

Developmental changes in mothers' perception of knowledge, solicitation, and child disclosure during middle childhood

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Abstract

Parents can actively seek knowledge (solicitation) or receive information provided willingly by the child (disclosure). In adolescence, disclosure is the main source of parental knowledge, but its importance may take root earlier in the course of development. We examined: 1) the factor structure of an instrument adapted for middle childhood measuring maternal perception of knowledge, solicitation, and children's self-disclosure; 2) changes in these dimensions over middle childhood; and 3) the respective contribution of solicitation and disclosure to parental knowledge. The mothers of 793 elementary school students (61.5% boys, 80.2% Canadian-born) completed a questionnaire annually from Grades 1 to 4. Multilevel confirmatory factor analysis confirmed the instrument's structure at all time points. Growth curve analyses showed that mothers' perception of knowledge slightly declined from Grades 1 to 4. With respect to mothers' perceived parental solicitation and child disclosure, gender interactions emerged. Solicitation declined for girls but remained stable for boys, while disclosure declined for girls but increased for boys over time. In addition, mothers' perception of disclosure and solicitation are both main sources of maternal knowledge regardless of age and gender in middle childhood.

KEYWORDS

child disclosure, child social development, maternal knowledge, mother-child communication, parental solicitation

1 | INTRODUCTION

During middle childhood, children develop an increasingly large network of peers and spend more time with them (Collins & Madsen, 2019). Consequently, parents need to support their children in learning social skills by monitoring their integration into peer groups, offering advice and discussing related issues (Ladd & Parke, 2021). This parental support primarily occurs during their conversations with the child about his/her activities outside the home. Numerous studies focused on this type of communication have examined parental monitoring in adolescence (Keijsers & Poulin, 2013). However, such studies of the middle childhood period are rare, probably due to the lack of a suitable measurement instrument for this age group. The current study used a new instrument that measures mothers' perceptions of two dimensions of parent-child communication about activities outside the home (parental solicitation and child self-disclosure) and their outcome (parental knowledge). Repeated annual administration of this instrument to mothers of elementary school students from Grade 1 to 4 allowed us to examine changes in these three constructs and determine the contribution of solicitation and self-disclosure to parental knowledge. Mother's perceptions were collected because mothers usually take on most child-related responsibilities during middle childhood (Renk et al., 2003) and are generally more accessible to their child during weekdays (Keown & Palmer, 2014).

1.1 | Developmental changes during middle childhood

Middle childhood is characterized by the acquisition of new cognitive and social skills that will shape the parent-child relationship. More specifically, children develop new communication skills, such as the growing ability to adapt their speech depending on the interlocutor, emotional masking, conflict resolution skills, and knowledge of context-specific social norms (Huston & Ripke, 2006; Stafford, 2003). Furthermore, upon entering school, time spent with parents decreases in favor of time spent with peers and adults with whom children are not related (Collins & Madsen, 2019). In addition to schooling, many children engage in organized afterschool activities outside the home (Vandell et al., 2022).

These developmental changes make children's social interactions with peers increasingly complex. Parents must then rise to the new challenges faced by their children by modulating their parenting discourse and practices to support them in becoming autonomous in managing their peer relationships (Stafford, 2013). Given that children's daily activities increasingly take place away from their parents, parent-child conversations thus become invaluable opportunities for the dyad to exchange feedback while providing information to allow parents to play an advisory role (Parke & Ladd, 2016).

1.2 | Parent-child conversations and parental knowledge

Parents' conversations with their children about their daily activities outside the home might focus, for example, on peer conflict management, how to avoid intimidation, or friendship formation and maintenance. These exchanges are a type of "decontextualized discussions" (Lollis et al., 1992). Children then apply what they learn from these discussions to their peer relationships. Parent-child conversations also allow children to develop emotional and cognitive self-regulation through feedback from the parents (Collins, Madsen & Susman-Stillman, 2002). However, this form of intervention requires that parents be aware of their child's social difficulties or challenges. How do parents acquire such knowledge?

According to Kerr and Stattin (2000), parental knowledge comes from different sources one of which is parents' conversations with their child. These conversations can be initiated by the parent asking questions (parental solicitation) or by the child spontaneously disclosing information about his activities (self-disclosure). Studies conducted with adolescents have clearly shown that parental knowledge relative to out-of-home activities is derived primarily from

adolescent self-disclosure (Liu et al., 2020). However, it remains unknown whether these findings also apply to middle childhood or if the flow of information about the child's social activities would more likely occur through parental solicitation.

Bumpus and Hill (2008) emphasize that the ability of school-aged children to manage the information they pass on to their parents should not be underestimated. For example, Mishna et al. (2006) report that more than half of the parents in their sample would have been unaware that peers were victimizing their child if their child had not disclosed it. Children also show an increasing willingness to cooperate and negotiate with their parents (Kerns et al., 2001) and a gradual decrease in their authority beliefs (Laird & Marrero, 2011). As a result, these factors increasingly influence their exchanges with their parents, a tendency that continues through adolescence (Keijsers & Poulin, 2013). Presently, no longitudinal information is available on the stability or variation over time of children's self-disclosure behaviors, their parents' solicitation efforts, and the resulting parental knowledge, nor how these processes unfold during verbal exchanges in the parent-child dyad (Bumpus & Hill, 2008).

1.3 | Characteristics of parent-child communication during middle childhood

Parent-child communication is a two-way process that allows for the co-regulation of the dyad and the achievement of parenting goals (Stafford, 2013). According to Olson et al. (2019), family functioning relies on closeness, flexibility, and communication, three essential skills that allow the family to negotiate developmental changes during childhood. Information shared within the family also provides greater relational satisfaction among family members (Finkenauer et al., 2004) and more contextually appropriate parenting interventions (Stafford, 2003). As stated earlier, conversations between parent and child about the child's daily activities outside the home represent an opportunity for the dyad to exchange useful information about the child's functioning and to co-construct a relationship based on reciprocity.

Previous studies conducted during middle childhood mostly investigated parent-child conversations from three perspectives: their influence on the child's social behaviors, the emotional content of the exchanges, and parental guidance (see review by Laird et al., 1994). Specifically, Keown and Palmer (2014) identified the topics of conversations discussed by fathers, mothers, and boys during middle childhood. Conversations about people (family members, peers, etc.) were the most frequent, and the child's daily activities (academic, sports, and leisure) were the second most discussed topic. However, they did not document the content of specific exchanges between mother and child about activities outside the home, specifically with peers (e.g., activities, friends' characteristics), nor the directionality of the information flow. These authors also pointed out that mothers spend more time directly engaging with their child during weekdays, whereas fathers have more limited time and are mostly accessible to their child during weekends. Also, fathers' conversations with their sons are more limited to sports and physical activities compared to those with mothers. However, Bumpus and Hill (2008) note the lack of research on parents' perceptions of their exchanges with the child and the knowledge they gain about the child's daily activities. Mothers' perception of monitoring related constructs during childhood must be documented as their perspective on parent-child communication processes could later influence their parenting behaviors. For example, Tremblay-Pouliot and Poulin (2021) found that mothers use their knowledge of their children's activities outside the home to adjust their monitoring efforts at all levels of reported parental knowledge during adolescence.

1.4 | Children's gender differences

Gender is a major structuring element of socialization in middle childhood (Rose & Smith, 2018). School-aged children prefer to interact with same-gender peers, and boys' and girls' social worlds (activities, interaction patterns, etc.) differ in several key aspects (Rose & Rudolf, 2006). For example, school-aged girls typically master language's pragmatic

and social components better and faster than boys (Bornstein et al., 2004; Leaper & Smith, 2004). In addition, adults generally evaluate girls' social skills more positively than those of boys (Bouchard et al., 2012), which subsequently affects their gender-specific socialization behaviors. Parents also use more of an affiliative communication style (focused on the other and encouraging the interlocutor's involvement in the conversation) with boys and an assertive communication style (focused on oneself and aiming to influence the interlocutor) with girls (Shinn & O'Brien, 2008).

These gender differences in socialization could impact parent-child conversation during middle childhood. Adolescents and their parents report that girls disclose more than boys, that parents of girls solicit more, and that they have greater knowledge of their activities than parents of boys (Liu et al., 2020; Racz & McMahon, 2011). Smetana et al. (2006) also found that girls would disclose more readily to their mothers than boys. Furthermore, although parental knowledge and self-disclosure decline with age for all adolescents, this decline is more pronounced for boys (Keijsers et al., 2010). However, there is no gender difference in the contribution of solicitation and self-disclosure to parental knowledge (Liu et al., 2020; Racz & McMahon, 2011). Thus, when attempting to document parents' information acquisition strategies about children's daily lives, studies must consider children's gender. Measurement invariance should also be assessed for socioeconomic and immigration statuses to determine the psychometric equivalence of the construct prior to testing mean differences across groups (boys and girls) and across time (Putnick & Bornstein, 2016).

1.5 | Purpose of the study

The first objective of this study was to verify the factorial structure of a novel instrument, inspired by the one developed by Kerr and Stattin (2000), intended to measure mothers' perceptions of knowledge and two of its sources (solicitation and disclosure) in middle childhood. We also tested the instrument's invariance on socioeconomic status, immigration status, and the child's gender.

The second objective was to describe the changes observed in solicitation, disclosure, and knowledge using annual assessments from Grades 1 to 4. As their child enters elementary school, parents should be mindful to keep track of their child's social functioning. It was expected that solicitation would be high in Grade 1, gradually decreasing with time as children's social world and interactions increase in complexity (Collins & Madsen, 2019). Further, Keijsers and Poulin (2013) showed that solicitation gradually decreases in adolescence, suggesting that parents adapt to their child's growing social autonomy, a trend that should be initiated during middle childhood (Bumpus & Hill, 2008). Self-disclosure was expected to be low in Grade 1 and increase over time. Middle childhood is marked by an increase in children's verbal skills and ability to manage the nature and quality of the information they communicate (Stafford, 2003), which promotes an increasing ability to self-disclose. Finally, it was expected that knowledge would slightly decrease with age. During middle childhood, children's activities and social interactions become more varied and occur mostly outside the family home (Collins & Madsen, 2019). This increases the volume of information to be shared as the mothers spend less time with their children.

Some gender differences were expected as well. Based on previous studies (Liu et al., 2020; Keijsers et al., 2010; Racz & McMahon, 2011), it is likely that mothers of girls would solicit more information and have more knowledge than mothers of boys.

The third objective was to examine how much solicitation and disclosure contributed to knowledge and whether their contribution varied from Grades 1 to 4. As shown in adolescence (Liu et al., 2020), we initially anticipated that disclosure would be the main source of parental knowledge. During this period, the children's ability to manage information improves (Bumpus & Hill, 2008) as their social lives become increasingly complex and they face many social situations for the first time. As they enter school, children would gradually become more efficient in reporting any new social challenges their parents might not foresee. As stated previously, children must often voluntarily inform adults of their social difficulties as they may be unknown to them (Mishna et al., 2006). Thus, we also expected solicitation to contribute progressively less to knowledge from Grades 1 to 4 as parents might rely more and more on their child's

disclosure to acquire new information. Finally, the moderating effect of gender on these associations was explored. All the analyses control for socioeconomic status (SES) as many studies found differences in reported parental knowledge in high versus low SES families (Racz & McMahon, 2011).

2 | METHOD

2.1 | Participants

Participants came from a sample of 1038 kindergartners (62% boys) recruited from three consecutive cohorts in 43 elementary schools of a school board district in the Greater Montreal Area (Canada). Parents gave their written consent, and children gave verbal acquiescence in the classroom. The sample recruited participated in a larger research project on the impact assessment of a violence and school dropout prevention program (Poulin et al., 2013). At the start of the study, 72% of the children lived with their biological parents. These families were from a wide range of socioeconomic levels. The average annual income was \$60,900. Annual income was less than \$20,000 for 7% of the families and more than \$100,000 for 18%. The majority of parents in the sample had completed high school (69.1% of mothers and 64.0% of fathers). Most families were Canadian born (84.0%), with the remaining families being first-generation immigrants (3.3% Africa; .3% USA; 1.2% Asia; 1.8% Caribbean; 4.2% Europe; 2.0% Latin America; 3.2% Middle East).

Mothers were asked to complete the questionnaire used in this study each year from Grade 1 through Grade 4. The analyses ($n = 793$; 61.5 % boys) included participants who contributed data at least one of the four-time points. Mothers in the retained sample had more schooling, $t(243.17) = 2.11, p < .05$, higher family income, $t(253.45) = 4.907, p < .001$, and were older when they had their first child, $t(240.28) = 3.75, p < .001$, compared with mothers excluded from the sample ($n = 245$). The retained families did not differ from excluded families in mothers' immigration status ($\chi^2(1) = .863, p = .353$).

2.2 | Procedure

Mothers completed a questionnaire in French in May each school year. The teachers received the questionnaires and then forwarded them to mothers in the students' school bags. Mothers returned the questionnaires to teachers in sealed envelopes. A research assistant went to collect them at the schools. Mothers received a gift certificate as a token of appreciation for their participation each year. The Université du Québec à Montréal Research Ethics Board approved the project.

2.3 | Instrument

The Demographic Questionnaire included items on child's sex, mothers' and child's date of birth. The mothers were also asked to report on their immigration status ("What is your country of birth? If other than Canada, how long have you lived in Canada (in years)?"). Family annual income was measured on a 10-point scale ranging from under \$20,000 to \$100,000 and over. Finally, mothers were asked to report their highest completed level of education. In the province of Quebec, Canada, high school is completed in grade 11, after which students then transition to CEGEP (college) which lasts 2 years for a preparation cursus toward university, or three years for a professional degree. This variable was split into four categories: 1 = no diploma, 2 = high school or vocational diploma, 3 = college studies, 4 = university studies.

The Parent-Child Communication Scale intends to measure mothers' perceptions of parental knowledge, parental solicitation, and child disclosure. Mothers received instructions: "Circle the number corresponding to the answer that,

in your opinion, best describes your situation" (free translation from French). The possible answers were on a five-point Likert scale: 1 = not at all; 2 = a little; 3 = moderately; 4 = a lot; 5 = completely.

Kerr and Stattin's measure (Stattin & Kerr, 2000) inspired the questionnaire's items, bearing in mind the context specific to elementary-school children, which differs from the one specific to adolescents. For example, parents of children in Grade 1 might solicit information about their games and behavior with their peers in the schoolyard, whereas parents of adolescents might ask them about what they do with their friends in the evening.

2.3.1 | Parental knowledge

Three items measured parental knowledge. These items were: "You know where your child is when he or she plays with one or more friends someplace other than at home." (Item 1), "You know what your child does when he or she plays with one or more friends someplace other than at home." (Item 2), and "You know which friends your child is with when he or she plays with one or more friends someplace other than a home." (Item 3).

2.3.2 | Parental solicitation

The parental solicitation measure comprised four items. These items were: "You ask your child about his or her friends." (Item 4), "You ask your child to tell you about his or her classmates or the other kids in childcare." (Item 5), "You ask your child to tell you about his or her day at school." (Item 6), and "You start conversations with your child about what he or she does in his or her free time." (Item 7).

2.3.3 | Child self-disclosure

Three items formed the child self-disclosure measure. These items were: "Your child tells you about what he or she did outside the home (e.g., at childcare services, at school, at a friend's house)." (Item 8), "Your child tells you about school (e.g., how he or she is doing in different subjects, relationships with teachers)." (Item 9), and "Your child tells you about his or her friends of his or her own volition (e.g., who are the friends he or she hangs out with, what they do)." (Item 10).

2.4 | Data analysis plan

We used a multilevel confirmatory factor analysis (MCFA) using MPlus 7.11 (Asparouhov & Muthén, 2014) to verify the instrument's factor structure (Objective 1) on the scores obtained for the ten items at each time point. The purpose of this analysis was to determine whether the factor structure remained stable across Grades 1 to 4 (Wu et al., 2017). More specifically, it verifies whether the items measured the three dimensions constructs uniformly (inter-subject level) and at all time points (intra-subject level; Suhr, 2006). To assess the model's goodness of fit, the Comparative Fit Index, the Tucker-Lewis Index, the RMSEA index, and the SRMR index (Level 1 and Level 2) are used (Hu & Bentler, 1999).

Measurement invariance tests were also performed using R software and lavaan packages (R Core Team, 2021; Rosseel, 2012) to compare scale measurement invariance by child's gender, families' socioeconomic status, and mothers' immigration status. According to conventions and best practices (Putnick & Bornstein, 2016), we followed the four main steps for testing invariance. We tested configural invariance (Model 1; pattern equivalence of free and fixed loadings on the factors), metric invariance (Model 2; equivalence of the item loadings on the factors), scalar invariance (Model 3; equivalence of item intercepts), and strict invariance (Model 4; similarity of the sum of specific variance and

the error variance across groups). Model 2 was compared to Model 1, Model 3 to Model 2, and Model 4 to Model 3 to determine their respective fit to the data. For all comparisons showing that invariance was not supported, we investigated individual sources of non-invariance and then tested adjusted models to determine partial invariances. Groupings by child's gender (boys, $n = 487$; girls, $n = 306$), socioeconomic status (SES), and immigration status (mother is Canadian born, $n = 666$; mother is an immigrant, $n = 127$) were compared. The three groups used for SES were: Group 1 for families with an average annual income of \$39,999 or less ($n = 260$); Group 2 with average annual incomes of \$40,000 to \$79,999 ($n = 371$); Group 3 with average annual incomes of \$80,000 or more ($n = 333$). These groups reflect the average income for single mothers (\$37,700 annually), the median income (\$69,400 annually) for households of two or more persons, and the average income for dual-earner families (\$84,400 annually) in Québec (Statistics Québec, 2022).

To examine changes across Grades 1 to 4 by gender (Objective 2), we carried out growth curve analyses using R software version 3.4.4 (Bates et al., 2015; Kuznetsova et al., 2017; R Core Team, 2021). Growth curve modeling is a form of multilevel regression modeling used to analyze repeated measures data nested within cases. This type of analysis is appropriate when studying the effect of maturation and development on individuals while accounting for the effects of predictors that may vary over time (Singer & Willett, 2003). In other words, growth curve models estimate variations as a function of time and predictors while factoring in both mean effects over time and random effects (Pires & Jenkins, 2007). Four models were tested sequentially for each of the three study variables (solicitation, disclosure, knowledge) (Hox et al., 2017). First, we tested an unconditional model specifically to estimate the mean values and random variance (Model 1). Second, we tested an unconditional model to estimate change over time, taking account of random variance over time (addition of time estimator) (Model 2). Third, we inserted co-variables—gender and family socioeconomic status (SES)—into the model to verify their effects, taking account of the random variance for the estimators (Model 3). Fourth, we tested a model that included the interaction effects of time with all the above predictors, taking account of the random variance for the estimators (Model 4).

Finally, to test the extent to which solicitation and disclosure contribute to knowledge and whether these contributions change between Grades 1 and 4 (Objective 3), a latent growth model (LGM) was conducted using R software and lavaan packages (R Core Team, 2021; Rosseel, 2012). We first tested a latent trajectories model (Model 1) without any predictors to examine baseline level (intercept) and change (slope) for mothers' parental knowledge as well as covariance between the slope and intercept of the data. We then tested Model 2 to examine the contribution of maternal solicitation and child disclosure to parental knowledge. This last model specifies the time-varying variables (solicitation, self-disclosure) as well as the time-fixed co-variables (gender, SES). The effect of SES was examined by comparing the effect of Group 1 and Group 3 to the effect of the reference group (Group 2, representing median annual income). The Comparative Fit Index, the Tucker-Lewis Index, and the RMSEA index, were used to assess the model's goodness of fit (Wu et al., 2009). This analysis also uses the FIML method to account for missing data.

3 | RESULTS

3.1 | Longitudinal confirmatory factor analysis and invariance analyses

As Figure 1 shows, the items correlated with factors as expected (inter- and intra-subject levels). More specifically, the three factors were adequately measured at each time point (factor loading $\geq .06$) using the items. The model fits the data well: CFI = .967; TLI = .957; RMSEA = .027; SRMR(1) = .025, SRMR(2) = .059. The internal consistency of each scale was acceptable to good at each time point (Cronbach's alpha: .76–.81 for solicitation; .87–.88 for disclosure; .62–.66 for knowledge). The scores on each scale for each time point were obtained during subsequent analyses by calculating the average for the corresponding items.

The invariance analyses showed strict invariance for children's gender ($\chi^2(88) = 111.39, p = .47$) with indices showing a strong model fit (CFI = .97, TLI = .97, RMSEA = .027) (Table S1) and for families' socioeconomic status

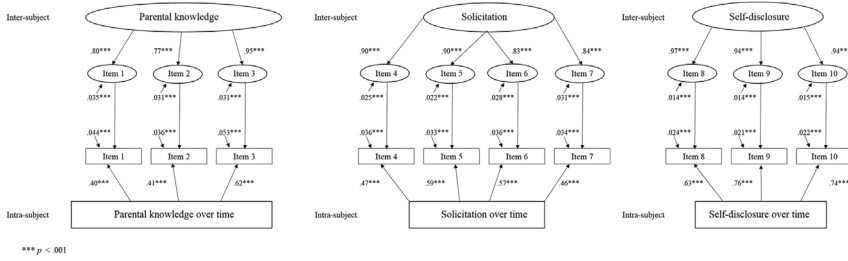


FIGURE 1 Results of longitudinal confirmatory factor analysis.

TABLE 1 Correlations between variables under study and descriptive statistics

	1	2	3	4	5	6	7	8	9	10	11	12
Knowledge												
1. Grade 1	—	—	—	—	—	—	—	—	—	—	—	—
2. Grade 2	.59**	—	—	—	—	—	—	—	—	—	—	—
3. Grade 3	.64**	.60**	—	—	—	—	—	—	—	—	—	—
4. Grade 4	.57**	.62**	.61**	—	—	—	—	—	—	—	—	—
Solicitation												
5. Grade 1	.35**	.28**	.34**	.36**	—	—	—	—	—	—	—	—
6. Grade 2	.27**	.33**	.31**	.32**	.71**	—	—	—	—	—	—	—
7. Grade 3	.31**	.34**	.41**	.35**	.62**	.67**	—	—	—	—	—	—
8. Grade 4	.24**	.23**	.28**	.40**	.61**	.63**	.63**	—	—	—	—	—
Disclosure												
9. Grade 1	.30**	.26**	.32**	.36**	.50**	.40**	.44**	.39**	—	—	—	—
10. Grade 2	.25**	.33**	.28**	.26**	.38**	.50**	.42**	.36**	.61**	—	—	—
11. Grade 3	.21**	.29**	.32**	.30**	.34**	.40**	.53**	.41**	.56**	.62**	—	—
12. Grade 4	.23**	.24**	.28**	.35**	.30**	.34**	.34**	.49**	.53**	.58**	.65**	—
M	4.29	4.24	4.22	4.18	4.37	4.36	4.33	4.29	4.07	4.09	4.08	4.00
SD	.60	.65	.61	.63	.66	.64	.64	.68	.89	.88	.89	.93

* p < .05 ** p < .01, *** p < .001.

(χ^2 (144) = 179.56, p = .14) also showing a strong model fit (CFI = .96, TLI = .97, RMSEA = .033) (Table S2). Regarding immigration status, the results showed partial scalar invariance (χ^2 (75) = 36.76, p = .46) with a strong model fit (CFI = .96, TLI = .96, RMSEA = .031). Invariance was good but not absolute for immigrant participants, and a direct comparison of means was not possible between groups for three items (1, 2, and 5) (Table S3).

3.2 | Descriptive analyses

The descriptive statistics for solicitation, child self-disclosure, and knowledge at each time point and their inter-correlations are presented in Table 1. Means showed that the three dimensions slightly decreased over this period, except for a small increase in disclosure in Grade 2. Moreover, solicitation and disclosure both correlated positively and significantly with parental knowledge at each time point.

3.3 | Growth curve models

3.3.1 | Parental solicitation

The mean of parental solicitation at baseline was 4.34 (Model 1) on a scale of 1 to 5. Model 2 showed a significant linear decrease in parental solicitation over time ($b = -.02, p < .001$). Model 3 showed no significant SES effect ($b = .003, p = .93$) and Model 4 showed no effect for the SES*Time interaction ($b = .033, p = .23$). Model 3 also showed a significant gender effect which indicated that mothers of girls solicited more than mothers of boys (gender effect, $b = -.13, t(1815,00) = -2.29, p < .05$). However, Model 4 showed a significant Gender x Time interaction as parental solicitation modestly decreased over time for girls (slope of $-.03$) while it remained stable for boys (gender x time interaction effect, $b = .03, t(1647,00) = 2.08, p < .05$) (see Figure 2).

3.3.2 | Self-disclosure

The mean of children's self-disclosure at baseline was 4.08 (Model 1) on a scale of 1 to 5. Model 2 showed no significant change in child self-disclosure over time ($b = -.01, p = .55$). No significant effect was found in Model 3 for SES on self-disclosure ($b = .009, p = .84$) and no effect emerged in Model 4 for the SES*Time interaction ($b = -.03, p = .53$). However, when adding the gender variable in Model 3 and the Gender x Time interaction in Model 4, the results showed that girls self-disclosed less than boys (gender effect, $b = -.16, t(1955,78) = 2.16, p < .05$). Analysis of the Gender x Time interaction was significant (Gender x Time interaction effect, $b = .08, t(1676,14) = 3.49, p < .001$) and showed that self-disclosure decreased slightly over time for girls (slope of $-.04$), while it slightly increased for boys (slope of $.04$) (see Figure 2).

3.3.3 | Parental knowledge

In Model 1, the intercept was significant, and the mean of parental knowledge was 4.26 (on a scale of 1–5). Model 2 showed a small but significant linear decrease in parental knowledge over time ($b = -.031, p < .001$) but Model 3 failed to show any gender differences ($b = .03, p = .56$) nor differences on SES ($b = .02, p = .51$). Similarly, Model 4 showed no significant interaction effect (Gender x Time interaction, $b = .001, p = .93$; SES*Time interaction, $b = .05, p = .10$).

3.4 | Latent growth curve models

The first model (Model 1) estimating level (intercept), change (slope), covariance between the slope and intercept in parental knowledge fit the data well: $\chi^2(5) = 12.42, p < .05, CFI = .989, TLI = .986, RMSEA = .066$ (90% CI = $.019, .113$). The results showed a significant variance in the intercept parameter ($b = .22, p < .001$), showing variations between mothers in their initial levels of knowledge, but no significant variance for the slope parameter ($b = -.004, p = .40$).

Concerning the effect of predictor variables, Model 2 also demonstrated good fit to the data: $\chi^2(35) = 59.09, p < .01, CFI = .966, TLI = .951, RMSEA = .050$ (90% CI = $.025, .067$). As for the time-varying covariates, the results showed that parental solicitation and child self-disclosure predicted an increase in parental knowledge at all time points. Comparisons of the regression effects using the standardized betas pointed out to the fact that over time the contribution of solicitation to parental knowledge increased from Grade 1 ($\beta = .14, p < .001$) through Grade 4 ($\beta = .23, p < .001$) whereas the contribution of self-disclosure to parental knowledge remained stable (see Figure 3). These effects remained when including the time invariant variables (gender and SES).

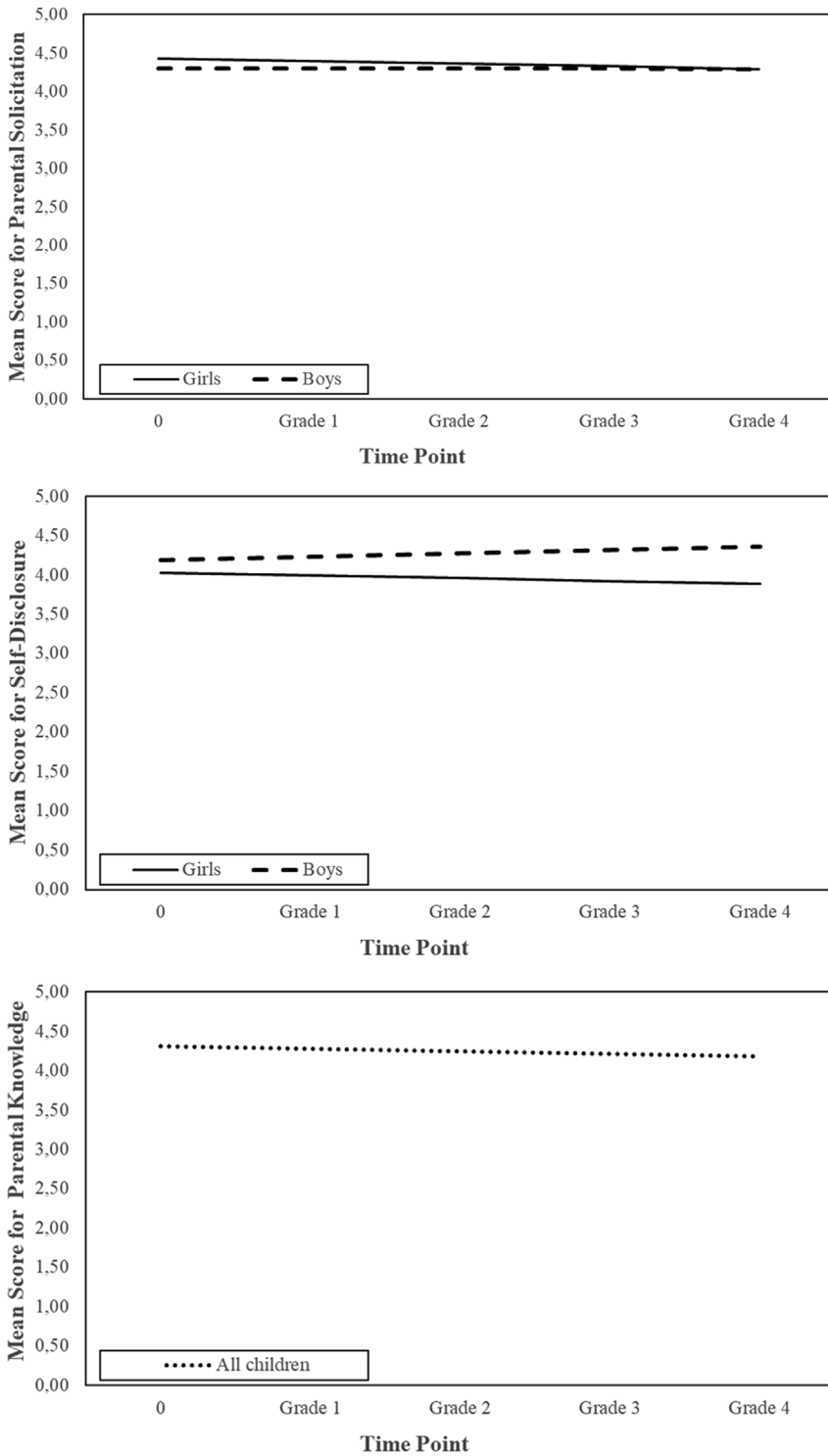
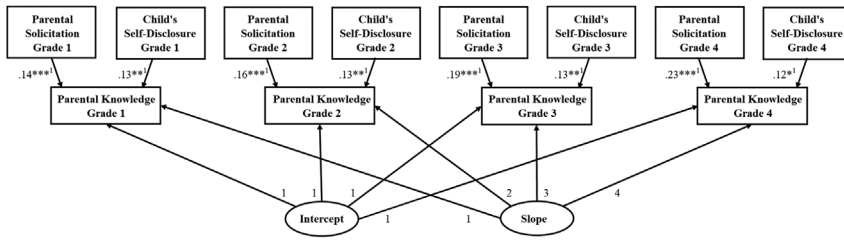


FIGURE 2 Change in mean score for parental knowledge, parental solicitation, and child self-disclosure from grades 1-4.



Note. The effects remain when the time invariant variables (gender and SES) are included.
^aStandardized beta coefficients from the latent growth curve models.
 * p < .05 ** p < .01 *** p < .001

FIGURE 3 Path diagram of the latent growth curve model for parental solicitation and child's self-disclosure as predictors of parental knowledge in grade 1 through 4.

4 | DISCUSSION

Parents must remain knowledgeable about their children's social activities to better support their social development. However, the communication processes (parental solicitation and child self-disclosure) that allow them to gain this information have been the focus of little research during middle childhood. Also, not much is known about the mothers' perceptions of these processes, even though they are usually closely engaged in their children's daily activities. The results of our study: 1) confirmed the factor structure of a novel instrument designed to measure mothers' perception of knowledge, solicitation, and self-disclosure in middle childhood; 2) revealed that maternal solicitation and knowledge slightly changed from Grades 1 to 4, but that parental solicitation and child disclosure were moderately different for boys and girls; and 3) showed that disclosure and solicitation both contributed significantly to parental knowledge regardless of children's age.

4.1 | Factor structure of the parent-child communication questionnaire

As the instrument developed by Kerr and Stattin (2000) was used to measure parents' perceptions of knowledge, solicitation, and self-disclosure in adolescence and not in childhood, we adapted it for mothers of younger children. We examined its structure using a multilevel confirmatory factor analysis. The results confirmed that all items were loaded adequately on their targeted dimension. Moreover, this factor structure remained stable across Grades 1–4. Therefore, the data collected with this instrument can be used to test questions regarding changes that might occur in these dimensions during this development period.

Next, we examined the psychometric equivalence of the constructs across the scales and groups for children's gender, family socioeconomic status, and mothers' immigration status. Regarding children's gender and family SES, the results showed that the constructs measured by our instrument (solicitation, self-disclosure, and knowledge) were equivalent and could be construed similarly across groups and time (strict invariance). For immigration status, the results showed scalar invariance. Thus, the comparison of means between groups was allowed since the constructs took into account all mean differences in the shared variance of the items. However, residuals were different for three items across the two groups. Even though residual invariance is a necessary step in adequately reporting full invariance, it does not impede comparison between groups as the residuals are excluded from the latent factors (Putnick & Bornstein, 2016).

4.2 | Changes in solicitation, knowledge, and self-disclosure

We expected mothers' perception of solicitation and knowledge to decline from Grades 1 to 4 and child self-disclosure to increase. We also expected these changes to differ by children's gender in that mothers of girls would solicit more

information from them and be more knowledgeable compared to mothers of boys. We did observe statistically significant changes and gender interactions across Grades 1–4, but they were of small magnitude. This suggests that while the mothers perceived a slight change in their solicitation behaviors, children's self-disclosure, and parental knowledge, parent-child communication processes during the period we covered were somewhat stable. We thus cautiously interpret our results as noteworthy but modest precursors of future developmental changes.

Regarding parental solicitation, our results confirmed the hypothesized decline with age and showed that this changes slightly when including the children's gender. As expected, in Grade 1, mothers of girls solicited more information than mothers of boys. However, solicitation behaviors with girls modestly decreased in frequency with age, while they remained stable among mothers of boys. By Grade 4, the level of solicitation between mothers of girls and mothers of boys was the same. The slightly higher initial level of solicitation for mothers of girls might reflect a general tendency among mothers to worry less about the out-of-home social activities of boys than about those of girls (Pettit et al., 2007), prompting them to be more aware of and report more solicitation behaviors for girls. In addition, mothers who believe their children require more support with their psychosocial development may tend to be more proactive in their parental monitoring, particularly by soliciting more information (Pettit & Laird, 2002). As the differences were slight, we mainly interpret this finding as a potential indicator of continuity in gendered parental solicitation behaviors throughout childhood and adolescence, as the similarity between girls and boys as of Grade 4 is also observed for early adolescents (Keijsers & Poulin, 2013). Although toward age 14, parental solicitation increases with girls, it remains lower but stable with boys. Keijsers and Poulin (2013) maintained that these differences reflected distinct objectives in parent-child communication by gender. Accordingly, mothers of boys support the development of their autonomy more by offering them greater independence. Mothers of girls would instead seek to foster a balance between their children's need for autonomy and support by modulating their solicitation behaviors. Current findings provided modest support to this hypothesis during middle childhood.

Our results also showed that mothers perceived that self-disclosure behavior slightly increased with age for boys but diminished for girls. One possible explanation is that from Grades 1 to 4, girls generally participate in activities in dyads or small groups, whereas boys prefer to engage in activities in larger groups. In short, the complexity of social interactions and activities varies by gender (Rose & Smith, 2018; Spadafora et al., 2019), which could partly explain why school-age boys talked more spontaneously about their social life with their mothers. Boys may have more news to share or a greater need for support than girls, as their social interactions are generally more numerous and of shorter duration than those of same-age girls (Rose & Rudolph, 2006). A second explanation could be that mothers have higher expectations of girls' ability to discuss their social activities spontaneously. Indeed, adults generally perceive school-age girls to be more verbally adept than boys (Bouchard et al., 2012). Furthermore, female dyads (e.g., mother-daughter) appear to have the highest rates of self-disclosure in the family during everyday exchanges (Finkenauer et al., 2004). Smetana et al. (2006) also found that mothers erroneously rate girls as more disclosing than boys. Thus, it is possible that girls and boys do self-disclose similarly between Grades 1 and 4, but that mothers have a more favorable perception of boys' self-disclosure behaviors. This biased perception could encourage mothers to report a slightly higher frequency of these behaviors in boys and be more sensitive to even a slight decrease in girls' self-disclosure during development. More research is needed to better differentiate the processes at work.

Finally, our results showed that mothers' knowledge of their children's social life slightly diminished linearly from Grades 1 to 4. Even though this change was modest in size, it suggests that the decrease in parental knowledge observed as of Grades 5 and 6 (elementary to middle school transition) reported by Laird and Marrero (2011) could begin earlier than previously stated. Racz and McMahon (2011) pointed out that this decline in parental knowledge probably reflects children's increasing autonomy as they grow older. This greater autonomy would allow them to spend more time with their peers without the immediate presence of their parents and without the presence of other adults (e.g., other parents, teachers) who might be able to inform mothers of their children's social activities. This slight decline in parental knowledge proved similar for boys and girls.

4.3 | Relative contribution of solicitation and self-disclosure to parental knowledge

Contrary to our hypotheses, the results showed that parental solicitation and child self-disclosure both contributed significantly to parental knowledge, regardless of children's age, gender, and SES. The finding that solicitation made a significant and increasing contribution to parental knowledge was unexpected. What generally emerges from the literature is that solicitation is one of the least effective parental monitoring strategies for gaining knowledge of the social activities of adolescents, second only to parental control (Liu et al., 2020). In pre-adolescence and adolescence, youths may perceive parental solicitation as a violation of their privacy that runs up against their growing need for independence (Hawk et al., 2013). However, younger children may believe more in their mothers' authority or "right to know." In fact, as a process in parent-child communication, parental solicitation requires the cooperation of the children being questioned to obtain useful information. Moreover, the increase of solicitation's contribution to parental knowledge from Grades 1 to 4 suggests that the later transition between childhood and adolescence is a pivotal period for communicational dynamics between mothers and their children, especially as parental solicitation usually declines in early adolescence (Keijsers & Poulin, 2013). The significant contribution of child self-disclosure to parental knowledge seems to be a robust process of mother-child communication about peers that has been replicated across cultures and appears to be sustained regardless of the child's gender (Liu et al., 2020; Racz & McMahon, 2011).

4.4 | Strengths, limitations, and future research

This study has several strengths, including the use of a 4-year longitudinal design and a large sample size. However, there are some limitations. First, the sample used was relatively homogeneous, with families solicited residing in the same geographic area. Therefore, the current results will need to be replicated with more ethnically and socioeconomically diverse samples. Second, although the analyses showed significant effects regarding variation over time in child self-disclosure, parental solicitation, and parental knowledge, it is important to keep in mind that these variations are relatively small. Changes in these important processes of mother-child communication about the child's social activities outside the home do occur during middle childhood, but the results also suggest relative stability. More significant changes might occur at different stages of development, such as the transition to adolescence and high school. More longitudinal studies are needed to confirm the observed patterns across middle childhood through late adolescence.

Studies based on Kerr and Stattin's (Stattin & Kerr, 2000) model typically include the construct of "parental control," which refers to the rules parents assert to frame social activities outside the home and the information their child is required to disclose to them (Liu et al., 2020). However, this construct was not included, as children in Grades 1-4 also receive explicit instructions from the many adults who supervise their activities (e.g., teachers, supervisors, friends' parents, etc.) and the information that must be shared with adults (e.g., injuries, travel, duration of activities). Further research is needed to determine the appropriateness of including or not this dimension in childhood.

Further research is also required to continue the validation of the Parent-Child Communication questionnaire in middle childhood. Since the parental knowledge scale has a somewhat low internal consistency, it could also be improved by adding more precise and complex items measuring different aspects of parental knowledge, such as knowledge of the identity of their child's best friends and the child's social functioning at school. Also, further validation analyses would be needed to determine whether specific differences (i.e., degree of language proficiency, cultural interpretation of the items) or larger measurement error can explain the lack of strict invariance by immigration status for three items.

Father and child perceptions of these constructs should also be included since different informants can sometimes diverge in reporting on dimensions of parent-child communications (Tremblay-Pouliot & Poulin, 2021). In fact, the father-child communication on activities outside the home often differs from that of the mother-child dyad (Smetana et al., 2006). Thus, fathers may engage differently in solicitation behaviors and report different perceptions of

knowledge about activities outside the home (Tremblay-Pouliot & Poulin, 2021). In addition, the existence of inter-family differences in the use of parent-child communication processes regarding peers, as well as the characteristics of parents (e.g., parenting style) and children (e.g., externalizing behaviors) that would be associated with these differences, should also be documented.

Finally, examining the links between the dimensions of Kerr and Stattin's (2000) model and adjustment problems shows that self-disclosure, but not solicitation, is strongly related to lower levels of difficulties in adolescence and that this link is even bidirectional (Willoughby & Hamza, 2011). However, these links remain to be examined in middle childhood. Are the beneficial effects of self-disclosure already operating in childhood? Does parental solicitation also promote adjustment given its significant contribution to parental knowledge? These questions need to be explored in future research.

5 | CONCLUSIONS

Our study proposes a novel instrument for measuring mothers' perception of parental knowledge, parental solicitation, and child self-disclosure during middle childhood. Moreover, our results documented a significant but modest decline in parental knowledge and solicitation from Grades 1 to 4 for all children, whereas self-disclosure behavior declines for girls but increases for boys over this period. Finally, our study shows that child disclosure contributes as much to parental knowledge as does parental solicitation across Grades 1 to 4. These findings contribute to the literature on mother-child communication processes about the child's activities outside the home.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS APPROVAL STATEMENT

All procedures performed in this study were in accordance with the ethical standards of the Université du Québec à Montréal's institutional Research Ethics Board. Informed consent was obtained from all parents and verbal acquiescence was obtained from all children participating in this study.

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