Early Childhood Factors Associated With Peer Victimization Trajectories From 6 to 17 Years of Age

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abstract

OBJECTIVES: To describe (1) the developmental trajectories of peer victimization from 6 to 17 years of age and (2) the early childhood behaviors and family characteristics associated with the trajectories.

METHODS: We used data from 1760 children enrolled in the Quebec Longitudinal Study of Child Development, a population-based birth cohort. Participants self-reported peer victimization at ages 6, 7, 8, 10, 12, 13, 15, and 17 years. Participants' behavior and family characteristics were measured repeatedly between ages 5 months and 5 years.

RESULTS: We identified 4 trajectories of peer victimization from 6 to 17 years of age: low (32.9%), moderate-emerging (29.8%), childhood-limited (26.2%), and high-chronic (11.1%). Compared with children in the low peer victimization trajectory, children in the other 3 trajectories were more likely to exhibit externalizing behaviors in early childhood, and those in the high-chronic and moderate-emerging trajectories were more likely to be male. Paternal history of antisocial behavior was associated with moderate-emerging (odds ratio [OR] = 1.54; 95% confidence interval [CI] = 1.09–2.19) and high-chronic (OR = 1.93; 95% CI = 1.25–2.99) relative to low peer victimization. Living in a nonintact family in early childhood was associated with childhood-limited (OR = 1.48; 95% CI = 1.11–1.97) and high-chronic (OR = 1.59; 95% CI = 1.09–2.31) relative to low peer victimization.

CONCLUSIONS: Early childhood externalizing behaviors and family vulnerabilities were associated with the development of peer victimization. Some children entered the cascade of persistent peer victimization at the beginning of primary school. Support to these children and their families early in life should be an important component of peer victimization preventive interventions.

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WHAT'S KNOWN ON THIS SUBJECT: Peer victimization affects children worldwide. Few studies captured its evolution over critical periods in the development of peer relationships. Moreover, little is known about preexisting vulnerabilities that may forecast the emergence of different developmental patterns of peer victimization.

WHAT THIS STUDY ADDS: The development of peer victimization was heterogeneous. For some children, peer victimization lasted throughout their school career; for others, it was limited to the first years of primary school. Early childhood behaviors and family vulnerabilities were associated with these developmental patterns.

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Peer victimization is a public health concern worldwide.[1] It is defined as harm caused by peers acting outside of the norms of appropriate conduct.[2] Adolescents who have been exposed to persistent peer victimization are at increased risk of mental health problems, including anxiety, depression, and suicidality.[3–5] However, peer victimization is a multifaceted experience and relatively few studies have investigated its development over the life course. The identification of early behavioral and familial factors that may forecast the emergence of different patterns of peer victimization should provide information to better tailor preventive interventions.

Peer victimization is characterized by substantial individual variability in its timing, duration, and intensity. A variety of patterns of stability and change have been documented across different periods from early childhood to adolescence.[3,6–19] The bulk of these studies revealed that an important proportion of children (between 25% and 60%) experience moderate-level peer victimization with varying developmental patterns (ie, increasing, decreasing trajectories).[3,6,7,11,13,15,16] Most of these studies were focused on the transition from primary to secondary school.[3,11,13,15,16] However, there is evidence that the vicious cycle of peer victimization and adjustment problems may already be established in the first years of school[20–23] and possibly during preschool years.[7,24] To our knowledge, only 2 studies described the individual variations of peer victimization from the beginning of formal education throughout the high school years, capturing the critical periods in the development of peer relationships (ie, beginning of and subsequent transitions across the cycle of mandatory education).[3,16]

School-based antibullying interventions have shown significant but modest effects in reducing victimization.[25] Universal preventive interventions generally do not address preexisting vulnerabilities that may increase the likelihood of being a target of bullying. Behavior problems before school entry (ie, before 6 years of age) may condition subsequent peer victimization experiences. For instance, externalizing behavior problems in early childhood has been found to be one of the most important correlates of subsequent peer victimization.[7,8,20,21,24] The role of early childhood internalizing behavior is less understood, with studies revealing either an increased likelihood of[8,26] or no association with[7,21,24] subsequent chronic peer victimization. Moreover, studies revealed that children exposed to parents' psychopathology,[27,28] negative parenting,[7,29,30] or living in a nonintact family[13] have an increased likelihood of being peer victimized, whereas those who benefit from warm, supportive parenting are protected against peer victimization.[13,30] Despite the unique role that mothers and fathers play in children's psychosocial development,[31–33] the evidence on their differential contribution to the experience of peer victimization[34] is limited.

Our investigation builds on the work of Barker et al[7] and Geoffroy et al[3] on the development of peer victimization in the Quebec Longitudinal Study of Child Development (QLSCD) by extending the follow-up period across adolescence. It complements previous work with a comprehensive analysis of the contribution of early childhood behavior, maternal and paternal mental health, parenting, family structure, and socioeconomic disadvantage to distinct peer victimization developmental patterns from 6 to 17 years of age.

Thus, in this article, we aim to (1) describe the developmental trajectories of peer victimization from 6 to 17 years of age and (2) identify the early childhood behavior and family characteristics associated with the identified trajectories of peer victimization.

METHOD

Participants

This study is based on the QLSCD, a population-based birth cohort that tracks the development of 2120 children born in the Canadian province of Quebec in 1997–1998 and followed-up until 2015. The sample was drawn through a stratified sampling procedure on the basis of living area and birth rate from the Quebec Master Birth Registry. All mothers giving birth after 24 weeks' and not later than 42 weeks' gestation who spoke English or French were eligible. Detailed information on the QLSCD can be found elsewhere.[35] The QLSCD protocol was approved by the Institut de la statistique du Québec and the Research Centre of the Sainte-Justine University Hospital ethics committees. Written informed consent was obtained from all participating families at each assessment. The person most knowledgeable about the child (the mother in 98% of the cases) provided data about the child, family, and broader social context at 5 months, 1½, 2½, 3½, 4½, and 5 years after birth through home interviews. The fathers (biological fathers who had contact with the child at least once a month or mother's partner living in the household) also provided information through a self-administrated questionnaire.

The analytical sample in this study consists of 1760 children followed-up from 5 months to 17 years of age who reported their peer victimization experience at least once between 6 and 17 years: 862 boys (49.0%) and 898 girls (51.0%). More than half of the participants (n = 1038; 59.0%) provided information about peer victimization on >6

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waves (ie, 7 or 8 out of 8 assessments) (Supplemental Table 4). The characteristics of the participants included in this study are presented in Table 1.

Self-reported Peer Victimization From 6 to 17 Years of Age

When the children were aged 6, 7, 8, 10, 12, 13, 15, and 17 years, information on peer victimization was collected by using 6 items of a modified version of the Self-reported Peer Victimization Scale (Supplemental Information).[36] Participants reported how often they experienced physical (ie, "pushed, hit or kicked"), verbal (ie, "called names, insulted, said mean things to you," "teased you in a mean way/made fun of you"), relational victimization (ie, "did not let you be part of his or her group," "said bad things about you to other children"), and property attacks (ie, "forced you to give something that belonged to you/ made you pay them or give them something so they would leave you alone") (response range: 0 = never, 1 = once or twice, 2 = more often). The wording of the items was adapted to reflect changes in the experience of victimization that could occur with age (eg, the item "did not let me play with his or her group" used when participants were aged 6–12 years was changed to "did not let me be part of his or her group" when children were aged 13 years or older). At each wave, if participants answered at least 4 out of the 6 questions of the Self-reported Peer Victimization Scale, we calculated the mean of the items (range 0–2) and considered the data missing otherwise. The mean score at each wave was rescaled (multiplied by 5) to range from 0 to 10 (with a higher score indicating a higher level of peer victimization). Cronbach's α ranged from 0.74 to 0.81 across ages.

In Table 2, we provide the description of the measures used to assess family sociodemographic characteristics, parental mental health, parent-child relationship, and children's behavior. A comprehensive list of the items used to derive the early childhood measures is available (Supplemental Table 5).

Missing Data and Attrition

The excluded participants were more likely to be male, be of non-Canadian origins, come from socioeconomically disadvantaged families, have a mother with higher depressive symptoms, and have overprotective parents compared with participants retained in the study (Supplemental Table 6). Therefore, these variables were used to derive weights that were applied in all regression models by using the inverse probability weighting procedure. The proportion of missing data was <3.5% for the majority of the variables with the exception of father psychopathology (13.4%) and father-child relationship (20%). To avoid a loss of participants due to listwise deletion, the multivariate models were estimated by using multiple imputation by chained equations (n = 50 data set).

Statistical Analyses

Developmental Trajectories of Self-reported Peer Victimization

We used group-based trajectory modeling[43,44] to estimate the developmental trajectories of peer victimization from 6 to 17 years of age. Group-based trajectory modeling, a special case of finite mixture models, identifies clusters of individuals who follow similar developmental trajectories. The best-fitting model was identified by estimating models with 2 to 8 latent clusters with quadratic age terms and comparing them by using the Bayesian Information Criterion (BIC) as the primary fit index. As recommended, the size of the clusters was also considered to select the best model (no solution with small group sizes, ie, <5% of the sample, was selected). We assessed the quality of the classification identified by the model using the average posterior probability of cluster membership (good if >0.70 for each trajectory).

Association Between Early Childhood Factors and Self-reported Peer Victimization Trajectories

In a first step, we used univariate multinomial logistic regression models to estimate the association between trajectory membership and each early childhood variable separately. In a second step, to estimate the unique contribution of each variable over and above the effect of the other variables, we ran multivariate multinomial logistic regression models. We entered in the multivariate model all variables that revealed a significant association at $P < .05$ with any of the trajectories relative to the reference trajectory in the univariate models. The trajectory with the lowest levels of peer victimization was used as reference category in all the multinomial logistic regression models.

Post Hoc Analyses

We performed 2 separate subgroup analyses to compare the high-chronic trajectory to the moderate-emerging and childhood-limited trajectories.

RESULTS

Trajectories of Self-reported Peer Victimization From 6 to 17 Years of Age

We identified 4 distinct developmental trajectories of self-reported peer victimization from 6 to 17 years of age (Fig 1): (1) low peer victimization across the entire period (n = 579; 32.9%); (2) moderate-emerging peer victimization, characterized by steady levels of victimization from age 6 to 12 years and the second highest level of victimization across adolescence (n = 525; 29.8%); (3) childhood-limited peer victimization, characterized by a relatively high

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TABLE 1 Early Life Characteristics (Age 5 Months to 5 Years) of Participants by Trajectories of Peer Victimization From 6 to 17 Years of Age (N = 1760)

Characteristics	Overall	Low (n = 579)	Moderate-Emerging (n = 525)			Childhood-Limited (n = 461)			High-Chronic (n = 195)		
	Mean (SD) or n (%)	Mean (SD) or n (%)	Mean (SD) or n (%)	OR	95% CI	Mean (SD) or n (%)	OR	95% CI	Mean (SD) or n (%)	OR	95% CI
Boy[a]	862 (49.0)	243 (42.0)	275 (52.4)	1.52	1.20–1.93**	228 (49.5)	1.36	1.07–1.75*	116 (59.5)	2.04	1.46–2.84**
Externalizing behavior[b]	2.91 (1.21)	2.62 (1.15)	2.98 (1.24)	1.31	1.18–1.45**	3.01 (1.17)	1.33	1.19–1.48**	3.37 (1.22)	1.67	1.46–1.91**
Internalizing behavior[b]	1.22 (0.93)	1.21 (0.95)	1.25 (0.95)	1.05	0.92–1.19	1.18 (0.92)	0.97	0.85–1.11	1.24 (0.85)	1.05	0.89–1.25
Socioeconomic status[b]	3.99 (0.98)	3.92 (0.99)	3.97 (1.01)	1.06	0.94–1.20	4.05 (0.95)	1.15	1.01–1.30*	4.14 (0.91)	1.27	1.07–1.51**
Nonintact family[a]	576 (32.8)	160 (27.70)	163 (31.2)	1.17	0.90–1.52	171 (37.1)	1.56	1.20–2.03**	82 (42.30)	1.93	1.38–2.71**
Maternal history of antisocial behavior[a]	325 (19.0)	97 (17.20)	99 (19.40)	1.17	0.86–1.59	88 (19.70)	1.2	0.87–1.65	41 (21.90)	1.37	0.91–2.05
Paternal history of antisocial behavior[a]	272 (17.8)	68 (13.10)	93 (20.60)	1.73	1.22–2.44**	64 (16.20)	1.26	0.87–1.83	47 (28.70)	2.62	1.71–4.02**
Maternal depressive symptoms[b]	1.39 (1.15)	1.25 (1.07)	1.49 (1.26)	1.20	1.08–1.34**	1.43 (1.09)	1.15	1.03–1.29*	1.49 (1.18)	1.22	1.07–1.41**
Paternal depressive symptoms[b]	1.06 (1.00)	0.99 (0.97)	1.11 (1.00)	1.14	1.00–1.30	1.01 (0.93)	1.02	0.89–1.17	1.27 (1.20)	1.3	1.11–1.53**
Mother positive parenting[b]	6.52 (0.89)	6.56 (0.87)	6.52 (0.90)	0.94	0.82–1.08	6.48 (0.91)	0.91	0.79–1.05	6.54 (0.91)	0.98	0.82–1.18
Father positive parenting[b]	6.08 (1.18)	6.16 (1.19)	6.00 (1.18)	0.89	0.79–0.99*	6.07 (1.19)	0.94	0.84–1.06	6.02 (1.15)	0.92	0.78–1.07
Mother coercive parenting[b]	2.94 (0.99)	2.77 (0.94)	2.98 (1.05)	1.28	1.13–1.45**	3.02 (0.94)	1.31	1.15–1.49**	3.19 (1.00)	1.56	1.32–1.83**
Father coercive parenting[b]	2.56 (1.03)	2.43 (1.00)	2.58 (1.03)	1.18	1.03–1.34*	2.62 (1.02)	1.21	1.05–1.38**	2.76 (1.12)	1.38	1.16–1.66**

Trajectories of Peer Victimization From 6 to 17 y of Age (spanning Moderate-Emerging, Childhood-Limited and High-Chronic columns).

Reference category: low peer victimization trajectory. CI, confidence interval; OR, odds ratio.

* $P < .05$.

** $P < .01$.

a Binary variables.

b Continuous variables.

level of victimization at age 6, followed by a progressive sharp decline from age 6 to 17 years, and virtually no victimization at age 17 (n = 461; 26.2%); and (4) high-chronic peer victimization, characterized by persistently higher levels of victimization relative to the other groups despite a decline from age 6 to 17 years (n = 195; 11.1%). The fit indices of the models with 2 to 8 trajectories that were compared to determine the optimal solution are presented in Supplemental Table 7.

Early Childhood Factors Associated With the Trajectories of Self-reported Peer Victimization

Univariate analyses revealed that early childhood behavior and family characteristics were associated with peer victimization development (Table 1). Similar to the univariate analyses, in multivariate analyses, we showed that compared with the children following a low trajectory of peer victimization, children in the 3 other trajectories were more likely to exhibit higher levels of externalizing symptoms. Additionally, children following a moderate-emerging or a high-chronic trajectory of peer victimization, compared with those in the low victimization trajectory, were more likely to be boys and have a father with a history of antisocial behavior. Finally, children following a childhood-limited or high-chronic peer victimization trajectory were more likely to come from nonintact families (Table 3).

The associations for maternal and paternal depression and parenting as well as for socioeconomic disadvantage observed in the univariate models were not statistically significant when accounting for children's behaviors and the other family characteristics in multivariate models (Table 3). The level of internalizing behavior in early childhood and the maternal history of antisocial behavior were similar for

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TABLE 2 Description of the Measurement Instruments for Early Childhood Behaviors and Family Characteristics (5 Months to 5 Years)

Characteristics	Child Age at Measurement	Range[a]	Internal Consistency	Example of Items	Instrument and References
Familial and parental factors					
Socioeconomic disadvantage	5 mo, 1½, 2½, 4½, 5 y	0–8	—	Standardized aggregate index of 5 items relating to annual gross income, parental education level, and occupational prestige	Index computed by Statistics Canada[37]
Nonintact family status	5 mo, 1½, 2½, 3½, 4½, 5 y	—	—	1 = the child was living in a single-parent family or blended family (ie, living with stepparent[s] and/or siblings) at minimum 1 time point; 0 = otherwise	—
History of antisocial behavior	5 mo	—	—	5 items (mother), 4 items (father) (eg, "trouble with the police or arrested," "get into fights that you had started"); derived measure: 1 = engaged in 2 or more behaviors during adolescence, 0 = otherwise	Modified from NIMH-DIS[38]
Depressive symptoms	Mother: 5 mo, 1½ y; father: 5 mo	0–10	0.79–0.81 (mother) 0.74 (father)	12 items (eg,"did not feel like eating," "felt lonely," "had crying spells") (0 = less 1 d/wk to 3 = 5–7 d/wk)	Short version of CES-D scale[39]
Positive parenting	Mother: 2½, 3½, 4½, 5 y; father: 3½, 4½, 5 y	0–10	0.61–0.63 (mother) 0.71–0.76 (father)	5–9 items (eg, "calmly discuss the problem," "play sports activities or games together," "praise the child") (0 = never to 5 = several times/d)	Parenting Practices Scale[40]
Coercive parenting	Mother: 2½, 3½, 4½, 5 y; father: 3½, 4½, 5 y	0–10	0.67–0.72 (mother) 0.71–0.73 (father)	5–8 items (eg, "use physical punishment," "tell the child is not as good as others") (0 = never to 5 = several times/d)	
Child-level factors (reported by mother)					
Externalizing behavior	1½, 2½, 3½, 4½, 5 y	0–10	0.77–0.84	15–17 items (eg, "hits, bites, kicks," "encourages children to pick on a particular child," "cannot sit still, is restless or hyperactive") (0 = never to 2 = often)	Preschool Behavior Questionnaire[41,42]
Internalizing behavior	1½, 2½, 3½, 4½, 5 y	0–10	0.48–0.67	5 items (eg, "is nervous," "is high-strung or tense," "is too fearful or anxious" (0 = never to 2 = often)	

For variables measured repeatedly, we derived a measure across early childhood for those participants who had information available at minimally 2 waves. For the continuous variables, we calculated the mean of the items of each scale. The mean at each wave was rescaled to range from 0 to 10 by multiplying it with a constant (except for socioeconomic disadvantage, index computed by Statistics Canada). CES-D, Center for Epidemiologic Studies Depression; NIMH-DIS, National Institute of Mental Health Diagnostic Interview Schedule; —, not applicable.

a The higher the score, the more severe the symptoms or the socioeconomic disadvantage.

children across the 4 peer victimization trajectories (Table 1).

Post Hoc Analyses

Children in the high-chronic relative to the moderate-emerging and childhood-limited trajectories were more likely to exhibit higher level of externalizing symptoms in early childhood, controlling for other behaviors and family factors. Additionally, children in the high-chronic trajectory were more likely to be boys and have a father with a history of antisocial behavior compared with those in the childhood-limited trajectory and come from a nonintact family relative to those in the moderate-emerging trajectory (Supplemental Table 8).

DISCUSSION

This was the largest study to describe the developmental trajectories of peer victimization from 6 to 17 years of age and document their associations with early childhood behavior and family characteristics.

We identified 4 distinct peer victimization trajectories: low, moderate-emerging, childhood-limited, and high-chronic. Although the majority of children reported some level of peer victimization at school entry, all groups except the moderate-emerging group reported declining levels in middle childhood. The pattern of severity and stability of peer victimization, the relative size of the low and childhood-limited peer victimization groups, and the higher proportion of boys in the trajectories characterized by persistent peer victimization were findings similar to those described by Ladd et al[16] over the same ages (ie, 6–17 years). Thus, the striking similarities between these 2 studies done in distinct North American cultural settings suggest that they both captured general patterns of perceived peer victimization development throughout the cycle of mandatory education. Moreover, these 2 studies indicate that middle childhood is a period of substantial differentiation in the development of peer victimization. That is, more than half of the children exhibited a change in the rank ordering of the peer victimization group. The childhood-limited group reported the second

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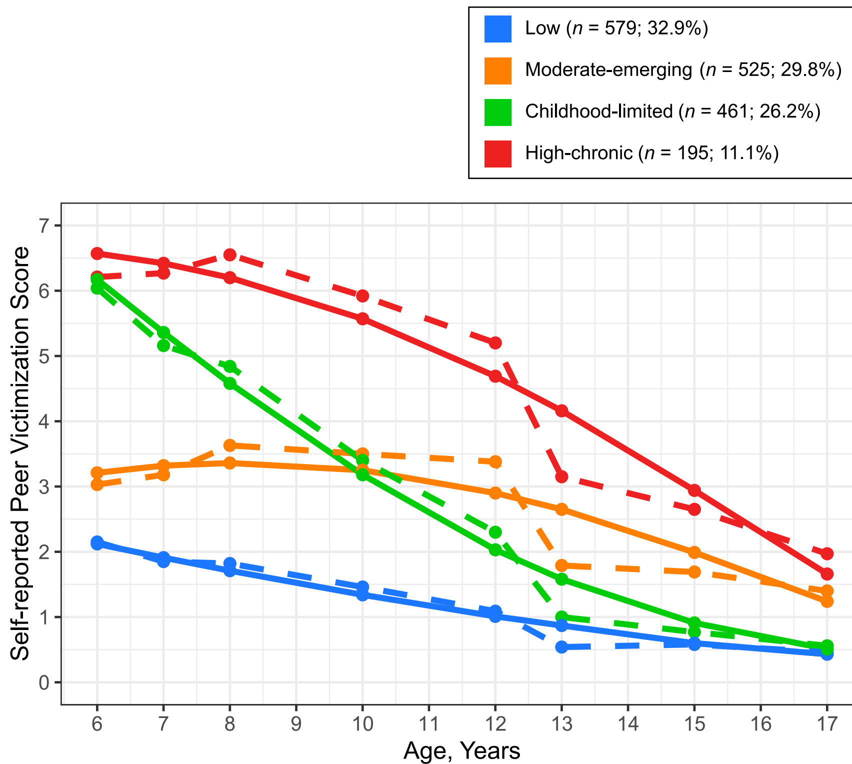

FIGURE 1
Trajectories of self-reported peer victimization from 6 to 17 years of age. Dashed lines represent trajectories for the observed values, and solid lines represent trajectories as estimated by our model. To model the slope of the trajectories, we used linear terms for the low trajectory and quadratic terms for the other trajectories. Fit indices of the model include the following: BIC: −21 168.9; entropy: median 0.75, range 0.66 to 0.80 (ie, quality of the classification; adequate if >0.70); and odds of correct classification: median 7.3, range 4.7 to 31.7 (ie, the model classifies the participants 7.3 times better than the classification by chance; adequate if >5.0).

highest level of victimization at 6 years of age and had, together with the low group, the lowest levels at 17 years of age. In contrast, the moderate-emerging group reported the second lowest levels of victimization at 6 years of age and the second highest level after the chronic group at 17 years of age. Our findings from 12 years of follow-up across childhood and adolescence strengthen the evidence about the existence of primary school–limited and late-onset peer victimization, which was theoretically described[8] or empirically derived[6,11] in short-term longitudinal studies.

We showed that paternal history of antisocial behavior was associated with persistent peer victimization (ie, high-chronic and moderate-emerging trajectories) when controlling for children's sex, behavior, maternal factors, parenting, socioeconomic disadvantage, and family structure. This was the first study reporting on the relationship between the fathers' mental health and the development of peer victimization in the offspring. However, our findings are in line with evidence from studies that revealed that paternal negativism[34] and hostility[45] are associated with peer victimization and bullying, respectively, and with studies on the association between the father's psychopathology and the offspring's behavioral problems.[31,46] Furthermore, in line with Brendgen et al,[13] we showed that living in a nonintact family was associated with high levels of peer victimization at school entry (ie, high-chronic and childhood-limited trajectories). The father's antisocial behavior distinguished between children in these 2 trajectories. That is, children

TABLE 3 Association Between Early Childhood Factors and Trajectories of Peer Victimization in Multivariate Multinomial Models (*N* = 1760)

Early Childhood Factors	Trajectories of Peer Victimization From 6 to 17 y of Age					
	Moderate-Emerging		Childhood-Limited		High-Chronic	
	OR	95% CI	OR	95% CI	OR	95% CI
Boy	1.41	1.10–1.80**	1.24	0.96–1.59	1.73	1.23–2.44**
Externalizing behavior	1.20	1.06–1.35**	1.19	1.05–1.35**	1.41	1.21–1.66**
Socioeconomic disadvantage	0.94	0.82–1.08	1.01	0.88–1.16	1.01	0.83–1.22
Nonintact family	1.07	0.80–1.42	1.48	1.11–1.97**	1.59	1.09–2.31*
Paternal history of antisocial behavior	1.54	1.09–2.19*	1.10	0.75–1.60	1.93	1.25–2.99**
Maternal depressive symptoms	1.12	0.99–1.25	1.04	0.92–1.18	1.01	0.87–1.18
Paternal depressive symptoms	1.05	0.91–1.20	0.96	0.83–1.11	1.14	0.96–1.36
Father positive parenting	0.92	0.82–1.04	0.97	0.86–1.10	1.00	0.84–1.18
Mother coercive parenting	1.06	0.90–1.24	1.11	0.94–1.31	1.15	0.93–1.42
Father coercive parenting	1.05	0.90–1.22	1.10	0.95–1.29	1.09	0.89–1.33

Reference category: low peer victimization trajectory. CI, confidence interval; OR, odds ratio.
* $P < .05$
** $P < .01$.

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who escaped high levels of peer victimization in the first years of primary school (ie, childhood-limited trajectory) had a father with better mental health than those who continued to be highly victimized during adolescence (ie, high-chronic trajectory). These findings strengthen the importance of paternal mental health for high-chronic peer victimization.

A genetically informative study has revealed that a father's antisocial behavior may influence children's behavioral problems through both genetic and environmental pathways.[47] Previous twin studies have indicated that genetic factors accounted for an important part of the variation in persistent peer difficulties.[8,22] Moreover, a polygenic risk score study revealed that high genetic risk for mental health problems was associated with increased exposure to bullying.[48] Future studies are needed to clarify the association between a father's mental health and the offspring's persistent peer victimization (eg, genetic, environmental mechanisms).

Consistent with previous research,[7,8,21,24] we found that high externalizing behavior problems during the preschool years were important factors for the development of peer victimization. Children who exhibited the highest levels of externalizing behavior during early childhood endured the highest levels of peer victimization from 6 to 17 years of age. These findings, taken together with the overrepresentation of boys and fathers with a history of antisocial behavior in the trajectories characterized by persistent peer victimization, echo the literature on the profile of bully-victims.[27] Similar to other studies among young children,[7,21,24] we found that children in the different trajectories of peer victimization had similar internalizing symptoms before school entry. These findings differ from those among older children and adolescents[49] probably because internalizing symptoms become more negatively perceived by peers and associated with peer victimization as children grow older.[9]

The findings from this study need to be interpreted in the context of its limitations. First, we did not assess the power imbalance between the bully and the victim, which is part of the definition of bullying. However, students' definition of bullying tends to focus on negative actions by peers and fails to include power imbalance.[50,51] Second, we did not differentiate between children who are only victimized and those who are simultaneously bullies and victims. Thus, the experiences of peer victimization described in this study also capture the experience of bully-victims. Third, we measured peer victimization using self-reports. Despite the advantages of this assessment method in long-term studies (see Ladd et al[16]), self-reported peer victimization is potentially biased by the self-system, which may be less differentiated and related to actual experiences in younger children.[22,52] Fourth, 83% of the baseline sample was available for the 17-year follow-up. To minimize attrition bias, analyses were conducted by using weights accounting for the probability of being retained in the study at follow-up. To minimize the loss of participants in multivariate models due to listwise deletion, we used imputations. Results with and without weights and imputations were fairly similar, strengthening the internal validity of the study.

These limitations notwithstanding, this is the largest and one of the longest population-based studies to have applied a longitudinal person-centered approach to analyze repeated measures of peer victimization. The external validity of our results is reinforced by the reproduction of the peer victimization trajectories between 6 and 17 years of age described by Ladd et al[16] despite the use of a different statistical method. Moreover, this study is unique through the description of both maternal and paternal factors associated to peer victimization development.

CONCLUSIONS

In this study, we identified 4 different developmental patterns of peer victimization across the entire cycle of mandatory education, primarily distinguished by their development during primary school. Some children experienced persistent peer victimization already in the first years in primary school. Early childhood externalizing behaviors and family vulnerabilities were associated with the development of peer victimization. To prevent persistent peer victimization, children who are victimized should be offered targeted interventions that address these individual and family vulnerabilities early in their school careers.

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ABBREVIATIONS

BIC: Bayesian Information Criterion
QLSCD: Quebec Longitudinal Study of Child Development

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Ms Oncioiu conceptualized and designed the study, conducted the data analysis, and drafted and finalized the manuscript; Dr Orri supervised, conceptualized, and designed the study, participated in the data analyses, and reviewed and revised the manuscript for important intellectual content; Drs Côté and Boivin supervised, conceptualized, and designed the study, designed the data collection instruments, obtained funding, coordinated and supervised data collection, and reviewed and revised the manuscript for important intellectual content; Drs Geoffroy, Arseneault, Brendgen, and Galéra and Ms Navarro reviewed and revised the manuscript for important intellectual content; Drs Tremblay and Vitaro designed the data collection instruments, obtained funding, coordinated and supervised data collection, and reviewed and revised the manuscript for important intellectual content; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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