this section.

Criteria:

Aggression and/or bullying is identified primarily through intent to inflict injury, pain, or harm on another person.

Aggressors may use **direct physical** and/or **verbal** attacks on others, or they may express hostility more covertly.

Direct physical aggression includes punching, hitting, kicking, shoving, scratching, biting, and spitting. It can also include attacking a person with a weapon, pushing a person into another, throwing an object at someone, or taking an object from a person.

Verbal aggression involves threatening, name-calling, insulting, swearing, yelling, teasing, or verbally disparaging another.

Covert, subtle, and/or indirect forms of aggression include: **social isolation**, where the aggressor manipulates the peer group in order to harm another (e.g., "Let's not be _____'s friend"); **exclusion**, (e.g., "You and you can play, but YOU can't"); and the spreading of **gossip** (e.g., "He wears stupid clothes"). In the case of gossip, the victim is not present and therefore unable to defend his/herself. A power differential is an inherent part of gossip.

N.B. **Exclusion** may occur because of game constraints (e.g., teams are evenly matched, or "no more joiners" has been previously established). Justifiable exclusion should not be considered as aggression.

Our current screening process does not take repetition of aggression into account when identifying bullying. While Olweus uses repetition over time as a criterion for bullying, children report that a solitary aggressive incident can constitute bullying (Smith and Madsen, 1993).

Differentiation of rough-and-tumble play from aggression:

In order to determine intent to inflict injury, it is necessary to differentiate rough-and-tumble play from serious acts of aggression. Smith and Boulton (1990) discriminate between the two using the following criteria:

- 1) Laughing and playfaces are characteristic of rough-and-tumble play, while frowning, staring, grimacing, and crying are typical of aggressive exchanges.
- 2) Rough-and-tumble exchanges end with the participants remaining together, while aggressive exchanges lead to the participants' separation.
- 3) Children who are playfighting will refrain from making contact, or only touch their opponent lightly, while there will be less restraint in serious fighting.
- 4) Stronger children will purposefully reverse roles during playfighting (e.g., allow weaker children a chance to dominate), while this is unlikely to happen in serious fighting.
- 5) Rough-and-tumble play has little interest for onlookers, while serious fighting will draw onlookers.

Instructions for completing the screening form:

The top section of each screening form contains space for the coder to indicate his/her name, the name of their coding partner (if applicable), the current date, and the number and time of the tape being coded. Tapes are numbered according to school (Q or D, respectively), type of filming (R or C for recess or classroom), the number of the tape, and the time of data collection. For example, tape DR3T6 indicates school D, recess tape #3, filmed at time 6.

Coders should screen tapes by watching an entire segment of tape (typically 8 to 12 minutes in length). The videotape timer should be reset for each segment. Start the timer immediately after the child first comes into view. If the child is interacting with a researcher, reset the timer as soon as the exchange ends (when child and researcher end conversation, and are separated by 5 feet). Coders may need to view a segment more than once in order to make decisions.

After viewing, the coder should fill in the following information for each segment:

STID: The student identification number of the target child. The target child (also known as focal child) is the child who wears the transmitter during a given segment of tape.

Aggression: The coder indicates whether aggression (intentional inflicting of pain, injury, or harm) is present in the segment, using a Y (yes) or N (no).

Duration: If aggression is present in a segment, the coder should record the total length of time of the aggression from the timer on the videocassette recorder. Duration can be computed from the difference between the aggression start and finish times. Start time occurs when the coder recognizes an actor with hostile intent (e.g., an aggressor begins to shove another child); finish time occurs with the ending of hostilities (e.g., the fighters separate for the remaining tape segment). Include sections where a teacher or staff person is involved in the dispute. **N.B: Coders should "chunk" together an aggressive episode, even if it has minor**

interruptions, as long as the theme and actors remains the same.

If more than one aggressive episode is present in a segment, re-enter the STID of the target child in the next space on the screening sheet, then rate the new interaction.

Notes: Coders can indicate any unusual or significant features of the tape segment in this space (e.g., "tape contains aggression, the sound quality is poor").

Power differential is rated on a 5-point scale, where 1 equals no differential, 3 equals medium differential, and 5 equals extreme differential. Ratings are based on the relative advantage that the aggressor(s) has (have) over the victim(s).

Gossip must involve some power differential, as the victim is unable to defend themselves.

As examples, a power differential of 1 would be given when two children shove and glare at each other, then **mutually** decide to walk away from their hostile interaction. A 3 rating would be given if, in the above example, one child withdrew while the other followed and shouted mild threats and insults.

A 5 rating would be given if one child was unsuccessfully attempting to withdraw from a highly aggressive child (the aggression could be verbal, physical, or a combination of the two). For gossip, a 3 rating would be given for mild putdowns and insults, while 5 would be given for attacks on reputation (e.g., "She's pregnant").

Severity of the incident is also rated on a 5-point Likert scale, where 1 equals low severity, 3 equals medium severity, and 5 equals high severity. Code these according to the amount of heightened affect, the intensity and duration of the physical or verbal aggression, and the coder's interpretation of the potential consequences of the episode.

As examples, a severity rating of 1 would be given when children lightly shove each other, or utter mild threats or insults. The level of emotional arousal (judged by vocal quality, rigidity of stance, facial expressions) should be low. A 3 rating would be given for physical aggression that involves medium-hard hitting or kicking, or threats and/or insults that are more serious and vehement (e.g. shouted threats and insults). A 5 rating would be given if the actors engage in hard physical hitting or kicking, or display extreme arousal (e.g., anxiety, distress, gloating). Verbally, high severity would be coded when children vocalize extreme threats (e.g., hatred, serious desire to inflict harm or death). A sample of the screening sheet, as well as other coding forms, is given in Appendix B.

Peer Coding: Part II - Contextual Information

Once the bullying interactions have been identified (defined as the identified aggressive interactions with a power differential greater than 1) and downloaded onto separate tapes, coding of the contextual factors can begin. Contextual factors are coded for each bullying interaction. In addition to coding the contextual factors for each episode, a global rater impression form must be completed. Copies of the coding sheet and global rating form for the contextual factors are in Appendix B.

N.B. The following is an abbreviated outline of the full contextual coding manual, because the contextual coding was not critical to the present research. For a detailed description see Pepler, Craig, O'Connell, and Atlas (1995).

SUMMARY OF THE PLAYGROUND CONTEXT CODES

Individual Perspective Ratings	Observations	Global Ratings
Bully and victim characteristics	Gender	Voice quality
	Race	Anxious
	Identification	Hostile
	Weight	Pleasureful
	Type of aggression	Fearful
	Reactive or proactive aggression	Reinforcing socially
	Social aggression (yes/no)	Social skills
	Type of bullying (direct, indirect)	
	Specific act (hit, poke, yell, threat, exclusion, etc.)	Aversive
	eye rolling,	Non-compliant
	ignoring,	Tense
	disapproving stare,	Cold
	sideways glance	Angry
Racial content (yes/no)	Depressed	
Genderist content (yes/no)	Reactive to camera	
Weapons used (yes/no)	Physical bullying	
	Verbal aggression	

Social Interactional Perspective	Observations	Global Ratings
1. Dyadic level	Dyad composition (same-gender, opposite) Race composition (Same-race, mixed) Aggression composition (e.g., physical/physical)	Relative dominance
2. Peer group	Present (yes/no) Number of peers Peer roles (Active, onlooker, parallel, intervene) Gender of peers (same-gender, opposite) Race of peers (Same-race, mixed) Reinforcing verbal (e.g, cheering) Reinforcing non- verbal act (e.g., surround victim)	Participate Respectful Aloof Friendly Hostile Pleasure Fearful Reinforce Participate Aversive Arrogant Effectiveness of intervention
3. Adults	Adult intervention (positive, neg.) Adult present (yes/no) Consequences for bully (yes/no) Consequences for victim (yes/no) Specific consequence (i.e., detention)	Effectiveness of intervention

Ecological Perspective	Observations	Global Ratings
1. Where it happens on the playground (or in classroom)	Duration (in seconds) Location (mark on playground or classroom map)	Severity of aggression Power differential Escalation of episode Resolution of episode Pace of episode
2. Behavioural state prior to interaction	Solitary Dyadic interaction Unstructured group interaction (playground code) Organized game (playground code)	

Peer Coding: Part II (continued)**CONTEXTUAL CODING GLOBAL RATING SHEET**

To conclude the contextual coding, the global rating questionnaire is designed to capture the rater's impressions of the interaction, as well as to provide information about the nature of the interaction among the bully, victim, peers, and adults. The global rating sheet must be completed for every episode. Answers should be recorded on the accompanying global rating answer sheet.

(See Appendix B).

At the top of the answer sheet indicate the name of the target child (i.e., the one wearing the microphone), the episode, the coder's name, and the date. Once you have completed the global ratings questionnaire, the location of the bullying interaction must be indicated on the appropriate playground survey form.

Peer Coding, Part III: Sequential event coding.

This coding requires the timing of event sequential data during bullying and victimization episodes (Bakeman & Querra, 1995). Coders enter a three digit code that accounts for: 1) the actor; 2) the action; and 3) the intensity of affect, ranging from extreme positive to extreme negative. A new code is entered whenever any component of the three digit code changes.

For example, a bully (1) attacks (1) with negative affect (6) would be entered as 116. This could be followed by the same bully (1) attacking (1) with extremely negative affect (7), entered as 117.

BEHAVIOUR CODES

- Bully Codes:
- 10 None of below
 - 11 Attacks Victim - Physically or verbally
 - 12 Attacks Victim - Indirect
 - 13 Encourages Peer - Physically or verbally
 - 14 Bully onlooks
 - 15 Bully desists
 - 16 Bully attacks peer
 - 19 Bully uncodeable (off-camera)
- Victim Codes:
- 20 None of below
 - 21 Victim retaliates - Physically or verbally
 - 22 Victim defend (protest/withdraw) - Physically or verbally
 - 23 Victim submit(protest/withdraw) - Physically or verbally
 - 24 Victim desists
 - 29 Victim uncodeable (off-camera)

Peer Codes: 30 None of below
 31 Peer joins bully - Physical and/or verbal
 32 Peer joins victim - Physical and/or verbal
 33 Peer desistance
 34 Peer passive observe bully - Default code
 39 Peer uncodeable (off-camera)

DEFINITIONS FOR BEHAVIOR CODES:

Bully Codes:

N.B. All bully codes begin with the prefix 1, followed by two other digits (for behavior and intensity of affect, respectively).

10 None of below. Code if a bully engages in behaviours other than those listed below.

11 Attacks victim (Physical and/or verbal). Physical attacks include hitting, kicking, use of weapons, threatening gestures or stance, hostile or mocking facial expressions, chasing a victim, and taking and/or keeping an object from another.

Verbal attacks include taunting, hostile teasing, swearing at, racial slurs, threats, and put-downs.

12 Attacks victim - Indirect. Gossip, put-downs, insults that are directed to a third party. The victim is unaware of them as they occur.

13 Encourages peer (Physical and/or verbal). Bully encourages aggression by pushing others at a victim, or tells others to attack a victim. The bully may also encourage others to exclude a victim (e.g., "tell him we're going over there, and not to follow us".)

14 Bully onlooker. The bully initiates an aggressive act, then watches others act against the victim.

15 Bully desists. Use this code if a bully stops his or her bullying (e.g., leaves the interaction, goes back to playing a game). This code may be particularly useful in response to intervention (teacher or peer). If desistance extends beyond 5 seconds, switch the code to a 10 (None of below).

16 Bully attacks peer. Use this code if a bully attacks a peer who is already a part of the bullying episode.

19 Bully uncodeable. Use when the bully is off-camera, blocked by others in the camera frame, or too far away to be seen.

Victim Codes:

N.B. All victim codes begin with the prefix 2, followed by two other digits (for behavior and affect, respectively).

20 None of below. Code if a victim engages in behaviours other than those listed below.

21 Victim retaliates (Physical and/or verbal). Retaliatory behaviors are not purely defensive. In the case of physical retaliation, the victim uses physical aggression (hits, kicks, spits) as a reaction to an attack by a bully, or uses threatening gestures or stance, or hostile/mockng facial expressions.

For verbal retaliation, the victim uses verbal aggression (swearing at, jeering, taunting, aversive screaming, hostile teasing, racial slurs, threats, put-downs) in reaction to an attack. Use also if a victim encourages physical or verbal peer retaliation.

22 Victim defends self (Physical and/or verbal). These victim behaviours are defensive, but may include elements of protesting as well as withdrawing. Physically, the victim may attempt to escape from, or defend against, the interaction, however the struggle is not a counterattack but an attempt at self-preservation. Use also for attempts to retrieve valuables, or attempts to include oneself after exclusion. Verbally, the victim indicates displeasure or a sense of injustice at the attack, but does not counterattack.

23 Victim submits (Physical and/or verbal). Physically, the victim may cower, slump, or otherwise stop trying to resist the bully's attack. The victim may also give up on getting back a possession, or give up on attempting to include his or herself. Verbally, the victim might submit by agreeing with the bully, or failing to verbally defend themself following abuse.

24 Victim desists. Use this code if a victim disengages from being victimized for 5 or more seconds (e.g., leaves the interaction, goes back to playing a game). This code is also to be used, if applicable, in response to intervention (teacher or peer). If desistance extends beyond 5 seconds, switch the code to a 20 (None of below).

29 Victim uncodeable. Use when the victim is off-camera, blocked by others in the camera frame, or too far away to be seen.

Peer Codes:

N.B. All peer codes begin with the prefix 3, followed by two other digits (for behavior and affect, respectively).

30 None of below. Code if a peer, for reasons unrelated to the aggressive interaction, is distracted, or turns their back on the interaction, or leaves the scene altogether. For example, code 304 for a peer who turns their back on a fight, looks at something off-camera, then runs off in that direction.

In contrast, code 355 (peer sides with victim) for a peer who leaves by saying to a bully, "you're awful, I'm not playing".

31 Peer joins bully (Physical and/or verbal). For physical joining, code if a peer joins the bully in hitting, kicking, or using threatening/demeaning gestures against a victim, or joins in chasing, excluding, or keeping possessions from a victim. Verbally, use this code if a peer joins with the bully in insulting, swearing at, or gossiping about a victim.

32 Peer joins victim (Physical and/or verbal). Physically, code if a peer places themselves between an altercation, or uses gestures to distract and separate the participants, or otherwise joins or affiliates with the victim (e.g., hugging, waving at).

Verbally, code peer joins victim if a peer tells a bully to desist, offers support to a victim, uses humour or other means to distract the participants, or offers to obtain teacher intervention.

33 Peer desists. Use this code if a peer stops his or her involvement in the interaction (e.g., leaves the interaction, goes back to playing a game). This code may be particularly useful in response to intervention (teacher or peer). If desistance extends beyond 5 seconds, switch the code to a 10 (None of below).

34 Peer observes bully - passive joining. Code this when peers are clearly aware of the bullying (onlooking for more than 5 seconds) but do not intervene and do not leave. Also use this code if peers passively accept exclusion of a victim by a bully.

39 Peer uncodeable. Use when a peer is off-camera, blocked by others in the camera frame, or too far away to be seen.

Affective Intensity Codes:

This rating of affect forms the third digit of each three-digit event code. Affective intensity is rated on a 7-point Likert scale, ranging from extremely positive to extremely negative, as follows:

1	2	3	4	5	6	7
Extr. Pos.	Pos.	Slight Pos.	Neutral	Slight Neg.	Neg.	Extr. Neg.

Affect forms the third digit of each assigned code. For example, 116 indicates a bully physically and/or verbally attacking a victim with negative affect.

Affect should be inferred from both physical and verbal cues. For physical cues, attend to rigidity of stance, threatening gestures, facial expression, and eye contact. As examples, a girl who faces her attackers using a rigid stance, a fixed frown, and a fixed glare would be coded as high on negative affective intensity (code 216).

A girl who has previously joined in excluding a victim waves at the victim while looking sad and distressed (code 325).

A bystander who comically acts out a hostile situation, using humour to defuse a bullying situation, should be rated as having positive affective intensity (code 322).

A boy who jumps into the air, claps his hands together, shouts and whirls around after witnessing a fight is coded as 311 - reinforcing the bullying with highly positive affect.

If intensity of affect is unclear, default to the neutral code.

Decision Rules:

Simultaneous bullying: In cases where two or more aggressors begin bullying simultaneously, code each as a bully. For example, two girls begin gossiping about a "stupid girl." While one girl initiates, the second joins in with no hesitation. In contrast, a code of **peer joins bully** would involve simply attending to gossip without objection, or attending followed by participation after 5 seconds.

When retaliation and defense occur simultaneously, the more extreme behavior should take precedence. For example, a boy angrily yells "give me back my hat!" while throwing a rock at an aggressor. Code physical and/or verbal retaliation (due to the rock throwing) rather than physical and/or verbal defense/protest (due to the verbal content).

When gossip and exclusion co-occur, code the message with the more extreme affect. If affect is equal, default to exclusion as the behavior code.

Peers are defined as persons within 15 feet of the incident who are clearly aware of the episode for 5 or more seconds.

Technical difficulties with the tapes (e.g., poor sound or picture) may preclude coding of all aspects of an interaction. Two rules cover these situations:

- 1) **Default to physical behaviors** if the verbal portion is inaudible. You may, however, code verbal bullying **if** this can be inferred from the context. For example, the participant has been shouting at a victim, and her mouth is clearly moving during brief gaps in sound.

2) **Do not code an off-camera actor.** Instead, enter a code of 999. Off-camera is defined as the majority of the person's body missing from the screen for a period of 5 seconds.

**Peer Coding, Part IV - Global Ratings
of Aggression and Distress:**

This coding involves rating each actor, over the course of the episode, on a five-point Likert scale.

Bullies, victims, and peers will be rated on the amount of **aggression** and amount of **distress** that they display during each 10-second interval, beginning 30 seconds prior to the aggressive episode.

Aggression:

Aggression is defined as physical or verbal hostility, including: hitting, kicking, use of weapons, threatening gestures or stance, hostile or mocking facial expressions, chasing a victim, taking and/or keeping an object from another, taunting, teasing (if intent is hostile), swearing at, racial slurs, threats, put-downs. **Include indirect aggression and gossip.**

Examples:

1 **Absence of aggression.**

2 **Mild aggression.** A child:

- gives a light shove to someone who is crowding them, but does not attempt to engage in a serious physical confrontation.
- calls another child "idiot", in passing, but does not stop to confront the other.
- mildly indirectly insults another (e.g., "he's silly"), or agrees with another's mild indirect insult.

3 Moderate aggression. A child:

- physically fights with another, but there is restraint involved (e.g. no hard blows, no hitting in the face).
- uses negative language against another (e.g., swearing, humiliating comments) but there is restraint involved - the aggressor may be trying to shock rather than harm.
- indirectly insults another (e.g., "She's a bitch"), or agrees with another's indirect insult. For indirect aggression, differentiate severity according to both content and negative tone of voice.

4 Serious aggression A child:

- is physically or verbally abusive, but maintains some restraint. They are aware/responsive to others, and have some knowledge that their behaviour should be kept covert (e.g., a child bends and holds his opponents fingers backwards during a fight, then glances around to see if others are watching).
- is indirectly verbally abusive, with little restraint (e.g., expresses hatred, plans to exclude or take revenge on another).

5 Extreme aggression. A child:

- delivers hard, repeated punches or kicks at another child, or uses a weapon against another child. There should be an out-of-control quality to the behaviour.
- screams abuse, or screams unintelligibly, at another child at the top of his/her voice (a tantrum-like behaviour).
- seriously indirectly abuses another child. Intent is to seriously damage another's reputation (e.g., spreads the rumour that "she's pregnant").

Distress:

Distress is defined as physical or verbal signs of anxiety, nervousness, discomfort, or hysteria. This can include physical things such as facial tics, grimaces, wincing, startle responses, fleeing, and verbal signs such as sighing, nervous laughter, complaining, expressing discomfort, protesting, crying, expressing anguish, and screaming in pain. **Use tone of voice as a cue for verbal signs of distress. Distress may also be an over-reaction to a non-aggressive act.**

1 Absence of distress**2 Mild distress.** A child:

- responds to a light shove with a grimace.
- responds to an insult with a nervous laugh.
- responds to exclusion with a slightly pained look.

3 Moderate distress. A child:

- shows discomfort with a bully by reluctantly following them, then says "I don't wanna play with you."
- verbally protests a perceived injustice, with verbal signs of anxiety (e.g., stuttering)
- responds to exclusion by watching the group while having a sad look on their face.

4 Serious distress. A child:

- leaves a physical or verbal aggressive interaction on the verge of tears.
- attempts to respond to exclusion but is so upset that they are unable to speak coherently.

5 **Extreme distress.** A child:

- screams in anguish in response to some physical or verbal abuse.
- responds to covert verbal insults by screaming and crying.

Appendix B - Coding protocols,
Coding recording forms,
sample transcript

Peer Coding: Part I - Data Screening Process:

Screening Form

Coder: _____ Coding partner: _____

Date: _____

Tape Number: _____ Time: T_____

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

STID	AGGRESS. (Y/N)	DURATION	NOTES	Power Differential			Severity						
-----	-----	-----	-----	1	2	3	4	5	1	2	3	4	5
				None		Med.		Ext.	Low		Med.		High

Protocol for audio transcripts

Coding of sequential events and global ratings of aggression and distress (coding parts III and IV) required the use of verbal transcripts of the videotapes. These transcripts were made by trained undergraduate assistants, using the following protocol:

Instructions for Transcribing Video Segments

1. Locate selected segment on download tape.
2. If start / stop times are not clear, watch the segment through a few times. Decide when the bullying begins and ends.
3. Transcribe from 30 sec. prior to the bullying until 30 seconds after the bullying. **N.B., you may need to go back to the original tape if the segment has been too shortened.**
4. Assign roles. If roles are unclear, make an attempt then confer with me.
5. Identify as many participants as possible while transcribing. Consult the school picture binders as necessary.
6. Submit draft copies of transcripts. Revisions are usually necessary. These will be made, whenever possible, prior to actual coding.
7. Copy the final version to the hard drive of the laptop computer in Rm. 362. (\wp51\transcr\schoola\filename.doc). Make a second copy on the floppy disk in this computer (a:\transcr\schoola\filename.doc).
8. Place a revised hard copy in the binder in Rm. 362.

Sample transcript:

Target name / ID # / Download tape # ____

The following is a descriptive account of one female peer group victimizing one child. The aggressor (hereafter labelled B1) begins by chasing the victim. The peer group then joins in chasing, taunting and teasing the victim (labelled V1). Other peer group members are labelled P2 - P6.

Descriptions are as follows:

V1 Black shirt, pink pants, blonde hair in ponytail
 B1 Red sweater, red skirt and tights
 P1 Pink jacket with hood, dark hair in ponytail
 P2 Multicoloured jacket, dark hair
 P3 Blue jacket, white hood, dark skin
 P4 Blue sweatshirt, long dark hair in low ponytail
 P5: Boy with blue and red shirt
 P6: Taller boy, red track suit with hood

Dialogue	Action
P1: Maria, how are you doing? Are you doing good, are you doing bad? Can I kill you?	
V1: Oh dear, well..	B1 approaches P1 and V1, grabs P1 to get at V1, then chases V1
No!	
	V1 is running and laughing
B1: move, move, move	
P1: I had her!	

V1: No!

B1: Tell me what you were going to say now Maria. Tell me Maria

V1: I'm not going to say anything

B1: Tell me!

V1: I promise, I promise

P1 Approaches V1 and B1 along with peers, P2, P3, and P4.

P1: Can I hurt her too? It's my favourite thing.

V1: Come on

B1: C'mon ... what were you going to say Maria?

V1: No...!

B1: I'm waiting... I'm waiting

B1 has her hand around V1's neck . P1 and B1 are both grabbing on to V1's hand (one on either side) and they are forcing V1 to walk. Peers P2, P3 and P4 follow them.

B1: Keep walking

V1: Wha...!

P1: Kiss the tree

V1: NO!

B1: Keep Walking!

V1: Ahh!

P1: Have sex with the tree

B1: Keep walking Maria
Keep walking, oh
smooth!
B1: ...what are you going
to say about me now?
V1: I didn't say anything
B1: Oh you ... going to say
something about me...

What are you going to
say?

?: ??????

P1: We're hurting her, want to help? P5 and P6 join the peer
group

?: Yeah

V1: Noooo!

P5 kicks V1
V1 screams

V1: No..!

B1: What are you going to
say to me?

P1: Everybody's paying you
back today Maria

V1: Stop!

P1: It's your lucky day,
everybody's paying
you...

V1: Stop!

B1: ...fence, o-kay

V1: NO, stop!

V1 screams

?: Shut the fuck up, Adrian
(?) V1 and the peer group go off
camera

P1: I'll break your chain,
I'll break your chain

B1: Missy missy move, missy
move

P1: There, now you don't
have to.... ahh!

B1: Move, missy

B1: Move Missy V1 comes back on
camera and
breaks away from
the group. B1 chases
V1 and the peer group
follows
B1 grabs V1 and swings
her around.
V1 screams
B1 and V1 go off camera
followed by the peer group

B1: Nice try

V1: Damn V1 screams

V1: St...Don't!

V1, B1, P1, P2 and P5 come
back on camera
B1 holds on to V1's arm.
V1 pulls away

B1: Let me just ask you
something.

V1: Leave me alone!

Break in Filming

V1 and P1 are the only ones
on camera. They stop and P1
turns to face V1

P1: I think Trudy wants
you. I think she wants
to kill you. I think
you're going to die.

V1: Leave me alone

P1: Blah Blah...!

V1: If you touch me, I mean
it, I'm going to tell.

**Appendix C - Rationale and
process of the sequential
data analysis**

Sequential analysis: Rationale and process

The purpose of the sequential data analysis was to examine contingencies among the behaviours of children on the school playground. The data consist of 53 videotaped segments, each containing a bully, a victim, and two or more peers. There are 219 peers on the 53 segments, and 53 bullies.

The data were initially coded using paper and pencil, and had the format illustrated below.

Behaviour codes

There are separate "streams" of data for each student within each videotape segment.

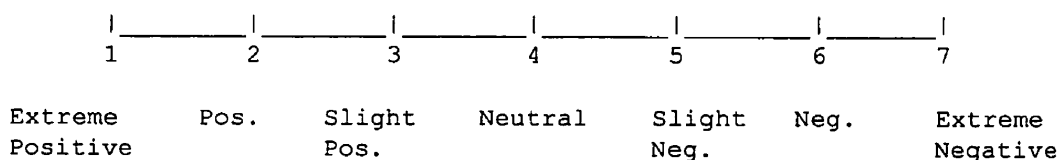
The squares are 2 second intervals; behaviour codes are permitted at the level of one second, so behaviours are recorded at the exact time they occur.

	<-----TIME----->													
	:10	:20	:30	:40	:50	1:00	:10							
	--bully (b) off cam-(9)-----*b_oth(4)-*b_attack v-(6)* ---b off cam--(9)-----													
Bully														
	--vic (v) other---(4)-----*--v retal. (5)--*v off (9)-*v submits(5)--													
Vic.														
	--peer1 (P1) off cam---(9)-----*p1 watches---(4)-----*p1 joins b (3)--													
Peer1														
	--peer2 (P2) other----(3)-----*p2 off -(9)-*p2 helps v--(3)-*-----p2 off (9)--													
Peer2														

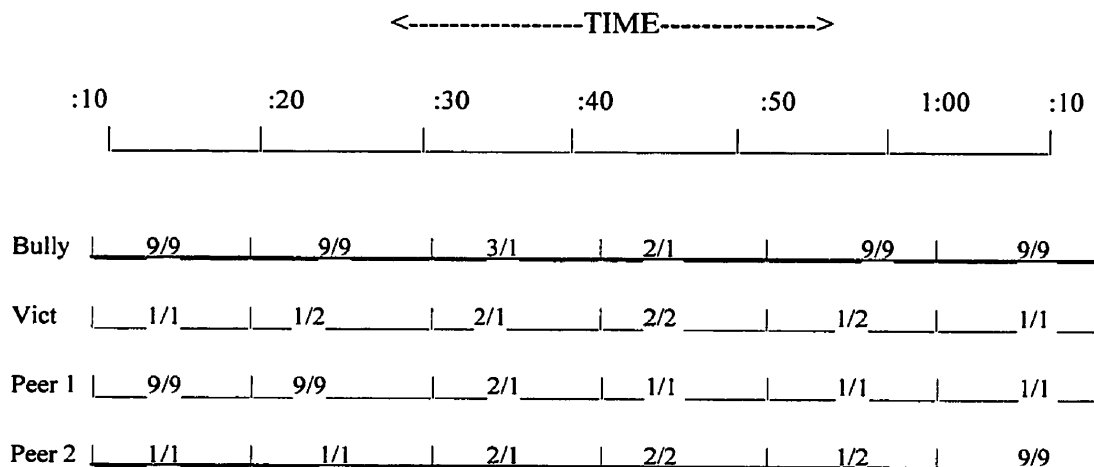
(Etc., up to 12 peers in some cases)

Affect ratings

For each and every behaviour code, across all actors, there is an affect rating (shown above in parentheses). The affect ratings are made on a seven point scale:

Aggression and distress ratings

For each actor, there are also ratings of aggression and distress at 10 second intervals on the time-line (the highest level during each interval is recorded). These ratings are on a 5 point scale, with 1 indicating no, 3 indicating moderate, and 5 indicating extreme aggression or distress (detailed descriptions are in my coding manual). N.B: A '9' code indicates uncodeable (e.g., off-camera) at all levels of coding, and for all actors.



In the above example the bully is off camera on both the aggression and distress ratings during the first 20 seconds (9/9), followed by aggression/distress ratings of 3 & 1, then 2 & 1, etc..

The above illustrates what the data look like in their original (paper and pencil) form.

Roger Bakeman's DOS-based Generalized Sequential Querier (GSEQ, 1995) was used to process the data. When entered into his program, the data appear as follows (The bold square brackets were added to identify lines):

Child x file% CODES ARE PRECEDED BY IDENTIFYING LETTER - B (bully), or P (peer)%

[Line 1] B9,00:10 B0,00:36 B1,00:41 B9,00:49 &

[Line 2] BA9,00:10 BA4,00:36 BA6,00:41 BA9,00:49 &

[Line 3] BAGG9 ,00:10 BAGG9 ,00:20 BAGG1 ,00:30 BAGG3 ,00:40
BAGG9 ,00:50

BAGG9 ,01:00 BAGG9 ,01:10 &

[Line 4] BDISS9 ,00:10 BDISS9 ,00:20 BDISS1 ,00:30 BDISS3
,00:40 BDISS9 ,00:50

BDISS9, 01:00 BDISS9 ,01:10 &

[Line 5] P9,00:10 P0,00:39 P4,00:42 P2,01:03 P0,01:13 P9,01:18
&

[Line 6] PA9,00:10 PA4,00:39 PA3,01:13 PA4,01:16 PA9,01:18 &

[Line 7] PAGG9 ,00:10 PAGG9 ,00:20 PAGG2 ,00:30 PAGG1 ,00:40
PAGG1 ,00:50

PAGG1 ,01:00 PAGG1 ,01:10 &

[Line 8] PDISS9 ,00:10 PDISS9 ,00:20 PDISS1 ,00:30 PDISS1
,00:40 PDISS1 ,00:50

PDISS1, 01:00 PDISS1 ,01:10 ,01:20 (1,1,1,1,2,2) /

Lines 1-4 identify bully codes. Line 1 is the bully's behaviour (8 mutually exclusive and exhaustive bully codes),

and line 2 are the affect ratings (a 7 point scale, from very positive to very negative) . The affect coding often, but not always, corresponds time-wise with the first line. It is possible, however, to have a behaviour change without an affect change, or vice-versa. Lines 3 and 4 are the bully aggression and distress ratings, respectively. Note that these codes are made at ten second intervals (not simply whenever a behaviour occurs).

Lines 5-8 have the same form as lines 1-4, but are the peer codes. The behaviour codes (line 5) are 6 mutually exclusive and exhaustive peer codes (i.e., these codes differ from the bully behaviour codes). Lines 6-8 use the same rating scales as the bully codes, but ratings are made on the peer rather than the bully. The bold-face codes at the end of the segment indicate the end of one videotaped interaction between a peer, a bully, and a victim. These ending codes provide information about the type of peer (e.g., male, junior student, at school 'A', interacting with bully #11).

A mutually exclusive and exhaustive coding scheme was also used for victims: examples of it are omitted to save time and space.

Purpose of the sequential analysis

Of interest were times when the bully and each peer join in one way or another. More specifically, what happens to the bullies aggression level and emotional valence rating *just before and just after* the bully is joined by a peer.

The bully can be joined by a peer in one of three ways: 1) actively joined, where a peer helps to abuse a victim, either verbally or physically; 2) passively joined, where a peer pays attention to the interaction (defined as 5 seconds or more of watching the interaction), or; 3) intervening against the bully (i.e., helping the victim, either physically or verbally).

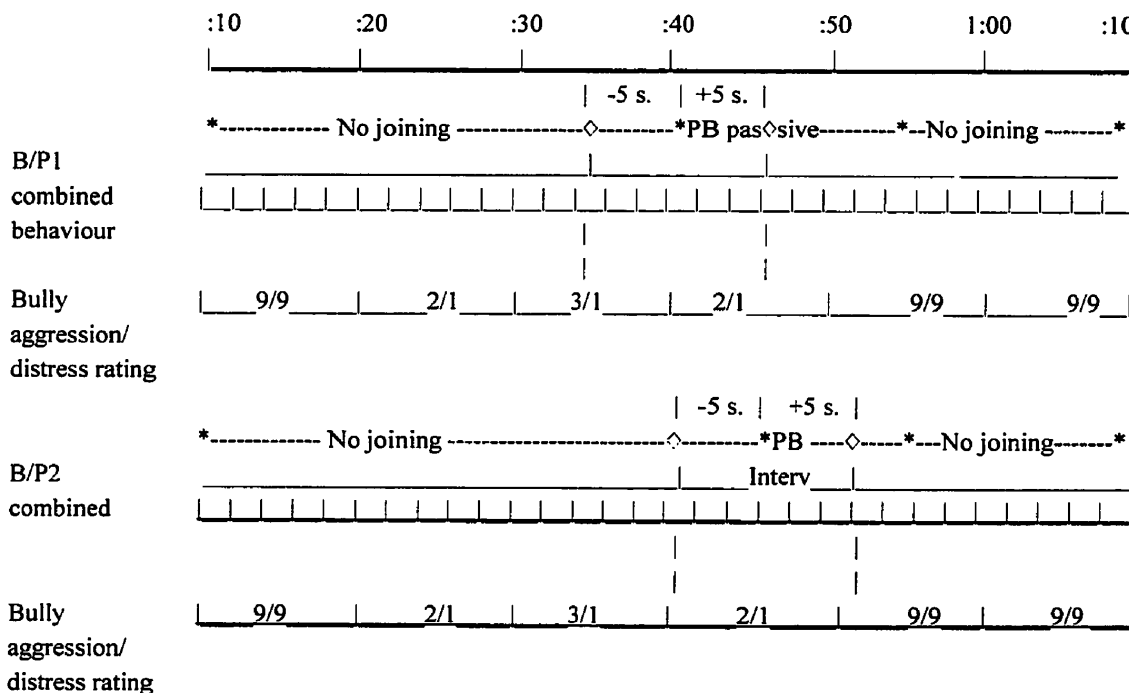
the ratings of aggression (because the intervals are 10 seconds long). The command for cases of active Peer and Bully joining looked like this:

```
WINDOW PB_passive-5 = (PB_passive-5, (PB_passive-5;
WINDOW PB_passive+5 = (PB_passive+5, (PB_passive+5;
```

Similar time windows were opened up for PB_active joining and PB_intervention.

Bully aggression ratings

These computations allow for examining change in the data, five seconds before and after the Peer and Bully joined. One variable of interest were the bully aggression ratings. Here, they are shown directly underneath each peer and bully combination, for illustrative purposes (the 5 seconds pre and post are marked with \diamond):



The program was used to tally the bully aggression rating before and after passive joining (P1), and intervening (P2). Note that this creates a summary table, across the length of the videotape segment, for all occurrences of each type of joining.

```
TARGET BAGG1 BAGG2 BAGG3 BAGG4 BAGG5 BAGG9;
GIVEN PB_passive-5 PB_passive+5;
```

```
TARGET BAGG1 BAGG2 BAGG3 BAGG4 BAGG5 BAGG9;
GIVEN PB_intervene-5 PB_intervene+5;
```

The two tables give the following results:

Table 1) Passive joining

	TARGET					
Given:	BAGG1	BAGG2	BAGG3	BAGG4	BAGG5	BAGG9
PB_PASSIVE-5	0	0	1	0	0	0
PB_PASSIVE+5	0	1	0	0	0	0

Table 2) Intervention

	TARGET					
Given:	BAGG1	BAGG2	BAGG3	BAGG4	BAGG5	BAGG9
PB_INTERVENE-5	0	1	0	0	0	0
PB_INTERVENE+5	0	0	0	0	0	1

Summary

Behaviour, affect, aggression, and distress ratings were made on all actors (bullies, victims, and peers) in 53 segments of videotape that contained playground bullying. The peer is the unit of analysis; data are structured as a continuous line of interaction between each peer and the bully in a given videotape segment. In total, there are 219 peers interacting with 53 different bullies.

The Generalized Sequential Querier (GSEQ) program combines bully and peer behaviours into new streams of data, thus allowing for examination of the convergent behaviours of these two actors. The preceding example demonstrated how GSEQ tallies bully affect and aggression scores, both prior to and following the peer and bully joining. The program also distinguishes different types of peer and bully joining (peer actively joining the bully, passively joining the bully, and intervening on behalf of the victim).

Limitations/ sequential data analysis concerns:

1. Summary nature of the tables. One drawback to the data as summarized above becomes apparent when multiple peer/bully joinings occur over the course of one videotape segment. For instance, if a peer passively joins in watching a bully 5 times over the course of a videotape segment, the table for bully aggression under the condition peer passively joins might look as follows:

	TARGET					
Given:	BAGG1	BAGG2	BAGG3	BAGG4	BAGG5	BAGG9
PB_PASSIVE-5	1	1	1	2	0	0
PB_PASSIVE+5	0	2	0	1	0	2

There is no way of telling from the above table which codes in the top row (pre-joining) correspond with the codes in the bottom row (post-joining). It was, however, possible to take a mean aggression rating for the top row and compare it with the mean aggression score for the bottom row. Missing data (9's) were omitted from the calculation.

2. Nesting of peers within bullies. Although there were 219 peers, and hence 219 peer-bully interactions, there are only 53 samples of bully behaviours. Thus, the (average) 4 peers per segment are interacting with the same bully behaviours. For this reason, Dr. Michael Ornstein (of the Institute for Social Research) agreed to correct the standard errors for the six pre and post scores described above.