

UNIVERSITÉ DU QUÉBEC À MONTRÉAL

LES RELATIONS DYADIQUES ENTRE PAIRS COMME FACTEURS MODÉRATEURS  
DU RISQUE ET DES CONSÉQUENCES ASSOCIÉS  
À LA VICTIMISATION PAR LES PAIRS

THÈSE  
PRÉSENTÉE  
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PAR  
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## RÉSUMÉ

Les relations avec les pairs jouent un rôle fondamental dans le développement des enfants. Malheureusement, ces relations ne sont pas toujours bénéfiques. En effet, la recherche montre qu'une proportion importante des enfants d'âge scolaire sont victimes d'intimidation de la part des pairs et que ces expériences ont un impact négatif sur l'adaptation psychosociale concomitante et ultérieure des victimes. Face à cette problématique, il devient nécessaire d'identifier les facteurs susceptibles de modérer la probabilité que certains enfants soient victimes d'intimidation et en subissent les conséquences néfastes.

La présente thèse propose d'examiner le rôle des relations dyadiques entre pairs comme facteurs modérateurs du risque et des conséquences associés à la victimisation par les pairs. Pour ce faire, deux objectifs sont poursuivis, chacun correspondant à un article empirique. Le premier objectif vise à examiner le rôle modérateur des caractéristiques prosociales des amis réciproques et des membres de la fratrie respectivement, dans le lien prédictif entre la manifestation de comportements agressifs réactifs et la victimisation par les pairs. Le second consiste à évaluer le rôle modérateur des caractéristiques comportementales agressives des amis réciproques dans le lien prédictif entre la victimisation par les pairs et la manifestation ultérieure de comportements agressifs réactifs et proactifs, respectivement.

Ces questions de recherche ont été examinées à partir d'un échantillon de jumeaux provenant de la grande région de Montréal et suivis longitudinalement depuis la petite enfance dans le cadre d'un vaste projet de recherche intitulé l'Étude des jumeaux nouveau-nés du Québec (ÉJNQ). Les données présentées dans le cadre de la thèse portent sur les deux dernières vagues de cueillette des données soit, lorsque les enfants étaient âgés de 6 et 7 ans, respectivement. Les données portant sur les amitiés réciproques et la victimisation par les pairs ont été obtenues à partir d'une procédure sociométrique de dénomination par les pairs alors que celles mesurant les comportements de prosocialité et d'agressivité réactive et proactive ont été recueillies à partir de questionnaire auto-administré par les enseignants.

Les résultats issus du premier article empirique suggèrent que les amis réciproques prosociaux peuvent jouer un rôle protecteur important auprès des enfants à risque de victimisation par les pairs. De manière plus spécifique, les résultats indiquent que les enfants manifestant des comportements agressifs réactifs qui ont des amis prosociaux sont moins susceptibles d'être victimisés par les pairs. En revanche, lorsque ces enfants ont des amis peu prosociaux le risque de victimisation est accru. De façon similaire au rôle modérateur des amis, les résultats montrent que

les caractéristiques prosociales des membres de la fratrie peuvent également minimiser le risque de victimisation par les pairs.

Les résultats issus du second article appuient d'autant plus le rôle modérateur des amis réciproques en démontrant que les enfants victimisés dont les amis manifestent des comportements d'agressivité réactive sont plus enclins à exhiber ce type de comportements à leur tour dans le futur. Par ailleurs, lorsque les enfants victimisés ont des amis peu agressifs, ils sont moins susceptibles de manifester des comportements d'agressivité réactive ultérieurement.

En conclusion, les résultats de la thèse soulignent l'importance d'identifier les facteurs modérateurs du risque et des conséquences associés à la victimisation par les pairs. En effet, les résultats de la thèse montrent que les relations dyadiques entre pairs ont une influence majeure sur la probabilité que certains enfants soient victimisés par les pairs et en éprouvent des répercussions sur leur adaptation psychosociale. De plus, les résultats obtenus témoignent de la nécessité de prendre en compte la distinction entre l'agressivité réactive et l'agressivité proactive lorsque ces variables sont à l'étude.

Mots clés : victimisation, agressivité réactive et proactive, prosocialité, relation d'amitié, relation fraternelle.

## CHAPITRE I

### INTRODUCTION GÉNÉRALE

## INTRODUCTION GÉNÉRALE

La victimisation par les pairs en milieu scolaire constitue un problème important dans plusieurs pays du monde. Une récente étude menée par l'Organisation mondiale de la santé portant sur les comportements de santé chez les jeunes d'âge scolaire, notamment les comportements de victimisation par les pairs, révèle que le Canada se situe dans la tranche supérieure parmi les 39 pays où l'on retrouve les plus hauts niveaux de victimisation (Currie, Gabhainn, Godeau, Roberts, Smith, Currie, Picket, Richter, Morgan, & Barnekow, 2008). Cette situation est préoccupante compte tenu du nombre croissant d'études démontrant que la victimisation par les pairs contribue de manière significative à la manifestation concomitante et ultérieure de nombreux troubles de l'adaptation chez les enfants et les jeunes (Hanish & Guerra, 2002; Hawker & Boulton, 2000; Snyder, Brooker, Patrick, Snyder, Schrepferman, & Stoolmiller, 2003). Au-delà des conséquences néfastes pour les victimes, la victimisation a d'importantes répercussions sur l'ensemble de la société puisque les victimes font souvent partie des clientèles qui requièrent des services en éducation spécialisée, en services sociaux et en santé mentale.

### 1.1 Définition de la victimisation

La victimisation est une forme d'agression qui s'inscrit dans un contexte relationnel où l'enfant qui commet les actes d'agression (l'intimidateur) use intentionnellement de son pouvoir pour blesser ou causer du tort à un autre enfant moins dominant (la victime). Ces actes d'agression se répètent dans le temps et ont pour effet de confirmer la victime dans sa position de dominé et de renforcer la dynamique de violence entre l'intimidateur et sa victime. Les actes d'agression peuvent survenir dans le contexte d'une interaction négative directe (devant la

victime) ou indirecte (dans son dos) et se manifester sous différentes formes telles que les actes physiques (ex. : coup de poing, coup de pied, morsure), les actes verbaux (ex. : menaces, injures) et les actes sociaux (ex. : exclusion sociale, diffusion de rumeurs).

## 1.2 Prévalence de la victimisation

Selon les données recueillies dans le cadre de l'étude menée par l'Organisation mondiale de la santé (Currie et al., 2008), le taux de victimisation au Canada se situent entre 10% et 20% selon l'âge des enfants. Le pourcentage des enfants victimes d'intimidation décroît progressivement avec l'âge, les plus hauts taux (autour de 20%) étant observés chez les enfants en début de scolarisation (Charach, Pepler, & Ziegler, 1995 ; Kochenderfer & Ladd, 1996 ; Snyder et al., 2003). Des variations en fonction de l'âge des enfants sont également observées en regard de la forme et du caractère direct ou indirect des actes d'intimidation. En effet, il semble que les enfants plus jeunes sont davantage enclins à être victimes d'actes d'intimidation directs qui se manifestent de façon physique ou verbale, alors que les plus vieux sont davantage exposés à des actes sociaux indirects (Kochenderfer & Ladd, 1996; Olweus, 1993). Enfin, la majorité des études ne rapportent aucune différence significative entre les garçons et les filles quant au taux de victimisation (ex. : Charach, Pepler, & Ziegler, 1995; Pepler & Craig, 1997) mais lorsqu'une différence significative est rapportée, elle est généralement en faveur des garçons (ex. : Currie et al., 2008; Snyder et al., 2003).

## 1.3 Facteurs de risque et facteurs modérateurs du risque associés à la victimisation

La recherche à ce jour a permis d'identifier un certain nombre de facteurs individuels qui augmentent la probabilité que les enfants soient victimes d'actes d'intimidation. Les études sur ce point indiquent que la manifestation de troubles

intériorisés et extériorisés chez les enfants constitue un facteur de risque important pour la prédiction de la victimisation par les pairs (ex. : Hodges, Malone, & Perry, 1997; Perry, Hodges, & Egan, 2001). Il semble toutefois que les liens entre les troubles intériorisés et extériorisés, d'une part, et la victimisation par les pairs, d'autre part, varient en fonction de l'âge des enfants (Boivin, Hymel, & Hodges, 2001). De manière plus spécifique, le lien prédictif entre les troubles intériorisés et la victimisation semble faible chez les enfants en début de scolarisation, mais tend à croître avec l'âge. Une tendance inverse s'observe en regard des troubles extériorisés qui contribuent de façon importante à la prédiction de la victimisation chez les enfants en début de scolarisation, mais ce lien prédictif tend à diminuer avec l'âge. Selon certains auteurs (ex. : Boivin et al., 2001), ces tendances du développement pourraient s'expliquer par le fait que les comportements intériorisés (ex. : retrait social, anxiété, humeur dépressive) sont moins saillants pour les pairs en bas âge, mais deviennent progressivement perçus de façon négative avec l'âge. En revanche, les comportements extériorisés (ex. : comportements agressifs, impulsifs, argumentatifs et perturbateurs) seraient perçus négativement par les pairs dès un jeune âge, mais les enfants manifestant de tels comportements auraient progressivement tendance à s'associer et à se protéger entre eux ce qui, en retour, minimiserait le risque de victimisation. En conséquence, il paraît pertinent d'accorder une attention particulière à la manifestation de troubles extériorisés comme facteur de risque pour la prédiction de la victimisation par les pairs, compte tenu du fait que la présente recherche a été réalisée auprès d'enfants en début de scolarisation.

### 1.3.1 Agressivité réactive et agressivité proactive comme facteurs de risque associés à la victimisation

De récentes études qui se sont intéressées au lien prédictif entre les troubles extériorisés, et en particulier les comportements agressifs, et la victimisation par les pairs ont mis en relief l'importance de distinguer entre deux types d'agressivité selon

leur valeur fonctionnelle et leurs mécanismes sous-jacents (ex. : Camodeca, Goossens, Meerum Terwogt, & Schuengel, 2002 ; Salmivalli & Nieminen, 2002; Schwartz, Dodge, Coie, Hubbard, Cillessen, Lemerise, & Bateman, 1998). Ainsi, l'agressivité *réactive*, associée au modèle de frustration-agression (Berkowitz, 1993; Dodge, 1991) constituerait une réaction défensive hostile suite à une frustration ou à une provocation réelle ou perçue et serait accompagnée d'un sentiment de colère. Le but premier de ce type d'agressivité serait de réagir au stimulus générateur de colère et de frustration et de blesser l'auteur de la provocation. Selon la théorie de la frustration-agression, la manifestation de comportements réactivement agressifs s'expliquerait par des caractéristiques propres au tempérament de l'enfant (ex. : hyper-réactivité, impulsivité, émotivité labile) ou par des réactions émotionnelles conditionnées en réponse à un stimulus externe (Berkowitz, 1993). Toutefois, cette perspective n'exclut pas la possibilité que certains contextes sociaux, par exemple les relations avec les pairs, puissent intervenir dans la manifestation de comportements réactivement agressifs chez l'enfant (Dodge, 1991).

L'agressivité *proactive*, pour sa part, est associée au modèle de l'apprentissage social (Bandura, 1983) selon lequel les comportements d'agressivité résulteraient de processus sociaux tels le modelage et le renforcement extrinsèque. Selon cette perspective, l'agressivité proactive constituerait une hostilité intentionnelle et préméditée dans le but d'intimider, d'influencer ou de dominer autrui. Contrairement à l'agressivité réactive, ce type d'agressivité ne requerrait aucune provocation préalable et serait déterminé par l'anticipation positive des conséquences des actes d'agression (Dodge, 1991).

La distinction conceptuelle entre l'agressivité réactive et l'agressivité proactive n'exclut pas la possibilité qu'un même individu manifeste ces deux types d'agressivité de façon concomitante. En effet, les recherches indiquent que la majorité des enfants agressifs présentent des profils mixtes (ex. : Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Vitaro, Brendgen, Tremblay, 2002). En dépit du

chevauchement typiquement observé entre l'agressivité réactive et l'agressivité proactive, des analyses factorielles exploratoires et confirmatoires démontrent que ces deux types d'agressivité constituent des facteurs distincts (ex. : Little, Jones, Henrich, & Hawley, 2003; Poulin & Boivin, 2000). De plus, la recherche permet de supposer que les corrélats de l'agressivité réactive et l'agressivité proactive, et en particulier les expériences de socialisation avec les pairs, sont différents.

Les données empiriques sur ce point portent à croire que l'agressivité réactive est associée à un profil psychosocial plus problématique que celui de l'agressivité proactive (Poulin & Boivin, 2000; Prinstein & Cillessen, 2003). Une récente méta-analyse menée par Card et Little (2006) examinant l'association entre l'agressivité réactive et l'agressivité proactive et plusieurs indices d'ajustement psychosociaux, révèle que, lorsque l'on contrôle pour le degré de chevauchement entre ces deux types d'agressivité, seule l'agressivité réactive – et non l'agressivité proactive – prédit la victimisation par les pairs. Ces résultats sont en accord avec l'idée soutenue par certains auteurs (ex. : Schwartz, Proctor, & Chien, 2001) selon laquelle les troubles de l'adaptation psychosociale qu'éprouvent les enfants réactivement agressifs, et en particulier la victimisation par les pairs, résulteraient d'un mode relationnel aversif et hostile qui suscite des réactions négatives chez les autres enfants. En d'autres termes, les manifestations de colère, d'irritabilité et d'hyper-réactivité qui caractérisent les enfants réactivement agressifs agacent et provoquent les autres, ce qui en retour, mènerait à des expériences de maltraitance par les pairs.

### 1.3.2 Relations d'amitié comme facteur modérateur du risque associé à la victimisation

En plus des facteurs de risque associés à la victimisation, on peut se questionner sur les facteurs susceptibles de diminuer la probabilité que les enfants dits « à risque » soient victimes d'intimidation de la part des pairs. En s'appuyant sur la prémissse que les relations d'amitié pendant l'enfance constituent un terreau fertile

au développement d'habiletés et de comportements sociaux ainsi que d'importantes sources d'entraide et de soutien (Hartup, 1996), plusieurs auteurs ont examiné le rôle modérateur des relations d'amitié réciproque dans l'association entre les comportements à risque et la victimisation. Les résultats issus de ces études montrent que la probabilité que les enfants manifestant des comportements à risque, et en particulier des comportements agressifs, soient victimes d'intimidation varie en fonction de la présence et des caractéristiques des amis réciproques. De manière plus spécifique, il apparaît que les enfants manifestant des comportements agressifs qui entretiennent des relations d'amitié sont moins enclins à être la cible d'intimidation que leurs semblables qui n'ont pas d'ami réciproque (Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). Il semble toutefois que cette fonction protectrice des relations d'amitié réciproque varie en fonction des caractéristiques des amis. En effet, lorsque les enfants manifestants des comportements agressifs ont des amis physiquement chétifs ou qui présentent des problèmes intérieurisés (ex. : anxiété, retrait social), le degré d'association entre les comportements agressifs de l'enfant et la victimisation augmente. Au contraire, ce degré d'association diminue lorsque les enfants manifestants des comportements agressifs ont des amis qui ne présentent pas de telles vulnérabilités (Hodges et al., 1997). De façon similaire, il apparaît qu'entretenir des relations d'amitié avec des amis qui sont eux-mêmes victime d'intimidation accroît le risque que les enfants réactivement agressifs soient la cible d'agressions par les pairs. En revanche, les enfants réactivement agressifs dont les amis réciproques sont des agresseurs proactifs (c'est-à-dire des intimidateurs) sont nettement moins à risque d'être victime d'intimidation par les pairs (Pellegrini, Bartini, & Brooks, 1999).

En somme, ces résultats suggèrent que la probabilité que les amis assument un rôle de protecteur auprès des enfants à risque de victimisation est largement tributaire de leur capacité à dissuader ou à contrecarrer les agresseurs potentiels. Il est cependant étonnant de constater que les quelques études qui ont étudié l'effet

modérateur des relations d'amitié réciproque sur la victimisation ont principalement centré leur attention sur les caractéristiques défavorables des amis. Or, on peut penser que certaines caractéristiques favorables des amis, par exemple, la prosocialité, puissent également jouer un rôle protecteur auprès des enfants à risque de victimisation. Plus spécifiquement, il se peut qu'en raison de leur capacité à négocier ou à désamorcer des situations potentiellement problématiques ou dangereuses, les amis prosociaux diminuent la probabilité que les enfants manifestant des comportements agressifs réactifs soient victime d'intimidation. Plusieurs recherches indiquent, en effet, que les enfants prosociaux présentent plusieurs indices de compétence sociale tels que la capacité à créer et à maintenir des rapports sociaux adéquats, à résoudre des conflits interpersonnels, à s'insérer à l'intérieur d'un groupe, à composer adéquatement avec leur propre colère et celle d'autrui, à éprouver de l'empathie et à aider les autres (Eisenberg & Fabes, 1992; Eisenberg & Fabes, 1998; Eisenberg, Fabes, Karbon, Murphy, Wosinski, Polazzi, Carlo, & Juhnke, 1996; Penner, Fritzsche, Craiger, & Freifeld, 1995). Ainsi, il est probable que les enfants agressifs de façon réactive bénéficient de la présence d'amis prosociaux. On peut penser que de tels amis peuvent agir à titre de conciliateur lors d'escarmouches ou de conflits avec les pairs et ainsi désamorcer le risque que les confrontations ne s'enveniment davantage. Il se peut aussi qu'à travers leurs interactions avec les amis prosociaux, les enfants réactivement agressifs en viennent à envisager et à développer des habiletés sociales plus adéquates minimisant de ce fait le risque de victimisation par les pairs.

### 1.3.3 Relations fraternelles comme facteur modérateur du risque associé à la victimisation

Un autre aspect de l'environnement social des enfants ayant suscité très peu de travaux empiriques en regard de la victimisation par les pairs est l'influence des membres de la fratrie. Pourtant, plusieurs études suggèrent que, tout comme les

relations d'amitié, les relations fraternelles pendant l'enfance constituent d'importantes sources d'entraide, de coopération et de soutien (Buhrmester, 1992; Buhrmester & Furman, 1987; East & Rook, 1992). De plus, la qualité des relations fraternelles semble jouer un rôle important dans l'adaptation sociale des enfants, notamment dans leurs relations avec les pairs. En effet, il a été démontré que le fait d'entretenir des relations fraternelles chaleureuses est positivement corrélé au statut sociométrique et négativement associé à la victimisation par les pairs (Lockman, Kitzmann, & Cohen, 2001). De façon similaire, il semble que les enfants manifestant des comportements agressifs dont les relations fraternelles sont jugées de bonne qualité, c'est-à-dire chaleureuse et peu hostile, éprouvent moins de problèmes relationnels avec les pairs que les enfants agressifs qui ont des relations fraternelles jugées conflictuelles (Stormshak, Bellanti, & Bierman, 1996). Bien que ces études suggèrent que la qualité des relations fraternelles joue un rôle significatif dans l'adaptation psychosociale des enfants, aucune étude à ce jour n'a examiné dans quelle mesure les caractéristiques prosociales du frère ou de la sœur ont un impact sur les relations des enfants au sein du groupe de pairs, en particulier en ce qui a trait au risque de victimisation par les pairs. On peut toutefois penser que de façon similaire aux caractéristiques favorables des amis, les caractéristiques prosociales des membres de la fratrie peuvent modérer le risque de victimisation chez les enfants manifestant des comportements agressifs réactifs.

#### 1.4 Conséquences et facteurs modérateurs des conséquences associées à la victimisation

Il semble peu probable que la relation entre la victimisation par les pairs et les troubles extériorisés chez les enfants s'exprime uniquement de manière unilatérale. En effet, des études transversales et longitudinales indiquent que la victimisation prédit la manifestation concomitante et ultérieure de troubles extériorisés, notamment les comportements d'agressivité (ex. : Hanish & Guerra, 2002; Hodges, Boivin,

Vitaro, & Bukowski, 1999; Snyder et al., 2003). Ceci suggère que les expériences de victimisation au sein du groupe de pairs constituent un facteur de risque important pour l'émergence et l'accroissement de comportements d'agressivité chez les enfants.

#### 1.4.1 Agressivité réactive et agressivité proactive comme conséquences associées à la victimisation

Le lien prédictif rapporté entre la victimisation par les pairs et la manifestation de comportements d'agressivité porte à croire que les expériences hostiles au sein du groupe de pairs peuvent mener certains enfants à réagir de manière agressive face aux épisodes d'intimidation auxquelles ils sont soumis ou encore, à initier des comportements agressifs envers d'autres enfants présumément plus faibles ou moins dominants qu'eux. En accord avec cette perspective, Pellegrini (1998) soutient que certaines victimes d'intimidation sont enclines à user de stratégies agressives de façon *réactive* (c'est-à-dire défensive et impulsive) en réaction aux expériences hostiles avec les pairs, alors que d'autres sont susceptibles d'user de stratégies agressives *proactives* (c'est-à-dire préméditées et instrumentales) dans le but d'intimider ou de dominer d'autres enfants à leur tour. Bien que la proposition de Pellegrini suggère que la victimisation par les pairs puisse contribuer à l'émergence et à l'accroissement de comportements à la fois réactivement et proactivement agressifs, aucune étude à ce jour n'a examiné cette question. De plus, à la lumière de récentes données empiriques en génétique du comportement (Brendgen, Vitaro, Boivin, Dionne, & Pérusse, 2006) qui montrent que des facteurs environnementaux distincts contribuent au développement de l'agressivité réactive et l'agressivité proactive chez les enfants, il semble important de tenir compte de cette distinction dans l'examen de l'impact de la victimisation par les pairs sur le développement de l'agressivité chez l'enfant.

#### 1.4.2. Relations d'amitié comme facteur modérateur des conséquences associées à la victimisation

Au-delà de l'examen des conséquences associées à la victimisation par les pairs, il apparaît pertinent de s'interroger sur les facteurs susceptibles de modérer la probabilité que les enfants victimes d'intimidation manifestent des comportements d'agressivité. Le peu d'études qui se sont penchées sur cette question suggère que les relations d'amitié réciproque peuvent jouer un rôle modérateur important dans le lien entre la victimisation et la manifestation de troubles extériorisés chez les enfants. En effet, il a été démontré que les enfants victimes d'intimidation qui entretiennent des relations d'amitié réciproque sont moins enclins à manifester ultérieurement des troubles extériorisés que les victimes qui n'ont pas d'ami réciproque (Hodges et al., 1999). En plus de la présence des amis, il semble que la qualité de la relation d'amitié, et en particulier le niveau de soutien social, modère les conséquences néfastes associées à la victimisation par les pairs. De manière plus spécifique, il a été démonté que les enfants qui rapportent un faible niveau de soutien social dans leurs relations d'amitié réciproque sont plus susceptibles de manifester des troubles extériorisés suite à des expériences d'intimidation que les enfants qui affirment ressentir un haut niveau de soutien social dans leurs relations avec les amis réciproques (Prinstein, Boergers, & Vernberg, 2001).

En plus de la présence et de la qualité des relations avec les amis, on peut penser que d'autres aspects des relations d'amitié réciproque, et en particulier les caractéristiques des amis, peuvent également moduler les répercussions néfastes de la victimisation par les pairs. Or, aucune étude à ce jour n'a examiné dans quelle mesure le lien prédictif entre la victimisation et la manifestation de troubles extériorisés varie en fonction des caractéristiques des amis réciproques. Plusieurs études suggèrent toutefois un effet principal des caractéristiques des amis sur les troubles extériorisés. Par exemple, dans le cadre d'une étude portant sur les facteurs de risque associés au développement de problèmes d'agressivité chez les enfants, Kupersmidt et ses

collègues (1995) ont démontré que le fait d'avoir des amis réciproques agressifs prédit le développement ultérieur de problèmes d'agressivité chez les enfants cibles. De plus, leurs résultats montrent que l'effet combiné d'avoir des amis réciproques agressifs et d'être rejeté par les pairs augmente d'autant plus le risque que les enfants cibles manifestent des problèmes d'agressivité plus tard. En revanche, lorsque le niveau d'agressivité des amis réciproques ou le niveau de rejet par les pairs diminue avec le temps, le risque que les enfants cibles manifestent des problèmes d'agressivité diminue. À ce titre, on peut penser que le fait d'avoir des amis qui manifestent des comportements agressifs augmente la probabilité que les enfants victimes d'intimidation manifestent de tels comportements à leur tour. De plus, étant donné la spécificité des facteurs environnementaux qui contribuent au développement de l'agressivité réactive et l'agressivité proactive respectivement (Brendgen et al., 2006), il apparaît que l'examen du rôle modérateur des caractéristiques des amis dans ce contexte doit prendre en compte la distinction entre ces différents types d'agressivité.

#### 1.4.3 Effet de récence des relations d'amitié comme facteur modérateur des conséquences associées à la victimisation

L'examen du rôle potentiellement modérateur des caractéristiques des amis réciproques dans l'association entre la victimisation par les pairs et la manifestation ultérieure de comportements d'agressivité soulève la question épique de l'instabilité dans les relations d'amitié réciproque chez les enfants et de l'impact de ces fluctuations sur les effets longitudinaux rapportés (Berndt, 1996). Dans cette perspective, Brendgen et ses collègues (2000) ont examiné dans quelle mesure l'impact des caractéristiques antisociales des amis, incluant l'agressivité, sur la manifestation de comportements antisociaux chez les enfants cibles varie en fonction de la récence des relations d'amitié. Les résultats de cette étude montrent que les caractéristiques antisociales des amis récents ont un impact plus important sur la prédiction des comportements antisociaux chez les enfants cibles que les

caractéristiques antisociales des amis antérieurs. Selon ces auteurs, ces résultats peuvent s'expliquer par le fait que les mécanismes de l'apprentissage social qui agissent au sein des relations d'amitié tels que le modelage et le renforcement extrinsèque sont maximisés lorsque les agents de socialisation ont une plus forte valence affective, ce qui est présumément le cas avec les amis récents. Ainsi, il apparaît pertinent d'examiner cet effet potentiel de récence dans le cadre de la présente recherche.

### 1.5 Objectifs de recherche

L'objectif principal de la présente recherche doctorale est d'identifier les facteurs modérateurs du risque et des conséquences associés à la victimisation par les pairs. Pour ce faire, deux objectifs sont poursuivis.

Le premier objectif vise à examiner le rôle modérateur des agents de socialisation de la même tranche d'âge que l'enfant, c'est-à-dire les amis réciproques et les membres de la fratrie, dans le lien prédictif entre l'agressivité réactive et la victimisation par les pairs. Plus spécifiquement, il a été vérifié si le lien prédictif entre la manifestation de comportements agressifs réactifs et les expériences concomitantes de victimisation par les pairs varie en fonction des caractéristiques comportementales prosociales des amis réciproques et des membres de la fratrie, respectivement. L'effet modérateur potentiel du genre dans ce contexte a aussi été investigué.

Ce premier objectif de recherche a été examiné à partir d'un échantillon de jumeaux élevés ensemble depuis la naissance. Comparativement à d'autres dyades fraternelles de non-jumeaux, les dyades de jumeaux possèdent plusieurs caractéristiques structurales apparentées aux dyades d'amis. Étant du même âge, on peut s'attendre à une plus grande symétrie dans les rapports entre jumeaux que dans les dyades fraternelles de non-jumeaux. De même, une similitude d'âge est généralement observée chez les dyades d'amis au cours de l'enfance (Epstein, 1989;

Hartup, 1970; Ladd, 1983). De plus, les jumeaux en début de scolarisation fréquentent communément la même école, voire la même classe. De la même façon, quand on demande aux enfants de désigner leurs meilleurs amis, ils nomment généralement des enfants qui partagent la même classe, et ce, même si des désignations à l'extérieur de la classe sont possibles (Epstein, 1983; Kupersmidt et al., 1995). Aussi, les études qui se sont intéressées aux processus qui sous-tendent la formation des relations d'amitié indiquent que, chez les enfants en début de scolarisation, le choix des amis est essentiellement basé sur une similarité dans les caractéristiques individuelles « de surface » telles que l'âge ou l'origine ethnique (ex. : Gottman, 1983). En ce sens, on peut penser que le degré de similitude généralement observé chez les dyades d'amis réciproques est comparable à celui constaté chez les dyades de jumeaux.

Le second objectif consiste à examiner le rôle modérateur potentiel des amitiés réciproques dans le lien prédictif entre la victimisation par les pairs et la manifestation de l'agressivité réactive et de l'agressivité proactive, respectivement. Plus spécifiquement, il a été vérifié si le lien prédictif entre la victimisation par les pairs et la manifestation ultérieure de l'agressivité réactive et de l'agressivité proactive varie en fonction des caractéristiques comportementales agressives similaires (c'est-à-dire réactive ou proactive respectivement) chez les amis réciproques. Il a aussi été vérifié si le rôle modérateur des caractéristiques agressives des amis dans ce contexte est plus important lorsqu'il s'agit d'amis réciproques récents ou d'amis réciproques antérieurs. Enfin, l'effet modérateur potentiel du genre dans ce contexte a également été investigué.

Le second objectif de recherche a été examiné à partir du même échantillon de jumeaux que celui utilisé pour le premier objectif. D'autres études portant sur les conséquences associées à la victimisation par les pairs ont employé un échantillon de jumeaux, même lorsque l'examen des facteurs génétiques ne constituait pas l'objectif focal de la recherche (ex. : Arseneault, Walsh, Trzesniewski, Newcombe, Caspi, &

Moffitt, 2006). À cet égard, il est important de noter que les études suggèrent que les jumeaux ne diffèrent pas des autres enfants en ce qui à trait aux caractéristiques de leur réseau d'amis telles que le nombre d'amis ou la qualité de leurs relations d'amitié (ex. : Koch, 1966; Thorpe, 2003). Des données empiriques ont également démontré que les jumeaux ne se distinguent pas des autres enfants quant à leur niveau d'adaptation psychosociale, notamment les comportements d'agressivité (ex. : Pulkkinen, Vaalamo, Hietala, Kaprio, & Rose, 2003).

Enfin, il importe de souligner que la majorité des études qui se sont intéressées aux facteurs susceptibles de modérer la probabilité que les enfants victimes d'intimidation éprouvent des difficultés d'adaptation ont été conduites à partir d'échantillons de pré-adolescents ou d'adolescents (ex. : Hodges et al., 1999; Prinstein et al., 2001). Il semble toutefois que la valeur fonctionnelle des relations d'amitié pour le développement des jeunes enfants soit comparable à celle des enfants plus âgés (Sebanc, 2003). Ainsi, à la lumière de nombreux indices empiriques permettant de croire que les effets de la victimisation s'observent dès la maternelle, il apparaît essentiel d'identifier les facteurs enclins à minimiser ou à exacerber les conséquences néfastes de la victimisation avant que les problèmes d'adaptation ne se cristallisent.

La thèse est présentée sous forme d'articles et chaque objectif de recherche est examiné en détail dans un article.

## CHAPITRE II

DO FRIENDSHIPS AND SIBLING RELATIONSHIPS PROVIDE PROTECTION  
AGAINST PEER VICTIMIZATION IN A SIMILAR WAY? (ARTICLE 1)

## **Do Friendships and Sibling Relationships Provide Protection against Peer Victimization in a Similar Way?**

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## Résumé

En se basant sur la prémissse que les relations d'amitié pendant l'enfance constituent d'importantes sources de soutien et d'entraide, cette étude a examiné le rôle modérateur des caractéristiques prosociales des amis réciproques dans le lien prédictif entre l'agressivité réactive et la victimisation par les pairs. Le rôle modérateur des caractéristiques prosociales des membres de la fratrie dans ce contexte a également été examiné. L'échantillon est composé de 246 pairs de jumeaux (246 garçons et 246 filles) âgés de 6 ans issus d'un vaste projet de recherche intitulé l'Étude des jumeaux nouveau-nés du Québec (ÉJNQ). Les données portant sur les amitiés réciproques et la victimisation par les pairs ont été obtenues à partir d'une procédure sociométrique de nomination par les pairs alors que celles mesurant les comportements de prosocialité et d'agressivité réactive ont été recueillies auprès des enseignants. Les résultats indiquent que l'agressivité réactive est associée de manière unique à la victimisation par les pairs. Ce lien est, par ailleurs, modulé par les caractéristiques prosociales des amis réciproques et des membres de la fratrie respectivement. Ainsi, lorsque les enfants manifestant de l'agressivité réactive ont des amis réciproques ou un co-jumeau prosociaux, leur risque de victimisation par les pairs est minimisé. Ces résultats suggèrent que les relations dyadiques entre pairs pendant l'enfance jouent un rôle protecteur important auprès des enfants à risque de victimisation par les pairs.

Mots clés: Victimation; Relations d'amitié; Relations fraternelles; Prosocialité

### Abstract

Based on the notion that friendship may serve an important protective function against peer victimization, this study examined the moderating effect of reciprocal friends' prosociality on the link between a child's reactive aggression and victimization. The study also investigated whether a similar moderating effect could be found with respect to sibling's prosociality, given that sibling relationships have been found to provide comparable social benefits as friendships. These questions were addressed using a sample of 246 six year-old twin pairs (246 boys and 246 girls). The results showed that a child's own reactive aggression uniquely contributed to the risk of victimization for both boys and girls. The link between reactive aggression and victimization was, however, moderated by reciprocal friends' prosocial behavior and sibling's prosocial behavior, respectively. The results are discussed in terms of their theoretical and prevention-related implications for children at risk for peer victimization.

Keywords: Victimization; Friends; Siblings; Prosociality

## Introduction

Considerable evidence indicates that approximately 10-15 % of school-age children are repeatedly victimized by peers (Kochenderfer Ladd & Ladd, 2001; Olweus, 1978; Perry, Kusel, & Perry, 1988). Victimization has been found to remain quite stable over time, with the same children enduring these negative peer experiences year after year (Hodges & Perry, 1999; Olweus, 1978). Moreover, a growing corpus of research suggests that children who are maltreated by their peers are at risk for a wide range of psychological, physical, social, and academic difficulties (Boivin, Hymel, & Hodges, 2001; Rigby, 2001). The recognition that peer victimization may have serious negative consequences for children's health and well being has prompted researchers to investigate the factors that place children at risk for peer maltreatment as well as factors that may mitigate this risk.

To date, research on this topic has identified several individual and social factors that place children at risk for peer victimization. In regard to individual risk factors, several investigators contend that victimized children behave in ways that invite or provoke other children, especially bullies (Hodges, Malone, & Perry, 1997, Hodges & Perry, 1999; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999). Consistent with this perspective, research shows that many victimized children display internalizing problems, that is, withdrawn, submissive, and anxious behavioral tendencies, or externalizing problems, such as disruptive, argumentative, and overly reactive behaviors (Hodges et al. 1997; Olweus, 1978; Schwartz et al., 1999). Accordingly, victims of peer aggression have often been characterized as either "passive victims" or "aggressive victims" (Olweus, 1978; Pellegrini, Bartini, & Brooks, 1999, Schwartz, Dodge, Pettit, & Bates, 1997). With respect to the latter subgroup, empirical evidence indicates that children who are both aggressive and victimized are more highly disliked by peers and display higher levels of emotionally dysregulated behaviors compared to passive victims or non-victimized aggressive children (Pellegrini et al, 1999; Schwartz, 2000; Schwartz et al., 1997). As such,

attention to this aggressive victim subgroup may be particularly important, as these children seem to be highly vulnerable to a variety of adjustment problems.

Recently, researchers investigating the link between aggression and victimization have highlighted the importance of distinguishing among different subtypes of aggressive behaviors, namely reactive and proactive aggression (Poulin & Boivin, 2000; Schwartz, Dodge, Coie, Hubbard, Cillessen, Lemereise, & Bateman, 1998). According to these authors, reactive aggression can be defined as an affective, defensive, impulsive, and hostile response to an actual or perceived threat or provocation. In contrast, proactive aggression is described as an instrumental, offensive, non-provoked, and aversive act aimed at influencing or dominating others. Although, these two aggressive dimensions have been found to be highly correlated in previous studies (e.g., Dodge & Coie, 1987), the discriminant validity of reactive and proactive aggression on a factorial level has been demonstrated (Poulin & Boivin, 2000). Further evidence for the concurrent discriminant validity of these two aggressive subtypes has been found with regard to social cognitive and behavioral correlates. For example, in an investigation with preadolescent boys, Poulin and Boivin (2000) showed that the display of reactive aggressive behaviors was related to a host of social and behavioral difficulties including negative social status and victimization. In contrast, the display of proactive aggressive behaviors was linked to positive peer status and was not associated with peer victimization. Likewise, Schwartz and colleagues (1998) demonstrated, in a sample of 8 year-old boys, that reactive aggression was positively associated with hostile attributional tendencies and peer victimization. Proactive aggression, however, was not correlated with victimization and was positively related to positive outcome expectancies and assertive social behavior. These findings suggest that these two subtypes of aggression differ considerably with respect to social adjustment outcomes in general and peer victimization in particular. Notably, in both of the aforementioned studies the differential relations between reactive and proactive aggression and victimization were examined using male samples only. Recent findings by Salmivalli and

Niemenen (2002) suggest, however, that the differential links between reactive and proactive aggression and victimization may be true for both boys and girls.

*Friends' characteristics as a moderator of the link between reactive aggression and victimization*

Related to the question of whether reactive aggression contributes to the risk of victimization is the question of whether there are protective factors that may help reduce this risk. Recent investigations suggest that reciprocated friendships may play an important moderating role in the relation between children's behavioral risk and peer victimization. For example, a study of fourth and fifth graders by Hodges and colleagues (Hodges, Boivin, Vitaro, & Bukowski, 1999) revealed that having a reciprocal best friend significantly reduced the likelihood of being victimized over a one-year period. Moreover, for children with a best friend, the degree to which this friend came to the rescue during attacks moderated the link between internalizing problems as a risk factor of victimization, on the one hand, and actual victimization experiences, on the other hand. Another study by Hodges and colleagues (Hodges et al., 1997) showed that when behaviorally at-risk children have friends who have internalizing problems, who are physically weak, or who are themselves victimized, the relation between children's behavioral difficulties and peer victimization is exacerbated. In contrast, the relation of children's behavioral risk to victimization is weaker when children have friends who do not display such vulnerabilities. Similarly, in their investigation with preadolescent boys and girls, Pellegrini and colleagues (1999) demonstrated that having victims as friends does not provide protection against peer aggression. Their results also showed, however, that having friends who are bullies does seem to provide effective protection from victimization.

Taken together, these findings suggest that the extent to which having friends protects behaviorally vulnerable children against attacks from hostile peers is largely

dependent upon the friends' capability to successfully buffer or defend from potential victimizers. With the exception of the study by Hodges and colleagues (1999), however, the few studies investigating the moderating effects of friends' characteristics on victimization have mainly focused on the friends' negative attributes, with little attention paid to friends' positive attributes. It seems plausible that friends' positive characteristics may also protect children at risk of victimization. Specifically, friends who display prosocial behaviors may be able to successfully defuse or prevent potential attacks by peers because they are well equipped to negotiate difficult social situations. Prosocial behavior, globally defined as voluntary behavior intended to benefit others, has been linked to a host of psychosocial adjustment indices, including social competence with peers, good interactional skills, constructive conflict resolution abilities, altruism, empathy, and optimal emotional regulation (e.g., Eisenberg & Fabes, 1998; Eisenberg, Fabes, Karbon, Murphy, Wosinski, Polazzi, Carlo, & Juhnke, 1996). As such, children at risk for peer victimization may benefit from having prosocial friends in several important ways. On the one hand, prosocial friends may provide direct and tangible help in potentially problematic or threatening peer situations by providing skillful and adaptive strategies to resolve the conflict and defuse the risk of further escalation. Alternatively, prosocial friends may provide vulnerable children with unique opportunities to learn and develop appropriate social skills and regulatory capacities, which, in turn, reduce the likelihood of peer maltreatment. These adaptive provisions may particularly benefit reactively aggressive children who are prone to the display of hot-tempered and dysregulated behavioral reactions to provocative or threatening situations. To shed light on this issue, the first goal of the present study was to examine whether reciprocal friends' prosocial behavior moderates the relation between a child's reactive aggression and peer victimization.

*Sibling's characteristics as a moderator of the link between reactive aggression and victimization*

Another aspect of children's social network relationships that has received very little attention in regard to victimization is kinship. The scarcity of research investigating the potential influence of kinship on children's risk of victimization is surprising in light of evidence that friendships and sibling relationships provide children with comparable social benefits, including emotional support, security, companionship, cooperation, competitiveness, and the sharing of mutual experiences (Buhrmester, 1992; Buhrmester & Furman, 1987; East & Rook, 1992). Indeed, evidence suggests that sibling relationships – similar to friendship relations - have a bearing on children's social adjustment among peers. For example, a high level of warmth in children's sibling relationship has been associated with positive peer outcomes, including positive social status and low rates of victimization in a sample of 8-13 year-old boys and girls. In contrast, a high level of conflict in the sibling relationship has been linked to poor peer relations (Lockwood, Kitzmann, and Cohen, 2001). Similarly, a study by Stormshak, Bellanti, and Bierman (1996) conducted with behaviorally aggressive 6 year-old boys and girls showed that children who engaged in conflictual sibling relationships (i.e., high level of conflict and low level of warmth) are more disliked by peers compared to children whose sibling relationships were described as involved (i.e., moderate levels of warmth and conflict) or supportive (i.e., low level of conflict and high level of warmth). In addition to sibling relationship quality, empirical evidence suggests that siblings' characteristics exert a unique influence on children's individual adjustment. Indeed, studies examining the effect of siblings' negative attributes on children's social adjustment show that having an antisocial brother or sister predicts children's concurrent and later delinquent behavior even after controlling for the effects of other social factors such as parental and peer influences (e.g., Slomkowski, Rende, Conger, Simons, Conger, 2001; Stormshak, Comeau, & Shepard, 2004). What has not been investigated, however, is

whether sibling's positive characteristics have an effect on children's peer relations, notably their risk of victimization by peers. More specifically, do siblings' prosocial characteristics protect against the risk of victimization in a similar way that friends' prosocial characteristics do? At least theoretically, it is possible that a prosocial sibling may buffer vulnerable children from the risk of victimization through similar mechanisms as friends, e.g., by providing help or by modelling prosocial problem solving behaviors. To address this question, the second goal of the present study was to examine whether sibling's prosocial behavior moderates the relation between the target child's reactive aggression and victimization.

To summarize, the goals of the present study were to investigate (a) whether reciprocal friends' prosocial behavior moderates the relation between a child's reactive aggression and peer victimization, and (b) whether sibling's prosocial behavior moderates the relation between a child's reactive aggression and peer victimization. It was hypothesized that the link between a child's reactive aggression and victimization would be weak at a high level of friends' prosocial behavior, whereas this relation should be strong at a low level of friends' prosocial behavior. Similarly, it was expected that the relation of a child's reactive aggression to victimization would be weak at a high level of sibling's prosocial behavior, whereas this association should be strong at a low level of sibling's prosocial behavior. Given that more boys than girls are aggressive victims (e.g., Perry et al., 1988), potential moderating effects involving sex were tested, although no specific sex difference in the link between reactive aggression and victimization was expected. In addition, because sibling research consistently shows that the sex composition of the dyad (i.e., same-sex versus mixed-sex) influences the quality of the sibling relationship and the behavior of siblings toward one another (e.g., Buhrmester, 1992; Buhrmester & Furman, 1987), the moderating effect of the dyadic sex composition was examined.

The goals of the present study were investigated using a sample of twins who are raised together. Compared to other sibling dyads, twin dyads possess several

structural characteristics that make them more similar to friendship dyads. First, both members of the twin dyad are the same age, thus adding an egalitarian component to the sibling relationship that is not present in other non-twin sibling relationships. Likewise, children and their friends are concordant in age (Hartup, 1970; Ladd, 1983). In addition, young twin pairs often share the same school if not the same classroom, and children also often select friends within the same classroom or grade level even when friendship nominations outside the classroom are possible (Epstein, 1983; Kupersmidt, Burchinal, & Patterson, 1995). Importantly, empirical evidence suggests that the nature of twins' peer relations (e.g., number of friends) does not differ from that of non-twin children (Koch, 1966; Thorpe, 2003). The developmental significance of twins' peer relationships has not been systematically investigated, however. Thus, the extent to which friendship relations have a similar impact on twin children's social adjustment relative to their non-twin counterparts remains unknown. Notably, a recent study by Pulkkinen and colleagues (2003) showed that twin children did not differ from singletons with respect to internalizing and externalizing behavior problems as rated by their peers. Their findings did, however, reveal that twins had higher rates than non-twin children on a global score of peer-nominated socially active behaviors (i.e., leadership, popularity, and interactions with other children). The twin sample was assessed at six years of age, i.e., when they were in kindergarten. The vast majority of previous studies investigating the factors that may protect children against the risk of peer victimization have been conducted with children in middle grade school years (e.g., Hodges et al., 1999; Pellegrini et al., 1999). However, given the importance of early identification of risk and protective factors of peer victimization for prevention and intervention, it seems important to focus on the period when stable peer victimization experiences start to emerge i.e., kindergarten (Kochenderfer & Ladd, 2001).

## Method

### *Sample*

Participants for the present study were part of an ongoing longitudinal study (Quebec Newborn Twin Study, QNTS) of a population based twin sample from the greater Montreal area who were recruited at birth between November 1995 and July 1998 ( $N = 322$  twin pairs). For the same-sex twin pairs ( $n = 237$ ), zygosity was assessed at 18 months based on physical resemblance via the Zygosity Questionnaire for Young Twins (Goldsmith, 1991) and via DNA tests for 30 % of the population for whom the zygosity questionnaire was inconclusive. The average yearly household income (54000 \$ CAN) in the twin sample was slightly above the national average for couples with children. However, a comparison of family characteristics of this sample at 5 months of age with an epidemiological sample of singletons from the Montreal and Quebec City area indicated that the samples were very similar in terms of parental education, yearly income, age of parents at birth of children and marital status.

The sample was followed longitudinally at 5, 18, 30, 48, and 60 months focusing on a variety of child-related and family-related characteristics. A sixth wave of data collection was completed at six years of age (kindergarten) to assess children's social adaptation in school. The present paper describes findings from this latest wave of data collection, which took place in the spring of the kindergarten year. The average age of assessment was 72.7 months (3.6 SD). Members of the twin dyad always frequented the same school and 64 dyads (26 %) shared the same classroom. Attrition in the sample averaged at approximately 5 % per year, resulting in a total of 246 twin pairs for the data collection at age 6 years, 98 identical twins and 148 fraternal twins (76 same-sex fraternal pairs, 72 mixed-sex fraternal pairs). Overall, there were 246 boys and 246 girls in the study sample. Participants remaining in the

study at 6 years of age did not differ from those lost in regard to zygosity status, family status, parent-rated temperament, and mother's level of education at 5 months of age. However, fathers in the remaining study sample had a slightly higher level of education than fathers of the participants who were lost from the study.

### *Measures and procedure*

All instruments were administered in either English or French, depending on the language spoken by the kindergarten teachers (see descriptions of measures below). Following a procedure suggested by Vallerand (1989), instruments that were administered in French but were originally written in English were first translated into French and then translated back into English. Bilingual judges verified the semantic similarity between the back-translated items and the original items in the questionnaire. The research questions and instruments were approved by the IRB and by the school board administrators. Prior to data collection, active written consent from parents was obtained. Data collection took place in the spring of the kindergarten year, to ensure that the children and teachers had become familiar with each other. The sociometric procedure took approximately 45 minutes per class. Children were encouraged not to share their responses with each other. In the same week, teachers completed the behavioral questionnaire for the target child and his or her three nominated friends and returned them by mail.

*Peer victimization.* The extent to which a child was perceived by his or her classmates as being victimized by peers was assessed using two items selected from the Victimization subscale of the modified Peer Nomination Inventory (Perry et al., 1988): "He/she gets hit and pushed by other kids" and "He/she gets called names by other kids". The Victimization subscale of the modified Peer Nomination Inventory has been shown to have good predictive validity and test-retest reliability. Although only two items were used, single-item peer nomination assessments tend to be highly

reliable because the scoring of each peer nomination item is generated on the basis of multiple respondents (e.g., Hodges et al., 1997; Perry et al., 1988).

Booklets of photographs of all children in a given class were handed out. Two research assistants ensured that all children recognized the photos of all their classmates by presenting them individually. The children were then asked to circle the faces of three children who best fit each of the two behavioral descriptors. For each behavioral descriptor, the total number of received nominations was calculated for each twin and  $z$ -standardized within each classroom to account for differences in classroom size. The two item scores were then summed up to yield a total victimization score ( $M = -.13$ ,  $SD = .84$ ). The internal consistency for the total victimization scale was moderate in the present sample with Cronbach's alpha = .54. The moderate overlap between the two victimization items most likely reflects the inherent nature of different forms of peer victimization (i.e. verbal and physical). Indeed, previous investigators have reported distinct factors for separate subtypes of peer victimization (e.g., Wolfe, Woods, Bloomfield, & Karstadt, 2000). Thus, some children may experience either verbal or physical harassment, whereas others may experience both. However, our interest in the present study was to capture a broad assessment of diverse forms of peer victimization.

*Reciprocal friendship.* Children were asked to nominate up to three friends in the classroom. For twins who shared the same class ( $n = 64$  pairs), it was specified that a sibling could not be nominated as a friend. Children were considered to have a best friend if a nominated friend also nominated them among his or her three friends. In this sample, 348 children (70.7 %) had at least one reciprocated friend. Children with reciprocal friends in our sample did not significantly differ from those without reciprocal friends with respect to child sex, zygosity status, sex composition of the sibling dyad, or mean levels of reactive and proactive aggression, prosociality and victimization. Of the 348 children with reciprocal friends, 293 (84.2 %) had only same-sex friends whereas 55 (15.8 %) had at least one opposite-sex friend.

*Reactive and proactive aggression.* Kindergarten teachers rated the children's level of reactive and proactive aggression using 6 items developed by Dodge & Coie (1987). This instrument has been shown to have good concurrent discriminant validity of the two types of aggression in previous studies (e.g., Dodge & Coie, 1987; Poulin et Boivin, 2000). In regard to reactive aggression, the teachers indicated to what extent the child "reacts in an aggressive manner when teased", "when somebody accidentally hurt him/her (such as by bumping into him/her), he/she reacts with anger and fighting", and "reacts in an aggressive manner when something was taken away from him/her". A fourth reactive aggression item was added to the original scale by Dodge & Coie (1987); "reacts in an aggressive manner when contradicted". This item was added to assess the extent to which children behave reactively aggressive even in a rather benign, less provocative context. In regard to proactive aggression, the teachers indicated to what extent the child "tries to dominate the other children", "scares other children to get what he/she wanted", and "encourages other children to pick on a particular child". Responses were given on a 3-point scale (0 = never, 1 = sometimes, 2 = often). For each type of aggression, the respective scores were averaged to yield a total reactive aggression score ( $M = 1.32$ ,  $SD = 1.94$ ), and a total proactive aggression score ( $M = .69$ ,  $SD = 1.14$ ). Internal consistency of the total scales was acceptable in the present sample with Cronbach's alpha = .88 for teacher-rated reactive aggression, and Cronbach's alpha = .72 for teacher-rated proactive aggression.

*Prosociality.* Kindergarten teachers rated children's and their friends' level of prosociality using the Preschool Social Behavioral Questionnaire (PSBQ; Tremblay, Vitaro, Gagnon, Piché, & Royer, 1992). The PSBQ has been shown to have good predictive validity, test-retest reliability and was specifically designed for children in kindergarten through grade two (Tremblay et al., 1992). The PSBQ comprises three scales: Disruptive behavior (13 items), anxious behavior (6 items) and prosocial behavior (10 items). For the purpose of the present study, only the prosocial behavior scale was utilized. Specifically, teacher-rated prosociality was assessed using an

abbreviated version of the prosocial scale, which included 6 items: “tries to stop a quarrel or a dispute”, “invites a child to join a game”, “tries to help someone who has been hurt”, “comforts a child who is crying or upset”, “helps other children who are feeling sick”, and “volunteers to clean up a mess that someone else has made”. In regard to friends’ prosociality, teacher-ratings were based on 2 items: “tries to stop a quarrel or a dispute”, and “invites a child to join a game”. This reduction in the number of items was necessary to reduce teacher’s workload and avoid the risk of nonparticipation. Responses were given on a 3-point scale (0 = never, 1 = sometimes, 2 = often). In order to be consistent across analyses regarding target children (i.e., siblings) and friends, analyses were conducted using a short prosociality scale, which included only the two prosociality items for which equivalent teacher-ratings were obtained for both the target children and their friends (i.e., “tries to stop a quarrel or a dispute”, and “invites a child to join a game”). A total prosociality score was computed for each child by averaging across the two item scores ( $M = .69$ ,  $SD = .51$ ). Internal consistency for the abbreviated prosociality scales was acceptable with Cronbach’s alpha = .61. The correlation between the full and abbreviated prosociality scales in the sibling sample was  $r = .82$ ,  $p < .001$ . A total friend prosociality score was computed by calculating the mean across the two item scores for each reciprocal friend and then averaging across reciprocal friends’ scores ( $M = 1.82$ ,  $SD = .48$ ). Notably, additional analyses conducted with the full 6 item-scale for the target children yielded similar results as with the reduced scale. The only exception was that a significant bivariate correlation was found between the target children’s own prosociality based on the full 6 item-scale and victimization ( $r = -.09$ ,  $p < .05$ ), which was not observed between the reduced scale and victimization (see results below).

## Results

### *Preliminary Analyses*

Preliminary analyses had shown no significant difference between identical twins and fraternal twins with respect to victimization. However, weighted factorial ANOVAs with sex composition of the dyad (same-sex vs. mixed-sex) and sex as independent variables revealed that children in mixed-sex sibling dyads were more victimized than those in same-sex sibling dyads,  $F(1, 243) = 5.05, p < .05$ , and boys were more victimized than girls,  $F(1, 243) = 4.93, p < .05$ , although no significant interaction between child sex and sex composition of the sibling dyad was found.

Table 1 presents the bivariate intraclass correlations among the measures for the whole sample. As shown, reactive and proactive aggression were highly correlated, replicating findings from previous studies (e.g., Dodge & Coie, 1987; Poulin & Boivin, 2000). As expected, reactive aggression was positively associated with victimization. At least on the bivariate level, proactive aggression was also positively related to victimization. As shown in subsequent regression analyses, however, this latter finding is due to the strong overlap between reactive and proactive aggression. Lastly, child's prosociality was positively associated with friends' prosociality. Bivariate intraclass correlations that did not include sex were also computed separately for boys and for girls. These correlations were then transformed into Fisher-z scores and corresponding correlations were compared across sex via z-tests. None of these correlations was significantly different for boys and for girls.

#### *Associations Between Children's Behavioral Characteristics, Reciprocal Friends' Prosociality and Victimization*

*Analytical rationale.* In the first set of analyses, it was examined whether reactive aggression but not proactive aggression uniquely predicted victimization, and whether reciprocal friends' prosociality moderated the link between a child's reactive aggression and peer victimization. In these analyses, only children with reciprocal friends were included. Multilevel modeling with the PRELIS 8.52 statistical package

(Jöreskog, Sörbom, du Toit, & du Toit, 2000) was used for the analysis of our hierarchically structured data. In a two-level model, a hierarchy consists of lower-level observations (i.e., level 1 unit of analysis) nested within higher-level observations (i.e., level 2 unit of analysis). In the context of the present study, each individual child is nested within a sibling pair. It is assumed that observations across pairs are independent from one another. However, because siblings within a given pair share genetic and environmental factors, observations within a given pair are interdependent, thus violating the assumption of independent observations in traditional linear models. Multilevel models allow for the estimation of within-pair and between-pair effects while simultaneously adjusting for the amount of data interdependency. In the present study, the level 1 unit of analysis represents each individual child, whereas the level 2 unit of analysis represents each individual sibling pair. The level 1 variance estimates describe the degree to which siblings within a pair differ from each other (i.e., within-pair variance), whereas the level 2 variance estimates indicate the degree to which sibling pairs differ from one another (i.e., between-pair variance) with respect to the dependent variable (i.e., victimization). Child-specific predictors (i.e., independent variables) are included in multilevel analyses as fixed effects. The fixed effect estimates provide information about the unique link between each child-specific predictor and the dependent variable and can be interpreted in a similar way as regression coefficients in a multiple regression.

*Model testing steps.* A series of subsequent models of increasing complexity were fitted to the data to examine the predictive effect of reactive aggression on victimization and the moderating effect of reciprocal friends' prosociality in this context. Each model was compared to the preceding one to evaluate whether the inclusion of additional predictors provided a better fit to the data. Goodness of fit for each model was evaluated based on the  $-2\log$  likelihood estimate and a likelihood ratio test was used to evaluate the difference in fit between subsequent models. Table

2 presents the results from the multilevel analyses. For each model, the fixed effects of the predictor variables, the level 1 and level 2 variance parameters, the model fit (i.e.,  $-2\log$  likelihood), and the likelihood ratio are provided.

The first model tested was an unconditional model, without including any predictors. The unconditional model provided preliminary information about the total within-pair (i.e., level 1) and between-pair (i.e., level 2) variance of victimization. As can be seen in Table 2, the variance estimates in model 1 (i.e., unconditional model) showed that 84 % of the total variance of victimization was attributable to within-pair differences whereas 16 % of the variance was explained by between-pair differences.

In the second model, level 1 (i.e., child-specific) predictors were added to the equation as fixed effects. The fixed effects provided estimates of the unique link between each predictor and victimization. These predictors included Child Sex, Sex Composition of the Dyad (same-sex versus mixed-sex), Child's Reactive Aggression, Child's Proactive Aggression, Child's Prosociality and Reciprocal Friends' Prosociality. To facilitate the interpretation of results, the dependent variable and all continuous independent variables were  $\bar{z}$ -standardized and the  $\bar{z}$ -standardized variables were used in the analysis. As indicated by the likelihood ratio test shown in Table 2, the addition of the predictors in model 2 significantly improved model fit compared to the unconditional model,  $p < .001$ . Among the six predictors entered into the equation, three predictors were significantly associated with victimization. Specifically, boys were more victimized compared to girls,  $b = -.20$ ,  $p < .05$ , and mixed-sex siblings were more victimized than same-sex siblings,  $b = .15$ ,  $p < .01$ . There was also a significant main effect of reactive aggression on victimization,  $b = .29$ ,  $p < .001$ . Proactive aggression, however, was not uniquely associated with victimization, nor were own and friends' prosociality. Overall, the addition of the predictors in model 2 reduced the total (i.e. unexplained) within-pair variance by 4 % ( $.84 - .81 / .84 = .04$  or 4 %), whereas the proportion of between-pair variance

dropped by 100 % ( $.16 - 0 / .16 = 1$  or 100 %) (see, e.g., Jenkins, Rasbash, & O'Connor, 2003 for similar calculations of variance differences between models).

In model 3, it was examined whether reciprocal friends' prosociality moderated the link between reactive aggression and victimization. For this purpose, a two-way interaction term "Child's Reactive Aggression X Reciprocal Friends' Prosociality" was added to the model. In addition, a second two-way interaction term "Child's Reactive Aggression X Child's Prosociality" was included to test whether the expected moderating effect was really due to the reciprocal friend's prosociality and not due to the child's own prosocial behavior. As shown in Table 3, significant interaction effects were found for both "Child's Reactive Aggression X Reciprocal Friends' Prosociality",  $b = -.10$ ,  $p < .05$ , and "Child's Reactive Aggression X Child's Prosociality",  $b = -.12$ ,  $p < .05$ . The likelihood ratio test indicated that the overall model fit was improved compared to the previous model,  $p < .01$ . Moreover, the addition of the two two-way interaction terms further reduced the within-pair variance by 2 %.

The nature of the two interactions was examined separately following a procedure for interaction terms involving continuous moderator variables described by Jaccard, Turrisi, & Wan (1990). First, the relation between child's reactive aggression and victimization was examined at three levels of reciprocal friends' prosociality: low (= 1 SD below the mean), medium (= at the mean), and high (= 1 SD above the mean). The fixed effect of child's reactive aggression at a medium level of reciprocal friends' prosociality was  $b = .29$ ,  $p < .001$ , indicating that reactive aggression was positively related to victimization when reciprocal friends' prosociality was moderate. When reciprocal friends' prosociality decreased by one standard deviation (i.e., when reciprocal friends' prosociality was low) the relation between child's reactive aggression and victimization was even stronger,  $b = .35$ ,  $p < .001$ . However, when reciprocal friends' prosociality increased by one standard deviation (i.e., when reciprocal friends' prosociality was high) the relation between a

child's reactive aggression and victimization was weak and no-longer statistically significant,  $b = .14$ , n.s.

Next, the relation between reactive aggression and victimization was examined at low, medium, and high levels of child's prosociality (as described above). The fixed effect of reactive aggression at a medium level of child's prosociality was  $b = .29$ ,  $p < .001$ , indicating that reactive aggression was positively related to victimization when child's prosociality was moderate. When child's prosociality decreased by one standard deviation, the relation between child's reactive aggression and victimization was even stronger,  $b = .37$ ,  $p < .001$ . However, when child's prosociality increased by one standard deviation, the relation between a child's reactive aggression and victimization was weak and no-longer statistically significant,  $b = .12$ , n.s.

*Testing moderating effects of sex.* It was also tested whether sex moderated the links observed in the preceding models. For this purpose, three interaction terms (Child Sex X Child's Reactive Aggression, Child Sex X Friends' Prosociality, and Child Sex X Child's Reactive Aggression X Friends' prosociality) were added to the equation as fixed effects in an initial fourth model. None of these interactions reached statistical significance. In an alternate fourth model, three other interaction terms (Child Sex X Child's Reactive Aggression, Child Sex X Child's Prosociality, and Child Sex X Child's Reactive Aggression X Child's prosociality) were added to the equation as fixed effects. Again, none of these interactions reached statistical significance.

#### *Does Sibling's Prosociality Moderate the Link Between a Child's Reactive Aggression and Victimization in a Similarly Way that Friendships Do?*

To investigate this question, data for the whole sample (i.e., children with and children without reciprocal friends) was transposed in order to obtain two

independent sets of measures for each individual child (i.e., one set of measures for one sibling and another set of measures for the other sibling in a given pair). One of the two siblings in a pair was then designated as the target child for the purpose of the analyses. Sibling correlations for the behavioral characteristic and victimization measures are provided in Table 3. These values represent the within-pair correlations (or intraclass correlations) for the behavioral characteristic and victimization measures, respectively. As can be seen, there was a consistent pattern of moderate within-pair correlations for all measures.

A hierarchical multiple linear regression analysis was then conducted in which target child victimization was the criterion. Child Sex, Sex Composition of the Sibling Dyad, Target Child's Reactive Aggression, Proactive Aggression, and Prosociality as well as Sibling's Prosociality were entered on the first step. In addition, because not all siblings in a pair shared the same classroom, a variable indicating whether siblings were in the same classroom or not was included to examine whether this aspect influenced the prediction of victimization. On the second step of the regression, two two-way interaction terms, "Target Child Reactive Aggression X Sibling Prosociality" and "Target Child Reactive Aggression X Target Child Prosociality" were included in the model. To facilitate interpretation, the dependent and all continuous independent variables were z-standardized prior to creating the interaction terms and the z-standardized variables were used in the analysis. Table 4 presents the results from the hierarchical multiple regression analysis. For each step of the regression analysis, the F-change, the change in  $R^2$ , the standardized regression coefficients, and the corresponding t-values are provided.

Together, the predictors in the first step of the model explained 23 % of the variance of target child's victimization. Boys were more victimized than girls,  $b = -.26$ ,  $p < .05$ , and children in mixed-sex sibling dyads were more victimized than children in same-sex sibling dyads,  $b = .33$ ,  $p < .01$ . The main effect of siblings sharing the same class was not significant ( $b = -.09$ , n.s.), indicating that children

with a sibling in the same classroom did not differ from those whose sibling was in a different class in regard to level of victimization. As expected, reactive aggression, but not proactive aggression, contributed uniquely to the prediction of victimization,  $b = .35, p < .001$ , replicating the results obtained in the previous set of analyses. Together, the two interaction terms entered in the second step explained an additional 3 % of the variance of target child's victimization, but only "Target Child Reactive Aggression X Sibling Prosociality" showed a significant interaction effect,  $b = -.13, p < .05$ . This two-way interaction was broken down following the procedure for continuous moderator variables described by Jaccard et al. (1990). Specifically, the predictive relation of target child's reactive aggression to victimization was examined at three levels of sibling's prosociality: low (= 1 SD below the mean), medium (= at the mean or 0), and high (= 1 SD above the mean). The regression coefficient for target child reactive aggression at a medium level of sibling's prosociality was  $b = .37, p < .001$ , indicating that target child's reactive aggression significantly predicted victimization when sibling's prosociality was moderate. When sibling's prosociality decreased by 1 SD (i.e., when sibling's prosociality was low), the relation between target child reactive aggression and victimization was even stronger,  $b = .52, p < .001$ . In contrast, when sibling's prosociality increased by 1 SD (i.e., when sibling's prosociality was high), the relation between target child reactive aggression and victimization was considerably weaker although still significant,  $b = .22, p < .05$ .

*Test of moderating effects of sex, of being in the same classroom, and of sex composition of the sibling dyad.* Additional hierarchical linear regression analyses were performed to examine whether the main effect of reactive aggression on victimization and the moderating effect of sibling's prosociality in this context differed as a function of (a) sex, (b) the siblings' being in the same classroom or not, or (c) the sex composition of the dyad. Only the interaction term "Sex X Reactive Aggression" was significant,  $b = -.30, p < .05$ . Follow-up analyses using the

procedure for dichotomous moderator variables described by Jaccard et al. (1990) revealed a main effect of reactive aggression on victimization for both boys and girls, but the link between reactive aggression and victimization was stronger for boys,  $b = .52, p < .001$ , than for girls,  $b = .22, p < .05$ . Neither the fact of the siblings' being in the same class or not nor the sex composition of the dyad significantly moderated any of the observed links.<sup>1</sup>

## Discussion

The present study examined whether children's behavioral vulnerability would be differentially related to peer victimization depending on their reciprocal friends' prosocial behaviors and their sibling's prosocial behavior, respectively. In line with previous findings, it was assumed that peer victimization would be uniquely predicted by a child's reactive aggression but not by his or her proactive aggression. Based on the notion that friends' characteristics may serve an important protective function against peer maltreatment, it was hypothesized that the link between a child's reactive aggression and victimization would be moderated by his or her reciprocal friends' prosocial behavior. It was also hypothesized that sibling's prosocial behavior would mitigate the link between a child's reactive aggression and victimization in a similar way that friends' prosocial characteristics do.

In accordance with previous findings (Poulin & Boivin, 2000; Schwartz et al., 1998), the results of the present study indicated that reactive aggression but not proactive aggression uniquely predicted a child's risk of peer victimization. These findings are in line with the notion that proactive aggression, which is defined as deliberate and instrumental, does not seem to be associated with peer harassment. In contrast, reactive aggression, characterized by impulsive, irritable, and emotionally dysregulated behaviors does seem to uniquely predict victimization by peers. As

noted by several other authors (e.g., Olweus, 1978; Perry et al., 1988; Schwartz et al., 1997), reactively aggressive children may be particularly at risk for peer maltreatment because peers may view their dysregulated and hostile behavioral style as aversive and provocative. Alternatively, these children may exhibit overly reactive and aggressive responses to perceived threats or provocations as a way to defend or protect themselves from potential victimizers. However, these aggressive retaliatory responses do not seem to be effective in countering peer provocations or attacks, but in contrast seem to foster hostile interactions with peers. In line with this notion, Kochenderfer and Ladd (1997) showed that fighting back, as a response to peer provocations, is associated with increased aggressive interactions with peers and continued victimization over time. Importantly, in accordance with findings by Salmivalli and Nieminen (2002), results from the present study showed that the link between reactive aggression and victimization is true for both boys and girls, although the regression analyses performed on the sibling data suggest that this link may be stronger for boys than for girls. This moderating effect of sex was not observed in the multilevel friend analyses, however. As such, the findings regarding a potentially stronger link between reactive aggression and victimization for boys remain tentative and await further investigation. Interestingly, the fact that the child's own prosocial behavior did not have a significant main effect on victimization, which is in line with recent findings by Persson (2005), suggests that a lack of positive behavior in and of itself may not put children at risk of peer harassment. Instead, it seems to be the presence of negative behavior such as reactive aggression that acts as a risk factor in this context. However, the display of prosocial behavior, both in the children themselves and the friends or siblings, may protect against victimization in at-risk children.

Consistent with recent investigations on the protective effect of friendship (e.g., Hodges et al, 1997; Hodges et al, 1999; Pellegrini et al, 1999; Schwartz et al, 1999), the findings from this investigation lend support to the notion that friends may

serve to protect behaviorally at-risk children from peer victimization. More specifically, the present results suggest that friends' prosocial behavior may play a crucial role in mitigating vulnerable children's risk of being targeted for peer aggression. When reactively aggressive children had friends characterized by a low level of prosocial behavior, the link between reactive aggression and victimization was rather strong. In contrast, when these children had friends characterized by a high level of prosocial behavior, the child's own reactive aggression was no longer predictive of victimization. These findings are important because they provide initial empirical support for the idea that friends' positive attributes may serve a protective function by reducing a vulnerable child's risk of peer victimization.

There are several ways through which prosocial friends can decrease a child's risk of victimization. One way may be through their ability to successfully negotiate conflictual peer situations. Indeed, prosocial children have been found to possess good interactional skills and display constructive strategies to resolve problematic social situations (Eisenberg et al, 1996). When reactively aggressive children become engaged in problematic exchanges with peers, prosocial friends may provide direct and tangible help by facilitating the resolution of the conflict situation and reducing the risk of further escalation. Another possibility is that through their interaction with prosocial friends, children with behavioral vulnerabilities learn and develop more adaptive ways to interact with peers, consequently reducing the risk of peer rebuff and victimization. Consistent with this notion, Newcomb and Bagwell (1996) contend that positive friendship relations provide a context for altering problematic behavioral tendencies in children. As such, reactively aggressive children who are prone to the display of impulsive and emotionally dysregulated behaviors may greatly benefit from their association with friends who exhibit highly adaptive social functioning. Some, albeit indirect support for this notion may be provided by the present finding that, similar to friend's prosociality, the display of own prosocial behavior also helped buffer the risk of victimization for reactively aggressive children. However,

given the cross-sectional nature of our correlational data, it is not possible to determine whether friends' prosocial behavior can really increase the child's own prosocial behavior or decrease the child's reactive aggression. Clearly, further research is needed to shed light on the specific mechanisms through which prosocial friends may protect children at risk for victimization. Nevertheless, the present findings offer an important new perspective on the role friends may play in countering peer victimization.

A similar pattern of results was found with respect to sibling's prosociality. Under conditions of moderate to low levels of sibling's prosociality, a child's reactive aggression predicted peer victimization. When sibling's level of prosociality was high, however, a child's reactive aggression was less predictive of victimization. These findings are consistent with the notion that sibling's characteristics may provide protection against the risk of victimization much like friends' characteristics do. Notably, although the link between a child's reactive aggression and victimization was still significant at a high level of sibling's prosocial behavior, it cannot necessarily be concluded that siblings are less effective than friends in providing protection from victimization because the degree of association between reactive aggression and victimization at high levels of sibling's and friends' prosociality were fairly comparable.

In an attempt to explain how sibling relationships impact on children's social competence with peers, Lockwood and her colleagues (2001) speculate that children involved in positive sibling relationships may develop positive expectancies about relationships, which, in turn, translate into more positive peer interactions. In line with this notion, Stormshak and colleagues (1996) demonstrated that aggressive children involved in supportive sibling relationships display better social competence with peers compared to those engaged in less supportive or conflictual sibling relationships. These authors also proposed that supportive sibling relationships might have a buffering effect on children's behavior problems through the enhancement of

children's coping skills and emotion regulation capacities. In light of these findings, it may be that through their frequent interaction with a highly socially skilled sibling, children with behavioral vulnerabilities develop more adaptive ways to interact with peers, which, in turn, decreases the likelihood of peer victimization. Notably, although the target child's own prosocial behavior did not provide a buffering effect against victimization in the sibling analyses in a similar way as in the friend analyses, it may be premature to conclude that no such effect exists. Indeed, the confidence interval of the interaction "Target Child Reactive Aggression X Target Child Prosociality" (-.21 - .05) included the estimated regression coefficient associated with the interaction "Target Child Reactive Aggression X Sibling Prosociality" ( $b = -.13, p < .01$ ). In other words, although only one of the two interaction terms reached statistical significance, the two coefficients do not significantly differ from each other. As such, we cannot entirely exclude the possibility that sibling's prosocial behavior might have a buffering effect against the risk of victimization through an enhancement of children's own prosociality. Another possible pathway for prosocial siblings' protective effect against victimization in at-risk children is that they may provide tangible help in potentially problematic peer situations by demonstrating skillful strategies to smooth over the conflict, in a similar way that prosocial friends might do.

Notably, siblings seemed to offer protective effects regardless of whether they were in the same class or not. Even siblings who were not in the same class frequented the same school, however. As such, our findings may be due to the fact that victimization occurs not so much in the classroom but mostly in other school venues (e.g., on the playground or in the cafeteria; Pellegrini & Long, 2002) where even siblings who do not share the same classroom can intervene in problematic peer situations. Continued research on the possible influence of sibling's characteristics on children's risk of victimization is necessary in order to broaden our understanding of how and why siblings may offer effective protection against peer maltreatment. In

addition, future research should investigate the possibility that children's sibling relationship quality may also play an important moderating role in the link between a child's behavioral vulnerability and peer victimization.

### *Limitations and conclusions*

Several limitations of the study deserve consideration, which may influence the interpretation of the present results. First, this study relied solely on concurrent measures, thus opening the door to alternative explanations regarding the direction of effects. For example, it is possible that children who are more victimized become more reactively aggressive as a response to peer harassment. As Berndt (1996) argued, however, traditional longitudinal designs may be problematic for investigating friendships in children. Because children's friendship network changes greatly from one year to the next, investigations over one or more school year(s) may actually result in researchers measuring the effects of friendships that have already ended. Short-term longitudinal designs (i.e., within the course of a school year) may provide a better option, but shortening the duration between assessments may greatly reduce the chances of detecting meaningful effects. Another limitation is the possibility that the findings derived from the present sample may not generalize to the general population including singletons. Given that children's behavioral characteristics were rated by teachers, who only evaluated the target children and their friends, it was not possible to examine potential behavioral differences between the twins and other classmates. Nevertheless, other studies have shown no difference between twin samples and singleton samples with respect to behavior problems and personality (e.g., Gjone & Novik, 1995; Pulkkinen et al., 2003). The average level of victimization for the children in this sample, however, was lower than their respective classroom mean. This finding may be explained by the fact that the presence of a sibling in the same school, similar to the presence of a friend (e.g., Hodges et al., 1999), can in itself decrease the likelihood of being a target of peer aggression.

Alternatively, in light of recent findings by Pulkkinen and colleagues (2003), twinship may provide children with unique adaptive social provisions, which, in turn, may reduce their risk of victimization. This particularity of the twin sample may also explain why friendless children did not differ from friended children on the level of victimization in the present study. It should be kept in mind, however, that most of the patterns found in this study are comparable to those observed in other studies based on singleton samples.

A related issue concerns the fact that the investigation of twin dyads may limit the generalization of the present findings to other, non-twin sibling dyads. Some evidence, albeit sparse, suggests that twin relationships are somewhat different from non-twin sibling relationships with respect to the degree of contact, intimacy, companionship, conflict, and support (Vandell, 1990). For example, in an investigation comparing school-age twin and non-twin sibling dyads matched on a variety of demographic variables, Koch (1966) found that twins spent more time together, were emotional closer, were less likely to be rivals, and were less jealous of one another compared to non-twin siblings. Nevertheless, research with preschool-aged twin pairs shows that the quality of the relationship between twins greatly varies from one dyad to the next (Robin, 1999), as is the case with all other types of sibling relationships. Moreover, a main interest in the present study was to focus on sibling dyads that are most likely to resemble friendship dyads on a number of features.

Finally, the limited number of children who had reciprocal friends of the opposite sex in the present study prevented the exploration of the possibility that the sex composition of the friendship dyad (i.e., same-sex versus mixed-sex friendship dyads) might influence the expected moderating effect of friend's prosociality on the link between reactive aggression and victimization. The findings regarding mixed-sex sibling dyads suggest that friends' protective effect might also generalize to mixed-sex friendship dyads, at least in kindergarten children. However, research on the dyadic sex composition in children's friendships consistently shows that cross-sex

affiliations become increasingly less frequent over the course of middle childhood (e.g., Buhrmester, 1992; Maccoby, 1988). As such, the pattern of results found in the present study might not generalize to older mixed-sex friendship dyads or even to older mixed-sex sibling relationships.

Despite these limitations, the present study offers a new perspective on the ways through which friends' and siblings' characteristics may protect children at risk for peer victimization. Indeed, the present results provide preliminary support for the notion that sibling's prosocial attributes may serve to protect children at risk for victimization in a similar way that friends' prosocial characteristics do. This finding also has some practical implications, as it suggests that preventive intervention efforts aimed at helping children at risk for peer maltreatment should encourage the development and maintenance of friendships with peers who possess characteristics that are most likely to convey protection from victimization. Moreover, for children who have siblings it may be fruitful to also include the sibling in the prevention program. The present findings also highlight the importance for future research to consider other close bonded relationships in children's social network - in addition to friendships - if we want to better understand how and under which conditions significant others may provide effective protection against victimization and ultimately put an end to vulnerable children's plight.

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## Footnote

<sup>1</sup> As previously mentioned, the overlap between the two items constituting the global victimization score was relatively modest. Therefore, additional analyses were performed to test whether the patterns of results with respect to the moderating effects of friends' or sibling's prosocial behavior would be only true for physical or verbal forms of victimization, respectively. Notably, results showed no clearly distinct pattern for physical and verbal victimization. Findings suggested, however, that the buffering effect of friends' prosocial behavior was especially pronounced for physical aggression whereas the buffering effect of sibling's prosociality was not more salient for one or the other form of victimization.

Table 1

*Bivariate Intraclass Correlations Among Measures for the Whole Sample (n = 246)*

Measures	1.	2.	3.	4.	5.	6.	7.
1. Child Sex <sup>a</sup>	—						
2. Sex Composition of the Sibling Dyad <sup>b</sup>	.00	—					
3. Child Reactive Aggression	-.07	.10	—				
4. Child Proactive Aggression	.00	.08	.64***	—			
5. Child Prosociality	.13*	-.03	-.00	.11	—		
6. Friends' Prosociality <sup>c</sup>	.11	-.06	.02	.10	.37***	—	
7. Victimization	-.15*	.14*	.40***	.31***	-.03	-.06	—

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls. <sup>b</sup> Sex Composition of the Dyad is coded so that a higher value (1) represents mixed-sex siblings. <sup>c</sup> n = 174 for correlations involving friends' prosociality. \* p < .05. \*\*\* p < .001.

Table 2

*Multilevel Analyses Predicting Peer Victimization (n = 348)*

Model	Predictor	Fixed effect (se)	Level 1 variance (se)	Level 2 variance (se)	-2log likelihood (df)	ΔLikelihood ratio (df)
1			.84 (.10)	.16 (.09)	983.94 (3)	
2			.81 (.09)	.00 (.07)	916.72 (9)	67.22*** (6)
	Child Sex <sup>a</sup>	-.20* (.10)				
	Sex Composition of the Sibling Dyad <sup>b</sup>	.15** (.05)				
	Child Reactive Aggression	.29*** (.06)				
	Child Proactive Aggression	.11 (.06)				
	Child Prosociality	.00 (.05)				
	Reciprocal Friends Prosociality	-.06 (.05)				
3			.79 (.09)	.00 (.07)	903.93 (11)	12.79 (2)
	Child Reactive Aggression X Reciprocal Friends Prosociality	-.11* (.05)				
	Child Reactive Aggression X Child Prosociality	-.12* (.05)				

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls. <sup>b</sup> Sex Composition of the Dyad is coded so that a higher value (1) represents mixed-sex siblings. Δ = Difference of model fit between consecutive models. Each model is tested against the respective preceding model.

\* p < .05. \*\* p < .01. \*\*\* p < .001.

Table 3

*Within-Pair Correlations Among Behavioral Characteristics and Victimization Measures (n = 246 sibling pairs)*

Measures	
Reactive Aggression Target Child / Sibling	.33**
Proactive Aggression Target Child / Sibling	.38**
Prosociality Target Child / Sibling	.28**
Victimization Target Child / Sibling	.22**

\*\*  $p < .01$ .

Table 4

*Hierarchical Multiple Linear Regression Predicting Peer Victimization (n = 246 sibling pairs)*

Step	Predictor	b	t	Model F	F change	R <sup>2</sup> change
1				10.17***	10.17***	.23
	Target Child Sex <sup>a</sup>	-.26*	-2.29			
	Siblings Share Same Class <sup>b</sup>	-.09	-1.33			
	Sex Composition of the Sibling Dyad <sup>c</sup>	.33**	2.63			
	Target Child Reactive Aggression	.35***	4.29			
	Target Child Proactive Aggression	.07	.88			
	Target Child Prosociality	-.02	-.34			
	Sibling Prosociality	.03	.44			
2				9.20***	4.68**	.03
	Target Child Reactive Aggression	-.13*	-2.37			
	X Sibling Prosociality					
	Target Child Reactive Aggression	-.08	-1.22			
	X Target Child Prosociality					

*Note :* <sup>a</sup> Sex is coded so that a higher value (1) represents girls. <sup>b</sup> Siblings Share Same Class is coded so that higher value (1) represents siblings who share the same class. <sup>c</sup> Sex Composition of the Dyad is coded so that a higher value (1) represents mixed-sex siblings. \* p < .05. \*\* p < .01. \*\*\* p < .001.

### CHAPITRE III

DO FRIENDS' CHARACTERISTICS MODERATE THE PROSPECTIVE LINKS  
BETWEEN PEER VICTIMIZATION AND REACTIVE AND PROACTIVE  
AGGRESSION? (ARTICLE 2)

**Do Friends' Characteristics Moderate the Prospective Links Between Peer  
Victimization and Reactive and Proactive Aggression?**

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## Résumé

L'objectif de cette étude consiste à examiner (a) le lien prédictif entre la victimisation par les pairs et la manifestation ultérieure de comportements agressifs réactifs et proactifs respectivement et (b) le rôle modérateur des caractéristiques agressives similaires des amis réciproques dans ce contexte. L'échantillon est composé de 658 enfants (326 garçons et 332 filles) issus d'un projet de recherche longitudinale intitulé l'Étude des jumeaux nouveau-nés du Québec. Les données présentées dans le cadre de cette étude portent sur les deux dernières vagues de cueillette des données soit, lorsque les enfants étaient âgés de 6 et 7 ans. Une procédure de nomination par les pairs a été utilisée pour évaluer les amitiés réciproques et la victimisation par les pairs. Les comportements d'agressivité chez les enfants cibles et les amis ont, pour leur part, été mesurés à partir des questionnaires remplis par les enseignants. Les résultats démontrent que la victimisation par les pairs est associée à un accroissement de l'agressivité réactive et non de l'agressivité proactive. Le lien prédictif entre la victimisation par les pairs la manifestation ultérieure de comportements agressifs réactifs est toutefois modéré par les caractéristiques agressives similaires des amis réciproques. Ainsi, lorsque les enfants victimisés par les pairs ont des amis agressifs réactifs, ils sont plus enclins à manifester ce type de comportements à leur tour dans le futur. Ces résultats s'observent uniquement chez les garçons, par ailleurs. Les implications théoriques et pratiques de ces résultats sont discutées.

Mots clés: Victimation ; Relations d'amitié ; Agressivité réactive et proactive

### Abstract

This study examined (a) the predictive link between peer victimization and children's reactive and proactive aggression, and (b) the potential moderating effect of reciprocal friends' reactive and proactive aggression in this context. The study also examined whether these potential moderating effects of friends' characteristics were stronger with respect to more recent friends compared to previous friends. Based on a convenience sample of 658 twin children (326 boys and 332 girls) assessed in kindergarten and first grade, the results showed that peer victimization uniquely predicted an increase in children's teacher-rated reactive aggression, but not teacher-rated proactive aggression. The relation of peer victimization to increased reactive aggression was, however, moderated by recent — not previous — reciprocal friends' similarly aggressive characteristics. These findings, however, tended to be mostly true for boys, but not for girls. The findings are discussed in terms of their theoretical and practical implications for victimized children's risk of displaying reactive and proactive aggressive behaviors.

Keywords: Victimization; Friendships; Reactive Aggression; Proactive Aggression

## Introduction

Empirical evidence suggests that approximately 10%-15% of school-aged children are identified as frequent and systematic victims of peers' aggressive acts (Kochenderfer & Ladd, 1996a; Olweus, 1991). Children who are victimized by their peers are at greater risk for a wide range of social, emotional, behavioral, and academic adjustment problems, both concurrently and prospectively (e.g., Hanish & Guerra, 2002; Hawker & Boulton, 2000; Kochenderfer-Ladd & Ladd, 2001; Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998). Although a number of studies investigating the negative effects of peer victimization on children's adjustment have focused on different types of internalizing outcomes (e.g., Hawker & Boulton, 2000), aggressive behavior as an outcome of peer victimization and potential moderating factors in this context have been largely overlooked. The present study addresses these issues by examining the predictive link between peer victimization and children's reactive and proactive aggression, as well as the potential moderating effect of reciprocal friends' reactive and proactive aggression in regard to this link.

To date, only few studies have tested the associations between peer victimization and children's display of aggression as well as related externalizing problems such as disruptive and antisocial behavior. For example, a study by Schwartz and colleagues (Schwartz et al., 1998) showed that peer victimization was concurrently and prospectively associated with aggressive and antisocial behavior as rated by mothers and teachers in a sample of third and fourth grade children. Likewise, Hanish and Guerra's (2002) investigation with a large community sample of boys and girls attending first through fourth grade showed that peer victimization predicted concurrent and subsequent teacher-rated aggression two years later. These authors also examined whether their findings varied as a function of sex and age and found no difference between boys and girls or between younger and older children with respect to the observed links between peer victimization and aggression. More recently, Snyder and colleagues (Snyder, Brooker, Patrick, Snyder, Schrepferman, &

Stoolmiller, 2003) investigated whether individual differences in playground observational measures of peer victimization assessed on multiple occasions throughout kindergarten and first grade were related to differences in children's aggressive and antisocial behaviors as rated by teachers and parents over this 2-year period. Their results showed that, for boys, an increase in peer victimization across kindergarten and first grade was related to an increase in aggressive and antisocial behaviors throughout the assessed period. For girls, initial (i.e., kindergarten) peer victimization predicted an increase in aggressive and antisocial behavior over the 2-year period. Together, these findings suggest that being victimized by peers may result in children exhibiting high levels of aggression.

In the last decade, researchers have highlighted the importance of distinguishing among different subtypes of aggressive behaviors on the basis of their underlying function, namely reactive and proactive aggression (e.g., Camodeca, Meeran Terwogt, & Goossens, 2002; Pellegrini, Bartini, & Brooks, 1999; Poulin & Boivin, 2000a; Salmivalli & Nieminen, 2002). Reactive aggression has been defined as affective, defensive, impulsive, and involving angry outbursts in response to an actual or perceived threat or provocation. In contrast, proactive aggression has been described as an instrumental, offensive, non-provoked, and aversive act aimed at influencing or dominating others. These two aggressive dimensions have been found to be moderately to highly correlated in previous studies, but exploratory and confirmatory factor analyses have demonstrated that reactive and proactive aggression are factorially distinct (e.g., Brown, Atkins, Osborne, & Milmanow, 1996; Crick & Dodge, 1996; Day, Bream, & Paul, 1992; Dodge & Coie, 1987; Poulin & Boivin, 2000a; Salmivalli & Nieminen, 2002; Vitaro & Brendgen, 2005). Moreover, behavioral genetic analyses showed that the most important contribution to both reactive and proactive aggression in young children seems to come from environmental effects that are — for the most part — specific to each of the two types of aggression (Brendgen, Vitaro, Boivin, Dionne, & Pérusse, 2006).

One important environmental influence that may distinguish between reactive and proactive aggression refers to children's socialization experiences with peers, notably peer victimization. For example, in an investigation with preadolescent boys, Poulin and Boivin (2000a) showed that the display of reactively aggressive behavior was concurrently associated with negative social status and peer victimization. In contrast, the display of proactive aggressive behavior was not linked to either negative social status or peer victimization. In a recent study with fourth, fifth, and sixth graders, Salmivalli and Nieminen (2002) compared children in different bullying roles with respect to reactive and proactive aggression. These authors found that being a victim of peer aggression was concurrently linked to high levels of reactive, but not proactive, aggression. However, being both a bully and a victim was related to high levels of both reactive and proactive aggression. These links were true for boys and for girls. Similar findings were reported by Camodeca and colleagues (Camodeca et al., 2002) with a sample of younger children.

Overall, the findings reviewed above support Dodge's (1991) suggestion that reactive aggression results from exposure to a harsh and threatening environment, such as peer victimization. In line with this reasoning, Pellegrini (1998) argued that many victimized children come to use aggression reactively (i.e., in a defensive and impulse manner) as a means to retaliate against hostile peer attacks. Pellegrini (1998) further argued, however, that some victimized children, perhaps as a result of social learning mechanisms such as modeling and reinforcement, may also become inclined to initiate proactive aggressive acts towards peers (e.g., in order to dominate or acquire resources from other — and presumably weaker — children). The findings in regard to proactive aggression by Camodeca and colleagues (2002) and Salmivalli and Nieminen (2002) indeed seem to support this latter proposition. Nevertheless, the concurrent nature of the existing data precludes any conclusions regarding the potential role that victimization may play in predicting *increases* in children's reactive and proactive aggression. As such, a first question addressed by the present

study was the extent to which peer victimization predicts an increase in children's display of reactive or proactive aggression or both.

*Friends' Aggressive Characteristics as a Moderator of the Prospective Links Between Peer Victimization and Children's Reactive and Proactive Aggression*

Related to the question of whether peer victimization contributes to an increase in children's display of reactive and proactive aggression is the question of whether there are factors that may mitigate these links. Empirical evidence suggests that friendships may play an important moderating role in the link between peer victimization and social-psychological adjustment, notably aggression. For example, a study by Hodges and colleagues (Hodges, Boivin, Vitaro, & Bukowski, 1999) revealed that peer victimization predicted significant increases in aggressive behavior one year later only for children without a very best friend but not for friended children. In a related vein, Prinstein, Boergers, and Vernberg (2001) found that peer victimization was associated with concurrent aggression only for adolescents who reported low social support from a close friend but not for those with high social support from a close friend. No interactive effect involving gender was found in either of these studies, suggesting that the moderating role of friendships in victimized children's aggression is true for both boys and girls.

The presence of friendships, particularly high quality friendships, seems to have a protective effect against later aggressive behavior in victimized children. Research suggests, however, that — depending on friends' characteristics — friends can also lead to increased aggressive behavior. Thus, in a study investigating single and cumulative risk factors in predicting third through seventh graders' aggressive behavior, Kupersmidt, Burchinal, and Patterson (1995) found that having aggressive friends predicted children's subsequent aggression. Moreover, their results showed that children who are both rejected by peers and have aggressive friends are at even greater risk of becoming aggressive over time. In contrast, when children's level of

rejection and their best friends' level of aggression decreased over time, children's risk of exhibiting subsequent aggression also decreased. These results were consistent across boys and girls. Friends' aggressive characteristics thus seem to compensate or exacerbate the effects of problematic social experiences such as peer rejection. However, no study so far has examined specifically whether friends' aggressive characteristics might moderate victimized children's risk of displaying aggressive behavior themselves. Nevertheless, in light of the findings discussed here, aggressive characteristics of a child's friends may play an important moderating role in the link between peer victimization and subsequent reactive and proactive aggression. Moreover, distinguishing between the potential moderating effects of friend's reactive versus proactive aggression may be important in this context, given evidence that these two aggressive subtypes are largely influenced by specific (i.e., non-overlapping) environmental influences (Brendgen et al., 2006). As such, friends' reactive aggression may specifically moderate victimized children's risk of subsequent reactive aggression, whereas friends' proactive aggression may specifically moderate victimized children's risk of subsequent proactive aggression.

Through processes such as observational learning and reinforcement of social attitudes and behaviors (Bagwell & Coie, 2004; Bandura, 1986; Dishion, Spracklen, Andrews, & Patterson, 1996), victimized children whose friends' are reactively or proactively aggressive may learn and develop similar aggressive strategies as a means to retaliate against peers or to bully other children. In line with this view, Poulin and Boivin's (2000b) investigation with fourth through sixth grade boys showed that proactively aggressive boys were likely to affiliate with other similarly aggressive friends. The authors suggested that friendships between proactively aggressive children may create an environment that promotes and reinforces the use of proactive aggression. Since no such pattern of results was found for reactive aggression, the authors suggested that social reinforcement of aggressive behaviors by peers may not pertain to reactive aggression. Other researchers have suggested otherwise, however. For example, Prinstein and Cillessen (2003) have argued that the display of reactive

aggression may be socially reinforced by peers through attitudes and behaviors such as increased attention. Relatedly, Pellegrini and colleagues (Pellegrini et al., 1999) have suggested that the display of reactive aggression by victimized children may be viewed by others as justified retaliation or as a legitimate means to defend against hostile peers. It thus seems plausible that having reactively or proactively aggressive friends' exacerbates victimized children's risk of displaying similarly aggressive behaviors. In contrast, having friends who do not display such aggressive characteristics may attenuate victimized children's risk of displaying reactive or proactive aggression because affiliations with these friends may provide children with more skillful and adaptive strategies (e.g., problem-solving and emotion-regulation techniques) to cope with the negative consequences of being a target of peer aggression (Wentzel, McNamara Barry, & Caldwell, 2004). Accordingly, a second question addressed by the present study was the extent to which friends' reactive or proactive aggression, respectively, moderates the link between peer victimization and children's increased display of reactive or proactive aggression.

When examining the potential moderating effect of friends' aggressive characteristics on the links between victimization and later reactive and proactive aggression, it may also be important to assess whether this effect is stronger when more recent friends' characteristics are considered compared to the characteristics of previous friends. Findings from a study by Brendgen, Vitaro, and Bukowski (2000) showed that recent friends' antisocial behavior (including aggression) had a much stronger predictive effect on children's own antisocial behavior than previous friends' antisocial behavior, suggesting that social learning among children's friendships may be particularly enhanced when socialization agents have a strong affective valence, such as may be the case with children's most recent friends. Therefore, a third question addressed in the present study was whether the potential moderating effects of friends aggressive characteristics on the link between peer victimization and children's later reactive or proactive aggression is stronger for recent friends compared to previous friends.

*Objectives of the Present Study*

To summarize, the goals of the present study were to examine (a) whether peer victimization predicts an increase in children's display of reactive or proactive aggression or both, (b) whether friends' reactively and proactively aggressive characteristics, respectively, moderate the potential links between peer victimization and children's similarly aggressive behaviors, and (c) whether the potential moderating effects of friends' aggressive characteristics in this context are stronger with respect to more recent friends compared to previous friends. It was hypothesized that peer victimization would predict an increase in children's display of both reactive and proactive aggression. However, it was expected that these links would be moderated by friends' similarly aggressive characteristics. Specifically, the link between peer victimization and increased reactive aggression should be strong at a high level of friends' reactive aggression, but weak at a low level of friends' reactive aggression. Similarly, the link between peer victimization and increased proactive aggression should be strong at a high level of friends' proactive aggression, but weak at a low level of friends' proactive aggression. Lastly, it was hypothesized that the moderating effects of friends' reactive and proactive aggression on the link between children's peer victimization and increased reactive and proactive aggression should be stronger with respect to more recent friends compared to previous friends. No gender effect was expected in these interactive links, given that previous studies have found no difference between boys and girls regarding the moderating effect of friendships on victimized children's aggressive behavior (e.g., Hodges et al., 1999, Prinstein et al., 2001). Nevertheless, potential moderating effects involving gender were tested. Also consistent with other studies examining the moderating effect of friends (e.g., Hodges et al., 1999), and because reciprocity in children's friendships is often considered a good indicator that the friendship really exists (Bukowski & Hoza, 1989), only reciprocated friendships were considered in the present study.

The questions addressed by the present study were investigated using a convenience sample of twins. Twin samples have been used in previous studies on the effects of peer victimization on child adjustment even when genetic effects were not the focus of the research question (Arseneault, Walsh, Trzesniewski, Newcombe, Caspi, & Moffitt, 2006). Importantly, empirical evidence suggests that the nature of twins' peer relations (e.g., the number of friends and friendship quality features) does not differ from that of non-twin children (Koch, 1966; Thorpe, 2003). Moreover, twin samples and singleton samples do not differ with respect to social-psychological adjustment, including aggressive behavior (e.g., Pulkkinen, Vaalamo, Hietala, Kaprio, & Rose, 2003). The twin sample was assessed when children were six and seven years of age (i.e., when they were in kindergarten and first grade). To date, the vast majority of studies investigating the factors that may mitigate victimized children's risk of experiencing negative outcomes have been conducted with pre-adolescents or middle adolescents (e.g., Hodges et al., 1999, Prinstein et al., 2001). However, recent evidence suggests that the functional significance of friends for young children's social-behavioral adjustment may be similar to that for older school-aged children (Sebanc, 2003). Furthermore, in light of empirical evidence that already a substantial amount of kindergarteners are exposed to peer victimization (e.g., Kochenderfer & Ladd, 1996b; Crick, Casas, & Ku, 1999), it is imperative to identify the factors that might moderate the potential impact of peer victimization on young children's risk of maladjustment before problems start to crystallize.

## Method

### *Sample*

Participants for the present study were a twin sample from the greater Montreal area who were recruited at birth between November 1995 and July 1998 ( $N$

= 648 twin pairs). For the same-sex twin pairs, zygosity was assessed at 18 months based on physical resemblance via the Zygosity Questionnaire for Young Twins (Goldsmith, 1991) and via DNA tests for 30 % of the population for whom the zygosity questionnaire was inconclusive. Eighty-four percent of the families were of European descent, 3% were of African descent, 2% were of Asian descent, and 2% were Native North Americans. The remaining families (9%) did not provide ethnicity information. The average yearly household income (54000 \$ CAN) in the twin sample was slightly above the national average for couples with children. However, a comparison of family characteristics of this sample at 5 months of age with an epidemiological sample of singletons from the Montreal and Quebec City area (SantéQuébec, Jetté, Desrosiers, & Tremblay, 1998) indicated that the samples were very similar in terms of parental education, yearly income, age of parents at birth of children, and marital status.

The sample was followed longitudinally each year with the most recent data collections completed at six and seven years of age (kindergarten and grade 1). The present paper describes findings from these two latest waves of data collection. The average age of assessment at T1 and T2 were 6.04 years (.28 SD) and 7.08 years (.27 SD), respectively. Attrition in the sample averaged at approximately 5 % per year, resulting in a total of 329 twin pairs who participated in the data collection at age 6 and 7 years, 134 monozygotic twins and 195 dizygotic twins (101 same-sex dizygotic pairs, 94 mixed-sex dizygotic pairs). Overall, there were 326 boys and 332 girls in the study sample. Participants remaining in the study at 7 years of age did not differ from those lost in regard to zygosity status, family status, parent-rated temperament, and mother's level of education at 5 months of age. However, fathers in the remaining study sample had a slightly higher level of education than fathers of the participants who were lost from the study. In kindergarten, 30% of the two twins in a pair attended the same classroom, whereas 70% attended different classrooms (albeit in

the same school). In grade one, 23% of the two twins in a pair attended the same classroom, whereas 77% attended different classrooms.

### *Measures and Procedure*

All instruments were administered in either English or French, depending on the language spoken by the children and the teachers (see descriptions of measures below). Peer victimization was measured at T1 using group-administered peer nominations, reciprocal friendships were recorded by children and their classmates assessed at both T1 and T2 using group-administered peer nominations, and children's and reciprocal friends' reactive and proactive aggression were measured at both T1 and T2 using teacher reports. Following a procedure suggested by Vallerand (1989), instruments that were administered in French but were originally written in English were first translated into French and then translated back into English. Bilingual judges verified the semantic similarity between the back-translated items and the original items in the questionnaire. The research questions and instruments were approved by the IRB and by the school board administrators. Prior to data collection, active written consent from parents was obtained. Data collection took place in the spring of the kindergarten and grade one school year, respectively, to ensure that the children and teachers had gotten to know each other. The average percentages of class attendance across all schools at the time of the peer nomination procedure were 78% and 76% at T1 and T2, respectively. The peer nomination procedure took approximately 45 minutes per class. Children were encouraged not to share their responses with each other. In the same week, teachers completed the questionnaire for the target child and his or her nominated friends and returned them by mail.

*Peer victimization.* Two items were used to assess the extent to which a child was perceived by his or her classmates as being victimized by peers at T1. These items were drawn from the seven-item victimization subscale of the Modified Peer

Nomination Inventory (Perry, Kussel, & Perry, 1988). One item assessed physical victimization ("He/she gets hit and pushed by other kids") and one item assessed verbal victimization ("He/she gets called names by other kids"). The two items were embedded within the peer nomination procedure along with other items (e.g., generalized aggression, hyperactivity, shyness) that do not directly bear on this paper. The Victimization subscale of the modified Peer Nomination Inventory has been shown to have good predictive validity and test-retest reliability (Hodges & Perry, 1999; Perry, Kussel, & Perry, 1988). The two victimization items were selected because, while reflecting different forms of peer victimization, they represented a broad assessment of peer victimization. Both items showed high item-total correlations (i.e.,  $r = .81, p = .00$  for the physical victimization item and  $r = .83, p = .00$ , for the verbal victimization item). Although only two items were used, even single-item peer nomination assessments tend to demonstrate high reliability and validity in measuring behavioral constructs because the scoring of each peer nomination item is generated on the basis of multiple respondents (e.g., Coie, Dodge, & Kupersmidt, 1990; Perry et al., 1988). These measurement qualities tend to hold true for younger (i.e., preschool) as well as older (i.e., adolescent) age groups (Coie et al., 1990). In addition, these two items have been used to represent a global measure of peer victimization in previous studies with young children (i.e., first graders) (e.g., Hanish & Guerra, 2002, Hanish & Guerra, 2000).

Booklets of photographs of all children in a given class were handed out to each child in a class. Two research assistants ensured that all children recognized the photos of all their classmates by presenting them individually. The children were then asked to circle the faces of up to three children who best fit each of the two behavioral descriptors. One booklet per behavioral descriptor was provided. The research assistants read questions aloud to the children. For each behavioral descriptor, the total number of received nominations was calculated for each child and  $z$ -standardized within each classroom to account for differences in classroom size. Following the procedure used in previous studies (e.g., Hanish & Guerra, 2002,

Hanish & Guerra, 2000), the two victimization item scores ( $r = .36, p = .00$ ) were then summed up to yield a total victimization score.

*Reactive and proactive aggression.* Kindergarten teachers rated the children's level of reactive and proactive aggression at T1 and Grade 1 teachers rated the children's level of reactive and proactive aggression at T2 using the six items reactive-proactive measure developed by Dodge and Coie (1987). This measure has been shown to have good concurrent discriminant validity of the two types of aggression in previous studies (e.g., Dodge & Coie, 1987; Poulin et Boivin, 2000a). In regard to reactive aggression, the teachers indicated to what extent the child "reacts in an aggressive manner when teased", "when somebody accidentally hurt him/her (such as by bumping into him/her), he/she reacts with anger and fighting", and "reacts in an aggressive manner when something was taken away from him/her". In regard to proactive aggression, the teachers indicated to what extent the child "tries to dominate the other children", "scares other children to get what he/she wanted", and "encourages other children to pick on a particular child". Responses were given on a 3-point scale (0 = never, 1 = sometimes, 2 = often). For each type of aggression, the respective scores were averaged to yield a total reactive aggression score and a total proactive aggression score. Internal consistency of the total scales was acceptable in the present sample with Cronbach's alphas for T1 and T2 reactive aggression = .84 and .85, respectively, and Cronbach's alphas for T1 and T2 proactive aggression = .70 and .72, respectively.

*Reciprocal friendship.* At T1 and T2, children and their classmates were asked to nominate up to three friends in the classroom. For twins who shared the same class, it was specified that a sibling could not be nominated as a friend. Children were considered to have a best friend if a nominated friend also nominated them among his or her three friends. In this sample, 470 children (71.4 %) had at least one reciprocated friend at T1 and 479 children (72.8 %) had at least one reciprocated friend at T2. Children with reciprocal friends at T1 and children with reciprocal friends at T2 did not significantly differ from those without reciprocal friends with

respect to child sex, zygosity status, sex composition of the twin dyad, victimization, or mean levels of proactive aggression at T1 and T2. Children without reciprocal friends at T1 did, however, display a greater mean level of reactive aggression at T1 compared to children with reciprocal friends at T1,  $F(1, 327) = 3.98, p = .05$ . Similarly, there was a trend for children without reciprocal friends at T2 to display a greater mean level of reactive aggression at T2,  $F(1, 327) = 3.40, p = .06$ . Of the 470 children with reciprocal friends at T1, 400 (85.1 %) had only same-sex friends whereas 70 (14.9 %) had at least one opposite-sex friend. Of the 479 children with reciprocal friends at T2, 403 (84.1 %) had only same-sex friends whereas 76 (15.9 %) had at least one opposite-sex friend.

*Reciprocal friends' reactive and proactive aggression.* Separately for children with at least one reciprocal friendship at T1 and for children with at least one reciprocal friend at T2, information about friends' aggression was obtained from teachers using the same reactive and proactive aggression scales as used for the target children. Specifically, together with the questionnaire assessing the target children's (i.e., twins') reactive and proactive aggression, teachers were provided with the names of the target children's nominated friends and were asked to also evaluate these friends' reactive and proactive aggression. With respect to reactive aggression, teacher ratings for the reciprocal friends were based on an abbreviated scale, which included two items (i.e., "reacts in an aggressive manner when teased" and "when somebody accidentally hurt him/her, he/she reacts with anger and fighting"). The reduction in the number of items was necessary to reduce teacher's workload and avoid the risk of nonparticipation. With respect to proactive aggression, teacher ratings were based on the same three items as were used for the target children (i.e., "tries to dominate the other children", "scares other children to get what he/she wanted", and "encourages other children to pick on a particular child"). Total friends' reactive and proactive aggression scores were determined by calculating the mean across the two reactive aggression items and the mean across the three proactive aggression items, respectively, and then averaging across a child's friends' scores.

Internal consistency of the friends' total aggression scales was acceptable with Cronbach's alphas for T1 and T2 reactive aggression = .83 and .85, respectively, and Cronbach's alphas for T1 and T2 proactive aggression = .78 and .80, respectively.

## Results

### *Preliminary Analyses*

Preliminary analyses had shown no significant link between zygosity status (i.e., monozygotic twins versus dizygotic twins) and any of the study variables. There was also no significant effect of the two twins' being in the same classroom or not at T1 or T2 on children's reactive and proactive aggression at T1 or T2, respectively. As a consequence, zygosity status and the fact of being in the same classroom or not were not included in subsequent analyses.

Table 1 presents the bivariate intraclass correlations as well as the means and standard deviations for all measures for the whole sample. As can be seen, child sex was significantly related to peer victimization at T1, indicating that boys were more victimized than girls. Child sex was also related to T1 reactive aggression, but not to T1 proactive aggression. Similarly, child sex was related to T2 reactive aggression, but not to T2 proactive aggression, indicating that boys were more reactively aggressive than girls, whereas girls were just as likely to be proactively aggressive as boys at both T1 and T2. Peer victimization at T1 was positively related to child's reactive and proactive aggression at T1 and T2, respectively. Reactive and proactive aggression were positively correlated at both T1 and T2, thus replicating findings from previous studies (e.g., Dodge & Coie, 1987; Poulin & Boivin, 2000a). T1 reactive aggression was positively related to both reactive and proactive aggression at T2. Similarly, T1 proactive aggression was related to both types of aggression at T2.

Also, child's reactive aggression at T1 and friends' reactive aggression at T1 were positively related. Similarly, there was a significant positive correlation between

child's and friends' reactive aggression at T2. Child's proactive aggression at T1 and friends' proactive aggression at T1 were positively related. Similarly, there was a significant positive correlation between child's and friends' proactive aggression at T2. Lastly, friends' reactive and proactive aggression at T1 were positively correlated as were friends' reactive and proactive aggression at T2, respectively. Bivariate intraclass correlations were also computed separately for boys and for girls. These correlations were then transformed into Fisher-z scores and corresponding correlations were compared across sex via z-tests. None of these correlations were significantly different for boys than for girls.

#### *Analytical Rationale*

Multilevel modeling with the PRELIS 8.52 statistical package (Jöreskog, Sörbom, du Toit, & du Toit, 2000) was used for the analysis of our hierarchically structured data. In a two-level model, a hierarchy consists of lower-level observations (i.e., level 1 unit of analysis) nested within higher-level observations (i.e., level 2 unit of analysis). In the context of the present study, each individual child is nested within a sibling pair. It is assumed that observations across pairs are independent from one another. However, because siblings within a given pair share genetic and environmental factors, observations within a given pair are interdependent, thus violating the assumption of independent observations in traditional linear models. Multilevel models allow for the estimation of within-pair and between-pair effects while simultaneously adjusting for the amount of data interdependency. In the present study, the level 1 unit of analysis represents each individual child, whereas the level 2 unit of analysis represents each individual sibling pair. The level 1 variance estimates describe the degree to which siblings within a pair differ from each other (i.e., within-pair variance), whereas the level 2 variance estimates indicate the degree to which sibling pairs differ from one another (i.e., between-pair variance) with respect to the dependent variable. Child-specific predictors (i.e., independent variables) are

included in multi-level analyses as fixed effects. The fixed effect estimates provide information about the unique link between each child-specific predictor and the dependent variable and can be interpreted in a similar way as regression coefficients in a multiple regression.

Using multilevel modeling, a series of consecutive models of increasing complexity were fitted to the data to examine the predictive effect of T1 peer victimization on T2 reactive and proactive aggression, above and beyond T1 levels of reactive and proactive aggression, and the moderating effect of reciprocal friends' characteristics in this context (i.e., reactive and proactive aggression). Each model was compared to the preceding one to evaluate whether the inclusion of additional predictors provided a better fit to the data. Goodness of fit for each model was evaluated based on the  $-2\log$  likelihood estimate and a likelihood ratio test was used to evaluate the difference in fit between subsequent models. The first series of models examined the moderating effect of T1 (i.e., previous) friends' characteristics and the second series of models examined the moderating effect of T2 (i.e., recent) friends' characteristics. Notably, although level 2 variance estimates (i.e., relating to between-pair differences) are provided in the tables, they are not of theoretical interest in the present study and are therefore not described in the text.

#### *Moderating Effects of T1 (Previous) Friends' Characteristics on the Link Between T1 Peer Victimization and T2 Reactive and Proactive Aggression*

*Predictions to T2 reactive aggression.* Table 2 presents the results from the multilevel analyses predicting from T1 peer victimization to T2 reactive aggression. For each model, the fixed effects of the predictor variables, the level 1 and level 2 variance parameters, the model fit (i.e.,  $-2\log$  likelihood), and the likelihood ratio are provided. The first model tested was an unconditional model, without including any predictors. This model was used as a baseline for comparing subsequent (i.e., more complex) models. In a second model, child-specific predictors were added to the

equation as fixed effects. These predictors included Child Sex, T1 Child Reactive Aggression, T1 Child Proactive Aggression, T1 Child Peer Victimization, T1 Reciprocal Friends Reactive Aggression, and T1 Reciprocal Friend Proactive Aggression. Controlling for child's T1 proactive aggression, in addition to controlling for child's T1 reactive aggression, was important given the significant correlation between the two aggressive subtypes. To facilitate the interpretation of the results, the dependent variable and all continuous independent variables were z-standardized and the z-standardized variables were used in the analysis. As indicated by the likelihood ratio test shown in Table 2, the addition of the six predictors in model 2 significantly improved model fit compared to the unconditional model,  $p = .00$ . The results showed a main effect of sex on child's reactive aggression at T2,  $b = -.23$ ,  $p = .01$ , indicating that boys displayed higher levels of reactive aggression at T2 compared to girls. In addition, high levels of reactive aggression at T1 predicted high levels of reactive aggression at T2,  $b = .35$ ,  $p = .00$ , whereas there was no link between proactive aggression at T1 and reactive aggression at T2,  $b = .02$ ,  $p = .63$ . There was a statistical trend for an effect of peer victimization at T1 on child's reactive aggression at T2,  $b = .07$ ,  $p = .09$ , over and above the effects of child's reactive and proactive aggression at T1. There was no effect of reciprocal friends' reactive aggression at T1,  $b = .09$ ,  $p = .12$ , and no effect of reciprocal friends' proactive aggression at T1 on child's reactive aggression at T2,  $b = -.06$ ,  $p = .28$ .

In a third step, it was examined whether friends' reactive aggression at T1 moderated the effect of T1 peer victimization on child's reactive aggression at T2. For this purpose, a two-way interaction term "T1 Child Peer Victimization X T1 Reciprocal Friends Reactive Aggression" was added to the preceding model. This two-way interaction term did not reach statistical significance,  $b = -.04$ ,  $p = .32$ , suggesting that peer victimization marginally predicted child's reactive aggression at T2 regardless of T1 friends' reactive aggression.

*Test of moderating effect of sex.* In a final step, it was examined whether the main effect of T1 peer victimization on child's reactive aggression at T2, as well as the moderating effect of T1 reciprocal friends' reactive aggression in this context, differed as a function of child's sex. For this purpose, two additional two-way interaction terms "T1 Child Peer Victimization X Child Sex" and "T1 Reciprocal Friends Reactive Aggression X Child Sex" and a three-way interaction term "T1 Child Peer Victimization X T1 Reciprocal Friends Reactive Aggression X Child Sex" were added to the preceding model. The addition of these three interaction terms marginally improved model fit compared to the preceding model,  $p = .07$ . No significant effect of the three-way interaction "T1 Child Peer Victimization X T1 Reciprocal Friends Reactive Aggression X Child Sex" was found,  $b = .07$ ,  $p = .54$ . There was, however, a significant interaction between T1 victimization and sex,  $b = -.20$ ,  $p = .03$ . Examination of this two-way interaction (Jaccard, Turrisi, & Wan, 1990) revealed that T1 victimization predicted T2 reactive aggression, over and above the effects of T1 reactive and proactive aggression in boys,  $b = .15$ ,  $p = .01$ , but not in girls,  $b = -.05$ ,  $p = .50$ .

*Predictions to T2 proactive aggression.* Table 3 presents the results from the multilevel analyses predicting from T1 peer victimization to T2 proactive aggression, over and above the effects of T1 reactive and proactive aggression. The first model tested was an unconditional model, which was used as a baseline for comparing subsequent models. In a second model, child-specific predictors (i.e., Child Sex, T1 Child Reactive Aggression, T1 Child Proactive Aggression, T1 Child Victimization, T1 Reciprocal Friend Reactive Aggression, and T1 Reciprocal Friend Proactive Aggression), were added to the equation as fixed effects. As shown, the addition of the six predictors significantly improved model fit compared to the unconditional model,  $p = .00$ . The results indicated no difference between boys and girls in proactive aggression at T2,  $b = -.05$ ,  $p < .61$ . Also, child's victimization at T1 did not predict child's proactive aggression at T2,  $b = .07$ ,  $p < .14$ , once the effects of child's reactive and proactive aggression at T1 were controlled. There were, however, main

effects of both T1 child's reactive aggression,  $b = .19, p = .00$  and T1 child's proactive aggression on child's proactive aggression at T2,  $b = .18, p = .00$ . In addition, the results showed a statistical trend for T1 reciprocal friends' reactive aggression on child's proactive aggression at T2,  $b = .12, p = .06$ , although no effect of T1 reciprocal friends' proactive aggression on child's proactive aggression at T2 was revealed,  $b = -.08, p = .19$ .

In a third step, it was examined whether friends' proactive aggression at T1 moderated the effect of T1 peer victimization on child's proactive aggression at T2. For this purpose, a two-way interaction term "T1 Child Peer Victimization X T1 Reciprocal Friends Proactive Aggression" was added to the preceding model. This interaction term was not significant,  $b = .02, p = .67$ .

*Test of moderating effects of sex.* In a final step, it was examined whether the main effect of T1 peer victimization on child's proactive aggression at T2 or the moderating effect of T1 friends' proactive aggression in this context differed as a function of child's sex. No moderating effects of child sex were found.

#### *Moderating Effects of T2 (Recent) Friends' Characteristics on the Link Between T1 Peer Victimization and T2 Reactive and Proactive Aggression*

*Predictions to T2 reactive aggression.* Table 4 presents the results from the multilevel analyses with T1 peer victimization predicting to T2 reactive aggression, over and above the effects of T1 reactive and proactive aggression. The first model tested was an unconditional model. In a second model, child-specific predictors (i.e., Child Sex, T1 Child Reactive Aggression, T1 Child Proactive Aggression, T1 Child Victimization, T2 Reciprocal Friend Reactive Aggression, and T2 Reciprocal Friend Proactive Aggression), were added to the equation as fixed effects. As can be seen in Table 4, the addition of the six predictors significantly improved model fit compared to the unconditional model,  $p = .00$ . Similar results as those described earlier with respect to the predictions of T2 reactive aggression were found. Specifically, there

was a main effect of sex on child's reactive aggression at T2,  $b = -.29$ ,  $p = .00$ , indicating that boys displayed higher levels of reactive aggression at T2 compared to girls. Also, high levels of reactive aggression at T1 predicted high levels of reactive aggression at T2,  $b = .39$ ,  $p = .00$ , whereas there was no link between proactive aggression at T1 and reactive aggression at T2,  $b = -.05$ ,  $p = .36$ . In addition, there was a main effect of T1 peer victimization on child's reactive aggression at T2, over and above the effects child's reactive and proactive aggression at T1,  $b = .12$ ,  $p = .00$ . Lastly, the results showed a main effect of reciprocal friends' reactive aggression at T2 on child's reactive aggression at T2,  $b = .12$ ,  $p = .02$ . In contrast, no effect of reciprocal friends' proactive aggression at T2 on child's reactive aggression at T2 was found,  $b = .08$ ,  $p = .12$ .

In a third step, it was examined whether friends' reactive aggression at T2 moderated the effect of T1 peer victimization on child's reactive aggression at T2. For this purpose, a two-way interaction term "T1 Child Peer Victimization X T2 Reciprocal Friends Reactive Aggression" was added to the preceding model. The inclusion of this interaction term significantly improved model fit compared to the previous model,  $p = .02$ . Moreover, the results revealed a significant interaction effect,  $b = .09$ ,  $p = .01$ , suggesting that the link between T1 peer victimization and child's reactive aggression at T2 varied as a function of reciprocal friends' reactive aggression at T2.

*Test of moderating effects of sex.* In a final step, it was examined whether the main effect of T1 victimization on child's reactive aggression at T2, and the moderating effect of T2 friends' reactive aggression in this context differed as a function of child's sex. The results indicated a significant interaction effect between T1 child peer victimization and child sex,  $b = -.17$ ,  $p = .04$ . There was also a statistical trend for a three-way interaction between T1 child peer victimization, T2 friends' reactive aggression, and child sex,  $b = -.15$ ,  $p = .08$ .

The two-way interaction between T1 victimization and child sex was examined first. The results revealed that for boys, T1 peer victimization predicted T2

reactive aggression, over and above the effects of T1 reactive and proactive aggression,  $b = .16, p = .00$ . In contrast, for girls, there was no significant link between T1 peer victimization and T2 reactive aggression once the effects of T1 reactive and proactive aggression were controlled,  $b = -.01, p = .91$ .

Second, the three-way interaction between T1 child peer victimization, T2 friends' reactive aggression, and child sex was broken down. The results showed a significant interactive effect between T1 peer victimization and T2 friends reactive aggression for boys,  $b = .11, p = .01$ , but not for girls,  $b = -.04, p = .61$ . To break down the significant two-way interaction in boys, the relation of T1 child's peer victimization to T2 child's reactive aggression was examined at three levels of T2 friends' reactive aggression: high (= 1 SD above the mean), medium (= at the mean), and low (= 1 SD below the mean). The results revealed that T1 peer victimization significantly predicted boys' reactive aggression at T2 when T2 friends' reactive aggression was moderate,  $b = .16, p = .00$ . When T2 friends' reactive aggression increased by one standard deviation (i.e., when T2 friends' reactive aggression was high) the relation of T1 peer victimization to boys' reactive aggression at T2 was stronger,  $b = .27, p = .00$ . However, when T2 friends' reactive aggression decreased by one standard deviation (i.e., when T2 friends' reactive aggression was low) the relation of T1 peer victimization to boys' reactive aggression at T2 was close to zero and no-longer statistically significant,  $b = .05, p = .48$ .

*Predictions to T2 proactive aggression.* Table 5 presents the results from the multilevel analyses predicting from T1 peer victimization to T2 proactive aggression, over and above the effects of T1 reactive and proactive aggression. The first model tested was an unconditional model. In a second model, child-specific predictors (i.e., Child Sex, T1 Child Reactive Aggression, T1 Child Proactive Aggression, T1 Child Victimization, T2 Reciprocal Friend Reactive Aggression, and T2 Reciprocal Friend Proactive Aggression), were added to the equation as fixed effects. As shown, the addition of the six predictors significantly improved model fit compared to the unconditional model,  $p = .00$ . The results revealed no difference between boys and

girls with respect to proactive aggression at T2,  $b = -.07, p = .42$ . Also, there was no effect of T1 peer victimization on child's proactive aggression at T2, once the effects of child's reactive and proactive aggression at T1 were controlled,  $b = .06, p = .15$ . There were, however, main effects of both T1 child's reactive aggression,  $b = .24, p = .00$  and T1 child's proactive aggression on child's proactive aggression at T2,  $b = .15, p = .01$ . In addition, there was a main effect of T2 reciprocal friends' proactive aggression on child's proactive aggression at T2,  $b = .19, p = .00$ , whereas no effect of T2 reciprocal friends' reactive aggression on child's proactive aggression at T2 was revealed,  $b = -.05, p = .40$ .

In a third step, it was examined whether reciprocal friends' proactively aggressive characteristics at T2 moderated the effect of T1 peer victimization on child's proactive aggression at T2. For this purpose, a two-way interaction term "T1 Child Peer Victimization X T2 Reciprocal Friends Proactive Aggression" was added to the preceding model. This interaction term was not significant,  $b = .01, p = .84$ .

*Test of moderating effects of sex.* In a final step, potential sex differences in the main effect of T1 peer victimization on child's proactive aggression at T2, and the moderating effect of T2 friends' proactive aggression in this context were examined. No significant two-way interaction was found, although the results did reveal a significant trend for the three-way interaction between T1 child peer victimization, T2 friends proactive aggression, and child sex,  $b = -.16, p = .07$ . However, the break down of this interaction did not indicate any distinct pattern between boys and girls.

### Discussion

The present study examined whether peer victimization is related to an increase in children's reactive and proactive aggression, respectively, and whether reciprocal friends' similarly aggressive characteristics moderate these links. It was also examined whether the potential moderating effects of friends' aggressive

characteristics in this context are stronger for more recent friends compared to previous friends.

*Effect of Peer Victimization on Reactive and Proactive Aggression and Friends' Moderating Effect in this Context*

As expected, the results of the present study indicated that peer victimization predicted children's increased display of reactive aggression, above and beyond their previous levels of reactive and proactive aggression. This result supports Dodge's proposition (1991) and extends previous findings on the concurrent link between peer victimization and reactive aggression (e.g., Camodeca et al., 2002; Poulin & Boivin, 2000a; Salmivalli & Nieminen, 2002) as it suggests that peer victimization may play a unique role in the development of reactive aggression in children. Being victimized by peers may lead to children exhibiting increased levels of reactive aggression as a means to retaliate or defend themselves against hostile peer attacks. The link between peer victimization and increased reactive aggression was, however, moderated by reciprocal friends' similarly aggressive characteristics. Specifically and in line with expectations, when children had friends who showed moderate to high levels of reactive aggression, peer victimization predicted an increase in children's reactive aggression. However, when children had friends who displayed a low level of reactive aggression, peer victimization no longer predicted an increase in reactive aggression over time. This finding lends support to the notion that the use of reactively aggressive behaviors in response to peer victimization may be socially reinforced by other children, thus increasing the display of such behaviors over time (e.g., Pellegrini et al., 1999; Prinstein & Cillessen, 2003). This may be especially the case when children have friends who display similarly reactive aggressive behaviors because such friends may be particularly likely to reinforce or model such aggressive behaviors. Conversely, victimized children's inclination to use reactive aggression as a response to peer provocations may be reduced when children have friends who do

not display such reactively aggressive characteristics because these friends may provide more skillful and adaptive strategies (e.g., problem-solving and emotion-regulation techniques) to cope with the negative consequences of being a target of peer victimization. Some, albeit indirect support for this notion are provided by findings that children who affiliate with highly prosocial friends are likely to display higher level of prosocial behaviors themselves over time (Wentzel, McNamara Barry, & Caldwell, 2004). In contrast, children who affiliate with lowly prosocial friends tend to display lower levels of prosocial behaviors themselves over time.

Importantly, the moderating effect of friends' reactively aggressive characteristics on the link between peer victimization and increased reactive aggression was only found with respect to most recent friends. This finding is in line with results reported by Brendgen and colleagues (Brendgen, et al., 2000), who found that the predictive effect of delinquent friends on adolescents' own aggressive behavior was more pronounced for most recent friends than for previous friends. As argued by Brendgen and colleagues (Brendgen et al., 2000), social learning among children's friendships may be particularly enhanced in a child's most recent friendships, which may have a specifically strong affective valence for children.

The findings described above were true only for boys, however. For girls, peer victimization was not significantly linked to increased reactive aggression, after controlling for their previous levels of reactive and proactive aggression. Moreover, there was a statistical trend indicating that the interactive effect between peer victimization and recent friends' reactive aggression was true for boys but not for girls. One explanation for these findings may lie in the fact that the reactive aggression items used in the present study captured more physical than relational forms of aggression, with the former being more prevalent in boys than in girls. Yet another explanation may be related to the exclusive focus on overt forms of peer victimization (i.e., verbal and physical) examined in the present study. Some evidence suggests that covert (i.e., relational) forms of peer victimization may be more prevalent among girls and that these forms of peer victimization may have unique

detrimental adjustment consequences, especially for girls (Crick et al., 1999; Crick, Nelson, Morales, Cullerton-Sen, Casas, & Hickman, 2001). Thus, it will be important for future studies to investigate potential links between covert forms of peer victimization and children's subsequent display of reactive aggression as well as potential moderating factors in this context.

In contrast to the findings for reactive aggression, peer victimization did not predict an increase in children's proactive aggression, once their previous levels of reactive and proactive aggression were accounted for. Moreover, no moderating effect of recent or previous friends' proactively aggressive characteristics on victimized children's increase in proactive aggression was found. Although previous evidence has shown that, in some cases, peer victimization may be concurrently linked to proactive aggression (e.g., Camodeca et al., 2002; Salmivalli & Nieminen, 2002), none of these studies has examined this link prospectively. The results of this study are the first to show that the relation of peer victimization to children's later aggression may pertain only to reactive — but not to proactive — aggression. Hence, in accord with Dodge's theoretical model (1991), it seems that peer victimization does not necessarily incite children to adopt proactively aggressive behaviors (e.g., in order to bully or dominate other — and presumably weaker — children themselves). This result could also be due to the relatively young age of the children in the present sample, however, as children in first grade may not easily find many younger (and thus weaker) victims to bully. More research comparing different age groups is thus necessary before any firm conclusion can be drawn in regard to the potential link between peer victimization and increase in children's proactive aggression.

#### *Additional Main Effect of Friends' Aggression on Children's Reactive and Proactive Aggression*

Although the main research question pertained to the moderating effect of friends' reactively and proactively aggressive characteristics, it is worth mentioning that recent friends' proactively or reactively aggressive characteristics also had a

main effect on children's similarly aggressive behavior, apart from any interactive effect with victimization. Specifically, having recent friends who display high levels of reactive aggression predicted an increase — albeit weakly — in children's reactive aggression. Similarly, having recent friends' who displayed proactively aggressive characteristics predicted an increase in children's proactive aggression. This context-specific effect of friends' proactively and reactively aggressive characteristics is in line with the finding from behavioral genetic research that the two types of aggression are subject to largely different environmental influences (Brendgen et al., 2006). By the same token, the context-specific effect of friends' aggressive characteristics is discordant with Poulin and Boivin's argument (2000b) that the modeling and reinforcement of aggressive behaviors in children's friendships pertains only to proactive aggression, but not to reactive aggression. It is important to note, however, that Poulin and Boivin's findings were based on data from a sample of older school-aged boys only, which may not necessarily generalize to samples of younger boys and girls. Hence, based on the present data, it appears that friends' aggressive characteristics may play a role in the development of both children's proactive and reactive aggression. Modeling of proactive aggression as a successful instrumental means to dominate others or to obtain desired resources may explain the main effect of friends' proactive aggression on children's own proactive aggression. As argued previously, however, the use of reactively aggressive behavior — such as in response to peer maltreatment — may also be socially reinforced or modeled by friends with similar characteristics, who may perceive such behavior as a justified defense, thereby increasing the display of such behaviors over time.

#### *Strengths, Limitations, and Conclusions*

This study is the first to examine the links between peer victimization and children's reactive and proactive aggression using a longitudinal perspective. In addition, this study is the first to investigate the unique and interactive effects of friends' reactive and proactive aggression on children's own aggression. Other

strengths of this study include the ability to look at both recent and past children's friendships as well as the use of multiple informants (i.e., peer-reports and teacher-reports), which minimizes the possibility that the findings were due to shared method variance.

Despite these strengths, several limitations of the study deserve consideration, which may influence the interpretation of the present results. A first limitation is the possibility that the findings derived from the present convenience sample of twins may not necessarily generalize to the general population including singletons. Given that children's adjustment problems were rated by teachers, who only evaluated the target children and their friends, it was not possible to examine potential adjustment differences between the twins and other classmates. Nevertheless, other studies have shown no difference between twin samples and singleton samples with respect to social-psychological adjustment (e.g., Pulkkinen et al., 2003). The average level of peer-rated victimization for the children in this sample, however, was somewhat lower than their respective classroom mean. This finding may be explained by the fact that the presence of a twin sibling in the same school, similar to the presence of a friend (e.g., Hodges et al., 1999), can in itself decrease the likelihood of being a target of peer aggression. This particularity of the twin sample may also explain why friendless children did not differ from friended children on the level of victimization in the present study. It should be kept in mind, however, that most of the patterns found in this study are comparable to those observed in other studies based on singleton samples. Importantly, empirical evidence also suggests that the nature of twins' peer relations (e.g., number of friends) does not differ from that of non-twin children (Koch, 1966; Thorpe, 2003). The developmental significance of twins' peer relationships has not been systematically investigated, however. Thus, the extent to which friendship relations have a similar impact on twin children's social-psychological adjustment relative to their non-twin counterparts remains unknown.

Second, the limited number of children who had reciprocal friends of the opposite sex in the present study prevented the exploration of the possibility that the sex composition of the friendship dyad (i.e., same-sex versus mixed-sex friendship dyads) might influence the expected moderating effects of friend's characteristics on the link between peer victimization and aggression. Given that research on the dyadic sex composition in children's friendships has consistently shown that cross-sex affiliations become increasingly less frequent over the course of middle childhood (e.g., Maccoby, 1988), it is possible that the pattern of results found in the present study does not generalize to older mixed-sex friendship dyads. Finally, replication is needed in order to test the generalizability of the present findings to children in other age groups.

Despite these limitations, the present study offers an important new perspective on the prospective links between peer victimization and children's display of reactive and proactive aggression. The finding that peer victimization predicted children's later display of reactive — but not proactive — aggression supports Dodge's theoretical model (1991) and further highlights the importance of distinguishing between these two aggressive subtypes. Moreover, the present results provide support for the notion that friends' aggressive characteristics (or lack thereof) may play an important role in fostering or preventing aggressive behavior problems related to being victimized. This finding may also have practical implications, as it suggests that preventive intervention with victimized children should discourage affiliation with aggressive friends and rather encourage the development and maintenance of friendships with peers who possess characteristics that are most likely to convey protection from maladjustment.

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Table 1

*Bivariate Intraclass Correlations Among Measures for the Whole Sample (n = 329)*

Measures	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Child Sex <sup>a</sup>	-									
2. T1 Child Peer Victimization		-.22***	-							
3. T1 Child Reactive Aggression			-.16**	.38***	-					
4. T1 Child Proactive Aggression				-.03	.26***	.60***	-			
5. T2 Child Reactive Aggression					-.22***	.29***	.42***	.26***	-	
6. T2 Child Proactive Aggression						-.07	.22***	.33***	.32***	.64***
7. T1 Friends Reactive Aggression <sup>b</sup>							-.13 <sup>†</sup>	-.05	.22**	.19**
8. T1 Friends Proactive Aggression <sup>b</sup>								-.06	-.02	.13 <sup>†</sup>
9. T2 Friends Reactive Aggression <sup>c</sup>									.25***	.00
10. T2 Friends Proactive Aggression <sup>c</sup>										-.07
<i>M</i>		50%		-.09	.36	.22	.34	.21	.41	.33
<i>SD</i>				.87	.50	.36	.51	.37	.49	.39
										.48
										.40

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls. The relative percentage of boys in the sample is given instead of a mean parameter. <sup>b</sup> n = 235 for correlations involving friends' aggressive characteristics at T1. <sup>c</sup> n = 240 for correlations involving friends' aggressive characteristics at T2. <sup>†</sup> p < .10. \* p < .05. \*\* p < .01. \*\*\* p < .001.

Table 2

*Multilevel Analyses With Victimization and Friends' Reactive Aggression at T1 Predicting Child Reactive Aggression at T2 (n = 470)*

Step	Predictor	Fixed effect (se)	Level 1 variance (se)	Level 2 variance (se)	-2log likelihood (df)	$\Delta$ Likelihood ratio (df)
1			.60 (.06)	.40 (.08)	1304.87 (3)	
2			.59 (.06)	.19 (.06)	1206.70 (9)	98.17*** (6)
	Child Sex <sup>a</sup>	-.23** (.09)				
	T1 Child Reactive Aggression	.35*** (.05)				
	T1 Child Proactive Aggression	.02 (.05)				
	T1 Child Peer Victimization	.07 <sup>†</sup> (.04)				
	T1 Friends Reactive Aggression	.09 (.06)				
	T1 Friends Proactive Aggression	-.06 (.06)				
3			.59 (.06)	.19 (.06)	1205.73 (10)	.97 (1)
	T1 Child Peer Victimization X T1 Friends Reactive Aggression	-.04 (.05)				
4			.59 (.06)	.17 (.06)	1198.80 (13)	6.93 <sup>†</sup> (3)
	T1 Child Peer Victimization X Sex	-.20* (.09)				
	T1 Friends Reactive Aggression X Sex	-.07 (.09)				
	T1 Child Peer Victimization X T1 Friends Reactive Aggression X Sex	.07 (.11)				

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls.  $\Delta$  = Difference of model fit between consecutive models. Each model is tested against the respective preceding model. <sup>†</sup>  $p < .10$ . \*  $p \leq .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 3

*Multilevel Analyses With Victimization and Friends' Proactive Aggression at T1 Predicting Child Proactive Aggression at T2 (n = 470)*

Step	Predictor	Fixed effect (se)	Level 1 variance (se)	Level 2 variance (se)	-2log likelihood (df)	ΔLikelihood ratio (df)
1			.69 (.07)	.32 (.08)	1318.81 (3)	
2			.67 (.07)	.18 (.06)	1248.33 (9)	70.48*** (6)
	Child Sex <sup>a</sup>	-.05 (.09)				
	T1 Child Reactive Aggression	.19** (.06)				
	T1 Child Proactive Aggression	.18*** (.05)				
	T1 Child Peer Victimization	.07 (.05)				
	T1 Friends Reactive Aggression	.12 <sup>†</sup> (.06)				
	T1 Friends Proactive Aggression	-.08 (.06)				
3			.67 (.07)	.18 (.06)	1248.15 (10)	.18 (1)
	T1 Child Peer Victimization X T1 Friends Proactive Aggression	.02 (.04)				
4			.66 (.07)	.18 (.06)	1246.44 (13)	1.71 (3)
	T1 Child Peer Victimization X Sex	.02 (.09)				
	T1 Friends Proactive Aggression X Sex	-.11 (.09)				
	T1 Child Peer Victimization X T1 Friends Proactive Aggression X Sex	.02 (.10)				

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls. Δ = Difference of model fit between consecutive models. Each model is tested against the respective preceding model. <sup>†</sup> p < .10. \* p ≤ .05. \*\* p < .01. \*\*\* p < .001.

Table 4

*Multilevel Analyses With Victimization and Friends' Reactive Aggression at T2 Predicting Child Reactive Aggression at T2 (n = 479)*

Step	Predictor	Fixed effect (se)	Level 1 variance (se)	Level 2 variance (se)	-2log likelihood (df)	$\Delta$ Likelihood ratio (df)
1			.63 (.06)	.36 (.07)	1328.74 (3)	
2			.60 (.06)	.11 (.05)	1193.18 (9)	135.56*** (6)
	Child Sex <sup>a</sup>	-.29*** (.08)				
	T1 Child Reactive Aggression	.39*** (.05)				
	T1 Child Proactive Aggression	-.05 (.05)				
	T1 Child Peer Victimization	.12** (.04)				
	T2 Friends Reactive Aggression	.12* (.05)				
	T2 Friends Proactive Aggression	.08 (.05)				
3			.59 (.06)	.11 (.05)	1187.32 (10)	5.86* (1)
	T1 Child Peer Victimization X T2 Friends Reactive Aggression	.09* (.04)				
4			.58 (.06)	.11 (.05)	1180.13 (13)	7.19† (3)
	T1 Child Peer Victimization X Sex	-.17* (.08)				
	T2 Friends Reactive Aggression X Sex	-.09 (.08)				
	T1 Child Peer Victimization X T2 Friends Reactive Aggression X Sex	-.15† (.08)				

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls.  $\Delta$  = Difference of model fit between consecutive models. Each model is tested against the respective preceding model. <sup>†</sup>  $p < .10$ . \*  $p \leq .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 5

*Multilevel Analyses With Victimization and Friends' Proactive Aggression at T2 Predicting Child Proactive Aggression at T2 (n = 479)*

Step	Predictor	Fixed effect (se)	Level 1 variance (se)	Level 2 variance (se)	-2log likelihood (df)	$\Delta$ Likelihood ratio (df)
1			.70 (.07)	.30 (.07)	1341.10 (3)	
2			.66 (.07)	.15 (.06)	1251.70 (9)	89.40*** (6)
	Child Sex <sup>a</sup>	-.07 (.09)				
	T1 Child Reactive Aggression	.24*** (.06)				
	T1 Child Proactive Aggression	.15** (.05)				
	T1 Child Peer Victimization	.06 (.04)				
	T2 Friends Reactive Aggression	-.05 (.06)				
	T2 Friends Proactive Aggression	.19*** (.06)				
3			.66 (.07)	.15 (.06)	1251.65 (10)	.05 (1)
	T1 Child Peer Victimization X T2 Friends Proactive Aggression	.01 (.04)				
4			.66 (.07)	.13 (.06)	1244.74 (13)	6.91 <sup>†</sup> (3)
	T1 Child Peer Victimization X Sex	.05 (.09)				
	T2 Friends Proactive Aggression X Sex	-.14 (.09)				
	T1 Child Peer Victimization X T2 Friends Proactive Aggression X Sex	.16 <sup>†</sup> (.09)				

Note: <sup>a</sup> Sex is coded so that a higher value (1) represents girls.  $\Delta$  = Difference of model fit between consecutive models. Each model is tested against the respective preceding model. <sup>†</sup>  $p < .10$ . \*  $p \leq .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## CHAPITRE IV

### DISCUSSION GÉNÉRALE

## DISCUSSION GÉNÉRALE

Les relations avec les pairs jouent un rôle fondamental dans le développement psychosocial des enfants. Ces relations offrent un contexte unique pour la prise de conscience des règles qui régissent les relations interpersonnelles, l'apprentissage d'habiletés et de comportements sociaux ainsi que la régulation socioaffective (Hartup, 1970; 1996). Il existe plusieurs facettes aux relations entre les pairs, notamment les interactions au sein d'un groupe et les interactions dyadiques (ex. : entre amis ou entre frères et sœurs), chacune contribuant à sa manière à l'adaptation des jeunes (Deater-Deckard, 2001; Rubin, Bukowski, & Parker, 1998). Bien que l'on ait longtemps supposé que les relations entre les jeunes enfants aient peu d'influence sur leur développement relativement aux relations avec les adultes, et en l'occurrence les parents, la recherche actuelle tend à montrer que les relations précoces entre pairs ont un impact déterminant sur leur adaptation psychosociale. (ex. : Crick, Casas, & Ku, 1999 ; Hay, Castle, & Davies, 2000 ; Hay, Castle, Davies, Demetriou, & Stimson, 1999).

Malheureusement, les relations entre pairs ne sont pas toujours bénéfiques. En effet, une proportion importante (environ 20%) des enfants en début de scolarisation sont victimes d'intimidation de la part des pairs (Charach, Pepler, & Ziegler, 1995 ; Kocherderfer & Ladd, 1996 ; Snyder et al., 2003). Plusieurs facteurs contribuent à la probabilité que certains enfants éprouvent de telles difficultés relationnelles, mais il apparaît que les caractéristiques comportementales individuelles comptent parmi les plus déterminantes dans la prédiction de la victimisation par les pairs (Perry, Hodges, & Egan, 2001). À cet égard, les résultats empiriques montrent que les jeunes enfants qui manifestent des comportements extériorisés, et en particulier des comportements d'agressivité, présentent un risque élevé d'être la cible d'intimidation de la part des pairs (ex. : Boivin et al., 2001). Il semble cependant peu probable que le lien entre la

manifestation de comportements d'agressivité et la victimisation chez les jeunes enfants s'exprime uniquement de manière unidirectionnelle. En effet, ce lien paraît s'inscrire dans une dynamique développementale complexe et bidirectionnelle où les comportements d'agressivité contribuent, d'une part, à l'émergence et à la perpétuation de relations conflictuelles au sein du groupe de pairs et, d'autre part, peuvent entraîner le maintien et l'exacerbation des manifestations agressives (ex. : Hodges et al., 1999). Le lien entre les comportements d'agressivité et la victimisation semble d'autant plus complexe à la lumière des récentes données empiriques soulignant l'importance de tenir en compte la distinction entre l'agressivité réactive et l'agressivité proactive lorsque le lien entre ces variables est examiné (ex. : Card & Little, 2006 ; Salmivalli & Helteenvuori, 2007).

En plus de s'intéresser aux facteurs de risque et aux conséquences associés à la victimisation par les pairs, il importe de se questionner sur les facteurs susceptibles de diminuer ou d'accroître la probabilité que les jeunes enfants soient victimes d'intimidation et n'en subissent les répercussions néfastes. Ainsi, l'objectif principal de la présente recherche doctorale était d'identifier les facteurs modérateurs du risque et des conséquences associés à la victimisation par les pairs. Pour ce faire, deux objectifs spécifiques étaient poursuivis. Le premier objectif était de vérifier le rôle modérateur des agents de socialisation de la même tranche d'âge que l'enfant, c'est-à-dire les amis réciproques et les membres de la fratrie, dans le lien prédictif entre l'agressivité réactive et la victimisation par les pairs. Le second objectif visait à vérifier le rôle modérateur des amitiés réciproques récentes et antérieures dans le lien prédictif entre la victimisation par les pairs et la manifestation de l'agressivité réactive et de l'agressivité proactive, respectivement.

Dans l'ensemble, les résultats de la thèse suggèrent que les relations dyadiques avec les agents de socialisation de la même tranche d'âge que l'enfant, c'est-à-dire les amis réciproques et les membres de la fratrie, peuvent jouer un rôle protecteur important auprès des enfants à risque de victimisation de la part des pairs.

De plus, les résultats obtenus portent à croire que les relations d'amitié réciproque peuvent également modérer la probabilité que les enfants victimes d'intimidation en subissent les conséquences néfastes.

Ce chapitre de discussion générale propose d'abord une intégration des résultats obtenus dans chacun des articles composant la thèse. Certaines contributions originales de la thèse pour la recherche dans le domaine des relations entre les pairs seront ensuite abordées. Finalement, des avenues de recherches futures et les implications de la thèse pour l'intervention seront discutées.

#### 4.1 Intégration des résultats

Dans le but de favoriser l'intégration des résultats issus des deux articles composant la thèse, deux points seront abordés. Ces points concernent, d'une part, les liens réciproques entre l'agressivité réactive et l'agressivité proactive et la victimisation par les pairs et, d'autre part, le rôle modérateur des relations amicales et fraternelles dans ce contexte.

##### 4.1.1 Associations entre l'agressivité réactive et l'agressivité proactive et la victimisation

Les résultats issus du premier article montrent que lorsque l'on prend en compte le chevauchement entre les différents types d'agressivité, seule l'agressivité réactive – et non l'agressivité proactive – prédit la victimisation par les pairs, et ce, tant chez les garçons que chez les filles. Ces liens différenciés concordent avec les données empiriques rapportées dans d'autres études (ex. : Camodeca et al., 2002 ; Card & Little, 2006 ; Salmivalli & Nieminen, 2002) et suggèrent que les comportements agressifs réactifs tels que l'irritabilité, l'impulsivité et l'hyper-réactivité sont perçus négativement par les pairs et peuvent mener à des expériences

de victimisation. En revanche, la manifestation de comportements proactivement agressifs ne semble pas augmenter le risque d'être victime d'agression de la part des pairs. Il est toutefois important de noter que les données recueillies dans le cadre de ce premier article de même que celles rapportées dans les études antérieures (ex. : Camodeca et al., 2002 ; Card & Little, 2006 ; Salmivalli & Nieminen, 2002) sont de nature transversale et que, par conséquent, la directionnalité des effets observés ne peut être clairement établie. De récentes données longitudinales rapportées par Salmivalli et Helteenvuori (2007) portent cependant à croire que l'agressivité réactive contribue de manière significative à l'accroissement de la victimisation par les pairs au-delà du niveau de victimisation précédemment observé, alors que l'agressivité proactive, pour sa part, ne semble pas augmenter le risque de victimisation ultérieure.

Les résultats du second article confirment la nature complexe des associations différencierées et bidirectionnelles entre la manifestation des comportements d'agressivité et la victimisation par les pairs. En effet, ces résultats révèlent que la victimisation par les pairs est associée à un accroissement de l'agressivité réactive, et non de l'agressivité proactive, au-delà des niveaux d'agressivité préalablement observés. Ceci appuie la proposition de Dodge (1991) selon laquelle l'exposition précoce à un environnement hostile et menaçant, tel que la victimisation par les pairs, suscite des réactions de peur, de colère et d'hyper-réactivité qui contribuent au développement de comportements agressifs réactifs chez les enfants. En accord avec cette perspective, Pellegrini (1998) soutient que certaines victimes d'intimidation sont davantage enclines à user de stratégies agressives réactives pour se défendre contre les attaques hostiles de la part des pairs. Cet auteur affirme également que d'autres victimes sont, pour leur part, plus susceptibles d'user de stratégies proactivement agressives dans le but d'intimider ou de dominer d'autres enfants à leur tour. Les résultats de la thèse n'appuient pas cette seconde proposition.

Bien qu'aucune autre étude à ce jour n'ait examiné les liens prospectifs entre la victimisation par les pairs et l'agressivité réactive et proactive respectivement, des

données empiriques portant sur les conséquences néfastes associées aux difficultés relationnelles avec les pairs corroborent les résultats obtenus dans la thèse. Plus spécifiquement, des résultats tirés d'une étude longitudinale menée par Dodge et ses collègues (Dodge, Lansford, Burks, Bates, Pettit, Fontaine, & Price, 2003) ont démontré que le rejet par les pairs chez les enfants en début de scolarisation contribue à un accroissement de l'agressivité réactive et non de l'agressivité proactive. Selon ces auteurs, ces données s'expliquent par le fait que des difficultés relationnelles précoces avec les pairs donneraient lieu à des attributions et des attentes hostiles dans les relations sociales ce qui, en retour, favoriserait la manifestation de comportements agressifs réactifs en réponse aux situations ambiguës ou conflictuelles avec les pairs. De telles difficultés relationnelles seraient moins propices à l'accroissement de l'agressivité proactive puisque ce type d'agressivité est plutôt lié à une surestimation des avantages que procurent les actes agressifs (Smithmyer, Hubbard, & Simons, 2000). Or, la recherche montre que le recours à des stratégies agressives pour contrer les épisodes de victimisation par les pairs augmente le risque que d'autres expériences de victimisation se produisent ultérieurement (ex. : Kochenderfer & Ladd, 1997).

Les résultats obtenus dans la présente thèse suggèrent que la probabilité que les expériences de victimisation entraînent un accroissement de l'agressivité réactive concerne uniquement les garçons et non les filles. Comment expliquer ce lien différencié chez les filles et les garçons ? L'examen des moyennes de l'agressivité réactive et de l'agressivité proactive chez les garçons et les filles respectivement, indique que les garçons sont plus réactivement agressifs que les filles, et ce, aux deux temps de mesure. L'examen des écarts-types pour chacun de ces types d'agressivité aux deux temps de mesure révèle toutefois une bonne variabilité dans l'étendue des cotes obtenues tant chez les garçons que chez les filles. Par conséquent, une explication possible à ces résultats est que l'impact de la victimisation par les pairs sur le développement de l'agressivité chez les filles s'exprime sous des formes

différentes que celles mesurées dans le cadre de cette thèse. En effet, on peut penser que la nature des items de l'agressivité réactive mettant davantage l'accent sur les comportements physiquement agressifs ne permet pas d'évaluer les comportements agressifs à caractère relationnel, pourtant plus répandus chez les filles (Crick et al., 1999). Une explication alternative réside dans le fait que les formes directes de victimisation mesurées dans le cadre de cette étude, c'est-à-dire la victimisation physique et verbale, ne permettent pas de vérifier les répercussions associées à des formes plus indirectes, c'est-à-dire relationnelles, de victimisation sur le développement de l'agressivité.

Or, une récente étude réalisée par Ostrov (2008) auprès d'enfants fréquentant la prématernelle montre que la victimisation relationnelle par exemple, le fait d'être la cible de médisances ou d'exclusion sociale prédit la manifestation de comportements similairement agressifs, et ce, au-delà des niveaux de victimisation et d'agressivité physique observés. En se basant sur ces résultats de même que ceux rapportés dans d'autres études (ex. : Maccoby, 1998 ; Ostrov & Keating, 2004), l'auteur soutient que les expériences de socialisation qui sous-tendent la manifestation de l'agressivité chez les filles et les garçons sont différentes, particulièrement chez les jeunes enfants où la ségrégation de genre est prééminente. Ainsi, selon cet auteur, la victimisation relationnelle serait davantage reliée à la manifestation de l'agressivité relationnelle chez les jeunes filles alors que chez les jeunes garçons, on observerait plutôt une association entre la victimisation physique et l'agressivité physique. À la lumière de ces résultats, il apparaît que les liens potentiellement différenciés chez les filles et les garçons entre la victimisation par les pairs, d'une part, et l'accroissement de comportements d'agressivité, d'autre part, mériteraient d'être explorés davantage dans les recherches futures.

En somme, les résultats de la thèse appuient l'importance de prendre en compte la distinction entre l'agressivité réactive et l'agressivité proactive lorsque l'examen des liens entre la victimisation par les pairs et les comportements

d'agressivité est à l'étude. En effet, il semble que seule l'agressivité réactive — et non l'agressivité proactive — prédit les expériences de victimisation au sein du groupe de pairs chez les enfants en début de scolarisation. De plus, il apparaît que ces liens différenciés opèrent de façon complexe et bidirectionnelle dans la mesure où les comportements agressifs réactifs peuvent, à la fois, constituer un facteur de risque et une conséquence de la victimisation par les pairs, particulièrement chez les garçons. Ainsi, la manifestation de l'agressivité réactive et les expériences de victimisation par les pairs semblent étroitement intriquées et insérées dans un patron relationnel émergent qui maintient et favorise la mésadaptation psychosociale des enfants.

#### 4.1.2 Rôle modérateur des relations dyadiques dans la prédition du risque et des conséquences associés à la victimisation

Les résultats rapportés dans le premier article montrent que les relations d'amitié peuvent jouer un rôle de protection important auprès des enfants à risque de victimisation par les pairs. Plus spécifiquement, ces résultats révèlent que les enfants réactivement agressifs qui ont des amis prosociaux sont moins susceptibles d'être la cible d'intimidation perpétrée par les pairs. En revanche, lorsque ces enfants ont des amis peu prosociaux leur risque de victimisation est accru. De façon similaire au rôle modérateur des amis, les résultats de cet article montrent que les caractéristiques prosociales des membres de la fratrie peuvent aussi diminuer le risque de victimisation chez les enfants réactivement agressifs. De manière plus spécifique, lorsque les enfants réactivement agressifs ont un frère ou une sœur qui présente un haut niveau de prosocialité, leur risque de victimisation est moindre. Ce risque est, par ailleurs, maximisé lorsque le frère ou la sœur présente un faible niveau de prosocialité.

Ces résultats vont dans le même sens que ceux rapportés dans des études antérieures (ex. : Hodges et al., 1999 ; Schwartz et al., 1999) et appuient l'idée selon

laquelle les relations d'amitié réciproques ont une fonction protectrice importante auprès des enfants manifestant des comportements qui présentent un risque pour la victimisation par les pairs. Les résultats issus de cette étude offrent toutefois une compréhension nouvelle et plus approfondie sur la manière dont les amis réciproques peuvent protéger ces enfants. En effet, à la lumière des présents résultats, il apparaît que le seul fait d'avoir des amis réciproques ne suffit pas à protéger du risque de victimisation, mais que les caractéristiques comportementales des amis, et en particulier leur niveau de prosocialité, doivent également être prises en compte. De cette façon, les amis réciproques qui possèdent des caractéristiques prosociales semblent plus enclins à offrir une protection efficace contre les actes d'intimidation que les amis qui présentent des caractéristiques comportementales moins favorables. Compte tenu leur haut niveau de compétence sociale (Eisenberg & Fabes, 1998; Eisenberg et al., 1996), les amis prosociaux peuvent agir à titre de conciliateur lors d'escarmouches ou de conflits impliquant les enfants réactivement agressifs et de ce fait, minimiser le risque que la situation s'envenime. On peut aussi penser qu'à travers leurs interactions avec des amis prosociaux, les enfants réactivement agressifs acquièrent et développent des habiletés sociales plus adéquates ce qui, en retour, atténue le risque de victimisation. Cette seconde perspective est en accord avec l'idée que de bonnes relations d'amitié pendant l'enfance constituent un terrain propice au développement et à la mise en pratique de nouvelles compétences sociales chez les enfants manifestant des problèmes comportementaux (Newcomb & Bagwell, 1996).

Il semble que le rôle de protection attribué aux relations d'amitié peut se généraliser à d'autres relations dyadiques significatives pendant l'enfance, notamment les relations fraternelles. En effet, les résultats de la thèse suggèrent que les membres de la fratrie qui manifestent des caractéristiques prosociales peuvent jouer un rôle de protection similaire à celui observé chez les amis réciproques prosociaux. Ainsi, on peut penser qu'à travers des processus semblables à ceux proposés pour les amis, c'est-à-dire une aide tangible lors de conflit ou

l'apprentissage d'habiletés et de comportements sociaux, les membres de la fratrie qui possèdent des caractéristiques prosociales peuvent minimiser le risque que les enfants réactivement agressifs soient la cible d'intimidation de la part des pairs. À cet égard, il importe toutefois de noter que les données rapportées dans le cadre de la thèse sont tirées d'un échantillon de jumeaux où les membres de la dyade fréquentent la même école voire la même classe. Par conséquent, la probabilité que les résultats présentés ici soient généralisables à d'autres dyades fraternelles de non-jumeau qui ne fréquentent pas la même classe ou la même école demeure incertaine. En effet, compte tenu des données empiriques qui démontrent que la plupart les actes d'intimidation en milieu scolaire ont lieu dans la cour de récréation et, dans une moindre mesure, dans la classe (Craig & Pepler, 1998), on peut penser qu'un co-jumeau prosocial est plus à même d'intervenir lors de situation problématique avec les pairs qu'un frère ou une sœur non-jumeau qui ne fréquente pas la même classe ou la même école. Clairement, l'idée que les relations fraternelles peuvent jouer un rôle de protection important auprès des enfants à risque de victimisation mériterait une attention accrue dans les recherches futures.

Les résultats du second article corroborent l'idée que les relations d'amitié, et en particulier les caractéristiques comportementales des amis réciproques, ont un impact majeur sur l'adaptation des enfants qui présentent des problèmes psychosociaux. De plus, les résultats de cet article confirment l'importance de prendre en compte la distinction entre l'agressivité réactive et l'agressivité proactive lorsque l'impact des caractéristiques comportementales agressives des amis sur l'adaptation des victimes est à l'étude. De manière plus spécifique, les résultats du deuxième article révèlent que lorsque les enfants victimes d'intimidation entretiennent des relations d'amitié avec des pairs agressifs de façon réactive, ils sont davantage enclins à manifester de tels comportements à leur tour. Inversement, les enfants victimisés dont les amis réciproques ne manifestent pas de telles caractéristiques comportementales sont moins à risque d'être réactivement agressifs

plus tard. En regard de l'agressivité proactive, les résultats obtenus ne révèlent aucun effet modérateur des caractéristiques agressives proactives des amis dans le lien entre la victimisation et la manifestation ultérieure de comportements similairement agressifs.

Ces résultats appuient l'hypothèse émise par plusieurs auteurs (Pellegrini et al., 1999 ; Prinstein & Cillessen, 2003) selon laquelle la manifestation de comportements agressifs réactifs en réponse aux attaques hostiles perpétrées par les pairs pourrait être socialement renforcée par les autres enfants, et en particulier les enfants réactivement agressifs, qui auraient tendance à estimer que de tels comportements constituent une riposte justifiée. Sous l'influence de ce renforcement positif, les enfants victimisés auraient tendance à recourir davantage à des stratégies agressives réactives en réponse aux actes d'intimidation. On peut également penser que les amis agressifs réactifs pourraient eux-mêmes user de stratégies agressives réactives lors de situations conflictuelles avec les pairs et ainsi, par processus de modelage, influencer la manifestation de comportements agressifs chez les enfants victimes d'intimidation. Il est clair qu'un examen plus approfondi des processus spécifiques qui sous-tendent les liens prédictifs observés serait nécessaire.

L'effet modérateur des caractéristiques agressives réactives des amis dans le lien entre la victimisation par les pairs et la manifestation ultérieure de l'agressivité réactive s'observe uniquement chez les garçons. Chez les filles, il apparaît que la victimisation par les pairs ne prédit pas l'accroissement de l'agressivité réactive et que les caractéristiques agressives des amis dans ce contexte n'ont pas d'effet modérateur significatif. Tel que mentionné précédemment, il est probable que les formes davantage directes qu'indirectes de victimisation et d'agressivité mesurées dans la cadre de cette thèse expliquent, du moins en partie, ces résultats. Une autre piste explicative peut être envisagée à la lumière d'une récente étude publiée par Brendgen et ses collègues (Brendgen, Boivin, Vitaro, Girard, Dionne, & Pérusse, 2008) examinant le rôle modérateur potentiel des facteurs génétiques dans le lien

prédictif entre la victimisation par les pairs et la manifestation de comportements agressifs. Appuyant le modèle hypothétique de « diathèse-stress », les résultats de cette étude montrent que la probabilité que les expériences aversives de victimisation entraînent la manifestation de comportements agressifs chez les enfants dépend de leur prédisposition génétique à l'agressivité, et ce, particulièrement chez les filles. En d'autres termes, seules les filles qui présentent une prédisposition génétique à l'agressivité sont susceptibles de manifester des comportements agressifs en réponse aux expériences de victimisation. Chez les garçons, la victimisation par les pairs est associée à la manifestation de comportements agressifs peu importe leur vulnérabilité génétique à l'agressivité. Ces résultats portent à croire que le rôle modérateur des facteurs environnementaux tels que le renforcement de comportements agressifs chez les amis réciproques, dans le lien entre la victimisation et la manifestation de l'agressivité est moins effectif chez les filles pour qui les variations observées pourraient être davantage attribuables à des facteurs d'ordre génétique. Ceci d'autant plus que les comportements d'agressivité étant généralement jugés moins favorablement chez les filles que chez les garçons (Goldstein, Tisak, & Boxer, 2002), ces dernières sont peut-être moins enclines à encourager de tels comportements lorsque des situations conflictuelles entre pairs surviennent. Clairement, ces hypothèses mériteraient d'être étudiées plus amplement à l'avenir.

Est-ce que le rôle modérateur des caractéristiques agressives réactives des amis réciproques dans le lien prédictif entre la victimisation par les pairs et la manifestation de l'agressivité réactive est différent pour les amis antérieurs et les amis récents ? Les résultats du second article indiquent que seuls les amis récents ont un impact sur la probabilité que les enfants victimisés manifestent davantage de comportements agressifs. Ces résultats corroborent ceux rapportés par Brendgen et ses collègues (2000) et suggèrent que les processus de l'apprentissage social en opération au sein des relations d'amitié sont plus saillants lorsque les agents de

socialisation ont une forte valence affective, ce qui semble être le cas avec les amis récents.

#### 4.2 Autres contributions de la thèse

En plus de contribuer à une meilleure compréhension des facteurs de risque et des facteurs de protection qui influent sur le développement psychosocial des enfants, cette thèse apporte également une contribution importante au niveau méthodologique, notamment en regard à la méthodologie d'analyse des données utilisée. Peu d'études dont les visées n'étaient pas d'ordre génétique ont été réalisées à partir d'un échantillon de jumeaux. Pourtant, la recherche tend à démontrer que les jumeaux ne se distinguent pas des autres enfants à plusieurs égards, incluant leur niveau d'adaptation psychosociale (ex. : Pulkkinen et al., 2003). De plus, l'examen systématique du rôle que joue la fratrie, et en particulier les co-jumeaux, dans le développement psychosocial des enfants a suscité peu d'intérêt de la part de la communauté scientifique. Cette pénurie peut, du moins en partie, s'expliquer par le fait que l'étude des membres de la fratrie pose plusieurs défis au plan de l'analyse statistique. En effet, les données recueillies auprès de jumeaux issus d'une même dyade ne sont pas considérées comme indépendantes en raison des influences communes qui s'exercent sur les membres de la famille, c'est-à-dire les facteurs génétiques et environnementaux. La violation du postulat d'indépendance des données empêche l'utilisation de modèles d'analyses plus traditionnels tels que la régression linéaire. L'utilisation dans le cadre de la présente thèse de modèles linéaires hiérarchiques à niveaux multiples, offre donc une alternative valable à l'analyse de ce type de données. De manière plus spécifique, les modèles à niveaux multiples permettent l'analyse de données structurées selon un ordre hiérarchique. Dans le contexte de la thèse, chaque jumeau pris individuellement correspond à une observation de niveau subordonné niché à l'intérieur d'un niveau plus élevé, c'est-à-dire la dyade. De cette façon, les modèles à niveaux multiples rendent possible

l'estimation des paramètres séparément pour chacun des niveaux d'analyse en tenant compte de la variabilité expliquée par les autres niveaux. En somme, l'analyse des données issues d'un échantillon de jumeaux et basée sur l'utilisation de modèles à niveaux multiples a permis de répondre aux questions de recherche sans pour autant compromettre la crédibilité statistique des résultats.

#### 4.3 Avenues de recherches futures

Les résultats de la thèse suscitent plusieurs questions qu'il serait important d'aborder dans les recherches futures. En premier lieu, les deux études présentées dans le cadre de la thèse ont permis d'approfondir les connaissances en regard des facteurs de protection susceptibles de modérer le risque de victimisation par les pairs de même que les conséquences néfastes qui y sont associées. Toutefois, ces résultats demeurent muets sur la question fondamentale des processus qui sous-tendent les liens observés. Ainsi, il serait pertinent de s'attarder à l'examen de ces processus dans l'avenir. Des travaux pourraient, par exemple, être entrepris de manière à vérifier dans quelle mesure le rôle de protection joué par les amis prosociaux auprès des enfants à risque de victimisation est tributaire de processus de l'apprentissage social tels que le modelage et le renforcement extrinsèque. D'autres travaux pourraient évaluer si des processus similaires sont en opération lorsque le rôle de protection joué par les membres de la fratrie dans ce contexte est à l'étude. De même, il serait important d'examiner les mécanismes à travers lesquels les amis agressifs réactifs actuels exacerbent la probabilité que les enfants victimisés, en particulier les garçons, manifestent de tels comportements agressifs à leur tour. À cet égard, certains auteurs (Pellegrini et al., 1999 ; Prinstein & Cillessen, 2003) ont évoqué l'idée que le recours à des stratégies agressives réactives en réponse aux attaques perpétrées par les pairs pourrait être perçu par certains enfants comme une retaliation justifiée et de ce fait, renforcerait la manifestation de tels comportements chez les victimes. Cette hypothèse mériterait d'être étudiée plus systématiquement à l'avenir.

Deuxièmement, les études menées dans le cadre de la thèse ont uniquement centré l'attention sur les formes directes (c'est-à-dire physique et verbale) de victimisation par les pairs. Or, des études suggèrent que la victimisation indirecte de la part des pairs telle que les médisances, les rumeurs ou l'exclusion sociale est, du moins en partie, associée à des facteurs de risque et à des conséquences distincts de ceux observés pour la victimisation directe (ex. : Crick et al., 1999; Ostrov, 2008). De cette façon, on peut également penser que des facteurs modérateurs différents peuvent influer sur la probabilité que certains enfants soient victimes d'intimidation indirecte ou n'en subissent les répercussions néfastes. Par exemple, une étude menée par Prinstein et ses collègues (2001) a démontré qu'un haut niveau de soutien social dans les relations d'amitié réciproque diminue le risque que les filles et les garçons victimes d'intimidation indirecte manifestent des troubles extériorisés. Aucun effet modérateur de la qualité des relations d'amitié dans ce contexte n'a toutefois été observé à l'égard de la victimisation directe. À la lumière de ces données appuyant la spécificité des différentes formes de victimisation, il serait intéressant d'examiner dans quelle mesure les résultats concernant le rôle modérateur des caractéristiques comportementales des amis et des membres de la fratrie obtenus dans le cadre de la thèse sont généralisables à d'autres formes plus indirectes de victimisation par les pairs. Il serait également pertinent de tester les différences potentielles entre les filles et les garçons à cet égard, compte tenu certains travaux suggérant un taux plus élevé de victimisation indirecte chez les filles que chez les garçons ainsi que des conséquences particulièrement dévastatrices associées à cette forme de victimisation chez ces dernières (ex. : Crick, Nelson, Morales, Cullerton-Sen, Casas, Hickman, 2001).

Troisièmement, l'évolution des connaissances met de plus en plus en évidence la nature profondément complexe des multiples facteurs impliqués dans la problématique de la victimisation par les pairs. En effet, on assiste depuis les dernières années à une reconnaissance de la nécessité pour la recherche dans ce

domaine d'aller au-delà de l'identification des facteurs individuels impliqués pour étendre l'investigation à l'identification et à la prise en compte d'autres facteurs environnementaux extérieurs à l'enfant tels que les amis, le groupe de pairs, l'école, la famille, les médias et le système social. De par leur intérêt pour les relations d'amitié et les relations fraternelles, les études menées dans le cadre de cette thèse s'inscrivent clairement dans cette foulée. Il faut toutefois reconnaître que beaucoup de chemin reste à parcourir afin qu'émerge une compréhension plus large et plus intégrée de la place qu'occupe ces relations dyadiques et leur rôle potentiellement modérateur auprès des enfants à risque de victimisation par les pairs et son effet dévastateur.

Enfin, de façon plus générale, l'étude des facteurs individuels et environnementaux reliés à la problématique de la victimisation par les pairs bénéficierait de l'utilisation de méthodologies d'analyses statistiques qui tiennent davantage compte de l'impact des facteurs génétiques sur les variables d'intérêt. En effet, la contribution des facteurs génétiques à la manifestation de phénotype tel que l'agressivité est aujourd'hui bien documentée (ex. : Brendgen et al., 2006). De plus, des résultats tels que ceux rapportés par Brendgen et ses collègues (2008) concernant le rôle modérateur d'une prédisposition génétique à l'agressivité dans le lien entre la victimisation et la manifestation subséquente de comportements d'agressivité chez les filles montrent bien l'influence que ces facteurs peuvent avoir sur les liens qui unissent les variables indépendantes et dépendantes à l'étude. De ce fait, un meilleur contrôle statistique de ces facteurs potentiellement confondants paraît souhaitable lorsque leur impact direct ou indirect sur les variables d'intérêt n'est pas le sujet principal de la recherche. S'appuyant sur des principes en génétique du comportement, Vitaro et ses collègues (Vitaro, Brendgen, & Arseneault, 2009) ont récemment proposé une méthodologie prometteuse pour le contrôle statistique de variables confondantes telles que des facteurs génétiques et en ce sens, offre une alternative valable à l'utilisation de devis expérimentaux dans le contexte de la

recherche psychosociale. L'application de cette méthodologie aux études s'intéressant à l'association entre la victimisation par les pairs et la manifestation de l'agressivité ainsi que les variables modératrices dans ce contexte serait certainement à envisager dans le futur.

#### 4.4 Conclusions et implications pour l'intervention

Pour conclure, les résultats de la thèse corroborent l'idée largement inspirée par les travaux de Sullivan (1953) selon laquelle les relations dyadiques entre pairs pendant l'enfance peuvent compenser pour certains impairs résultant d'autres expériences relationnelles problématiques. En effet, les résultats rapportés montrent que les relations dyadiques significatives entre pairs pendant l'enfance ont une influence majeure sur la probabilité que les enfants soient victimes d'intimidation par les pairs et en subissent les conséquences néfastes. Ces données témoignent également de la nécessité d'aller au-delà de l'examen de la seule présence des amis ou des membres de la fratrie et de centrer davantage l'attention sur les caractéristiques comportementales de ces derniers lorsque leur rôle modérateur potentiel est examiné.

En plus de leur contribution empirique, ces résultats présentent d'importantes implications pratiques. D'abord, à la lumière des résultats issus du premier article, il semble important de favoriser davantage le développement de relations d'amitié avec pairs prosociaux chez les enfants manifestant des comportements à risque de victimisation par les pairs. Par ailleurs, et compte tenu des résultats tirés du deuxième article, il serait important d'éviter l'affiliation entre les enfants aux prises avec des problèmes de victimisation et les pairs agressifs. Ceci paraît particulièrement capital chez les garçons.

Les données issues de cet article montrent également qu'indépendamment du genre de l'enfant et du niveau de victimisation par les pairs, le seul fait d'avoir des

amis qui manifestent des comportements agressifs, tant de manières réactive que proactive, augmente la probabilité que les enfants deviennent eux-mêmes plus agressifs dans le futur. Ceci appuie l'idée, maintenant bien soutenue empiriquement, que l'association entre pairs agressifs entraîne des formes d'apprentissage à la déviance (Dishion, Patterson, & Griesler, 1994). Par conséquent, de tel type de relation devrait être découragé pour tous les enfants, incluant les victimes d'intimidation.

Comment favoriser le développement et le maintien de relations d'amitié avec des pairs qui possèdent des caractéristiques favorables, notamment chez les enfants présentant un risque pour l'adaptation psychosociale ? Il semble qu'une des façons serait d'élaborer et de mettre en place des stratégies de pairage entre enfants présentant des niveaux d'adaptation psychosociale différents dans le contexte de la garderie, de l'école ou d'autres activités dans la communauté. Une autre façon serait de mieux informer et outiller les parents en regard aux avantages et aux inconvénients potentiels liés aux relations d'amitié pendant l'enfance. En effet, l'évolution des recherches dans le domaine des relations avec les pairs met en évidence le rôle majeur que joue la famille, et en particulier les parents, dans les expériences de socialisation avec les pairs (ex. : Parke & Ladd, 1992). Selon cette perspective, les parents ont un impact déterminant sur la nature et la qualité des relations de leur enfant avec les pairs et ce, tant de façon directe (ex. : à titre d'instigateur, de médiateur, de superviseur ou de consultant) que de façon indirecte à travers par exemple, leurs pratiques éducatives, leurs valeurs et leurs perceptions des relations sociales. Ainsi, ces derniers pourraient bien être les premiers « architectes » de l'univers social de leur enfant tant à l'intérieur qu'à l'extérieur du milieu familial.

Enfin, à la lumière des résultats indiquant que les membres de la fratrie peuvent aussi jouer un rôle déterminant dans l'adaptation psychosociale des enfants, notamment en regard à leur risque de victimisation par les pairs, il apparaît important d'accorder une attention accrue aux relations fraternelles lors de l'élaboration et la

mise en place de stratégies d'intervention par les différents membres de la communauté. De plus, des efforts accrus pourraient être apportés à la diffusion de connaissances destinées aux parents en regard de l'importance des relations fraternelles sur le développement psychosocial des jeunes. Il semble que de cette manière, la recherche dans le domaine des relations avec les pairs pourrait mieux soutenir ceux-ci dans leur désir d'ouvrir la voie à une vie sociale riche et structurante pour leur enfant.

## RÉFÉRENCES

(CHAPITRES I ET IV)

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## APPENDICE A

### CERTIFICAT D'ÉTHIQUE



Université du Québec à Montréal

Case postale 8888, succursale Centre-ville  
Montréal (Québec) Canada H3C 3P8  
Comité institutionnel d'éthique  
de la recherche avec des êtres humains

No. R1-031465

## Conformité à l'éthique en matière de recherche impliquant la participation de sujets humains

Le Comité d'éthique de la recherche avec des êtres humains de l'UQAM a examiné le protocole de recherche suivant :

Responsable(s) du projet : Mara R Brendgen

Département ou École : Psychologie

Titre du projet : *The many ways of suffering: Physical and psychological victimization.*

Étudiant(s) réalisant leurs projets de mémoire ou de thèse dans le cadre du présent projet ou programme :

Véronique Lamarche, Annie Renouf et Geneviève Charron, étudiantes au doctorat en psychologie.

Ce protocole de recherche est jugé conforme aux pratiques habituelles et répond aux normes établies par le «*Cadre normatif pour l'éthique de la recherche avec des êtres humains de l'UQAM*».

Le projet est jugé recevable au plan de l'éthique de la recherche avec des êtres humains.

### Membres du Comité

Marc Bélanger, Professeur, Département de kinanthropologie

Henriette Bilodeau, Professeure, Département Organisation et ressources humaines

René Binette, Directeur, Écomusée du fier monde, Représentant de la collectivité

Shahira Fawzi, Enseignante retraitée de la CSDM, Représentante de la collectivité

Suzanne Lemire, Professeure associée, École des arts visuels et médiatiques

Joseph Josy Lévy, Professeur, Département de sexologie et Institut Santé et Société

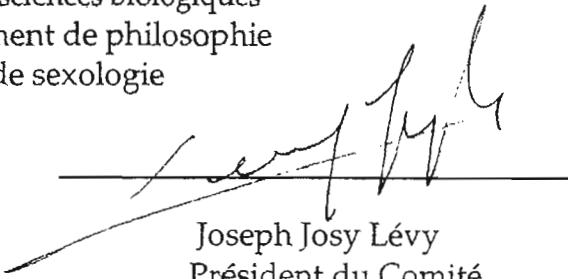
Francine M. Mayer, Professeure, Département des sciences biologiques

Christian Saint-Germain, Professeur, Département de philosophie

Jocelyne Thériault, Professeure, Département de sexologie

22 avril 2005

Date



Joseph Josy Lévy  
Président du Comité



## APPENDICE B

### INSTRUMENTS DE MESURE

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## B.1 Verbatim de la procédure sociométrique et items sur la victimisation

1<sup>ère</sup> étape : PRÉSENTATION DE LA CLASSE

*Bonjour comment ça va aujourd’hui ? Pour commencer, nous allons nous présenter. Elle, elle s’appelle .....et moi c’est ..... Quelqu’un est venu vous prendre en photo. On va faire un jeu avec vous avec ces photos. On va jouer au jeu « des devinettes sur tes amis »*

*maintenant, je vais te donner un cahier de photo et un crayon. Quand tu enterras ton nom, tu lèves ta main et je vais t’apporter le cahier. Mais attention ! Il ne faut pas regarder tout de suite ce qu’il y a dans le cahier. Il faut attendre le signal d’accord ?*

2<sup>ème</sup> étape : EXPLICATION DES RÈGLES DU JEU

*Maintenant, je vais t’expliquer le jeu. D’abord, il y a 2 règles très très importantes. La première, c’est le **silence**. Le silence est très très important pour pouvoir jouer. Si le silence s’en va, on ne peut pas jouer.*

*La deuxième règle, c’est qu’il ne faut pas regarder dans le cahier de ton voisin pour voir les réponses. Le jeu des devinettes sur les amis est un jeu qui se fait tout seul... Les réponses aux devinettes sont un secret entre toi et ton cahier.*

*Bravo ! Tu as compris les règles du jeu. Maintenant, je vais t’expliquer comment répondre aux devinettes. Tu es prêt ? Alors, ouvre le cahier à la première page. Les photos de tout le monde sont bien à la page de la **SOURIS** ?*

*On va commencer par nommer tous les amis. Ici, c'est....., ici, c'est....., etc.*

### **Seulement dans le cas des jumeaux MZ dans la même classe**

*Tu sais que .....et .....se ressemblent beaucoup. Alors pour ne pas se tromper, on a mis des points de couleur pour les reconnaître facilement. Ici, c'est.....qui a le point bleu et là, c'est.....qui a le point jaune.*

*Pour être sûr de ne pas se tromper, .....porte une camisole BLEUE parce qu'il y a un point bleu sous sa photo et .....porte une camisole JAUNE parce qu'il y a un point jaune sous sa photo.*

*Donc, si tu penses à ....., tu encercles le visage avec le point bleu et si tu penses à ....., tu encercles le visage avec le point jaune.*

*Maintenant, je vais te poser des questions et toi, tu vas répondre en encerclant les photos que tu vas choisir sans regarder les réponses des autres enfants. D'accord ?*

*Je vais te montrer comme faire. Lorsque je te demande d'encercler des visages, tu fais comme ça. Montrer l'exemple. Et non comme ça. Faire une démonstration d'un petit cercle à l'intérieur du visage. Ni comme ça. Faire une démonstration d'un petit cercle qui recoupe plus d'une photo. Tu encercles le visage comme ça. Refaire l'exemple.*

### **3<sup>ème</sup> étape : ÉNONCÉS SOCIOCÉTRIQUES**

*On va faire une petite pratique pour voir si tu as bien compris... On va à la page de la SOURIS.*

**Encercle ton propre visage.**

Faire le tour de la classe pour vérifier si les enfants ont bien encerclé la photo.

*Bravo ! Tu as bien compris le jeu. Maintenant, on va commencer. Mais attention ! Pour les prochaines devinettes que je vais te poser, tu ne peux plus encercler ton visage. Il faut toujours encercler le visage des autres enfants. Pas le tien. Tu comprends ?*

**Seulement dans le cas des jumeaux dans la même classe**

*Maintenant tu vas à la page de la **CHOUETTE**.*

**Encercle le visage de .....** (jumeau 1, correspondant au point bleu)

*Bon maintenant, vas à la page des **CERISES**.*

**Encercle le visage de .....** (jumeau 2, correspondant au point jaune)

*Bon, maintenant on commence le jeu pour vrai. Tourne la page pour aller à celle de l'**AUTOBUS**.*

**Encercle le visage de 3 enfants qui sont tes meilleurs amis.**

*N'oublie pas la règle du jeu, tu ne peux pas encercler toi. Pour cette devinette, tu ne peux pas encercler ton jumeau. (Seulement dans le cas des jumeaux dans la même classe.)*

*.....On va maintenant à la page des **PATINS**. Bon, ici avant de te poser la devinette, je vais te montrer un dessin. On regarde bien le dessin avec ses yeux. Regarde là, il y a un enfant qui crie des noms pas gentils à lui. Lui, il se fait souvent crier des noms.*

**Maintenant tu vas encercler le visage de 3 enfants qui, comme lui, se font**

**le PLUS souvent crier des noms par les autres enfants.**

*N'oublie pas la règle du jeu, tu ne peux pas t'encercler toi.*

.....On va maintenant à la page du **CHAT**. Ici encore, tu vas regarder un dessin. On regarde bien le dessin avec ses yeux. Cet enfant, il se fait souvent pousser et frapper par les autres enfants.

Maintenant toi, tu vas encercler le visage de 3 enfants qui, comme lui, se font le PLUS souvent pousser et frapper par les autres enfants.

*N'oublie pas la règle du jeu, tu ne peux pas t'encercler toi.*

## B.2 Items sur les comportements de prosocialité et les comportements d'agressivité réactive et proactive

### LE COMPORTEMENT DE L'ÉLÈVE

Les énoncés qui suivent se rapportent au comportement possible d'un enfant durant la classe. Nous aimerions vous poser quelques questions sur la manière dont \_\_\_\_\_ s'est senti ou a agi **au cours des 6 derniers mois.**

Selon votre connaissance de l'élève, indiquez-nous ce qui, selon vous, décrit le mieux les comportements de cet enfant. Même si cela peut paraître difficile, il est important de répondre à tous les énoncés. Si le comportement ne s'est jamais manifesté ou si vous êtes incapable d'évaluer ce comportement, ne répondez *jamais ou pas vrai*.

<b>Au cours des 6 derniers mois</b> , combien de fois diriez-vous que l'enfant :	<b>Jamais ou pas vrai</b>	<b>Quelques fois ou un peu vrai</b>	<b>Souvent ou très vrai</b>
1. ...a tenté d'arrêter une querelle ou une dispute ?	1	2	3
5. ...a essayé d'aider quelqu'un qui s'était blessé ?	1	2	3
9. ...a invité un enfant qui regardait les autres à prendre part à un jeu ?	1	2	3
17. ...a offert d'aider à nettoyer un gâchis fait par quelqu'un d'autre ?	1	2	3
60. ...a consolé un enfant (ami, frère ou sœur) qui pleurait ou était bouleversé ?	1	2	3
74. ...est venu(e) en aide à d'autres enfants (amis, frère ou sœur) qui ne se sentaient pas bien ?	1	2	3

	<b>Jamais ou pas vrai</b>	<b>Quelques fois ou un peu vrai</b>	<b>Souvent ou très vrai</b>
33. ...lorsqu'on le (la) taquinait, a réagi de façon agressive ?	1	2	3
51. ...lorsqu'on le (la) contredisait, a réagi de façon agressive?	1	2	3
55. ...lorsque quelqu'un lui a fait mal accidentellement (par exemple en le/la bousculant), il (elle) s'est fâché(e) et a commencé une bagarre (une chicane) ?	1	2	3
69. ...lorsqu'on lui prenait quelque chose, a réagi de façon agressive ?	1	2	3
18. ... a encouragé des enfants à s'en prendre à un autre enfant ?	1	2	3
40. ....a cherché à dominer les autres enfants ?	1	2	3
53. ....a fait peur aux autres afin d'obtenir ce qu'il (elle) voulait ?	1	2	3