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Factors Associated with Parent–Adolescent Attachment Relationship Quality: A Longitudinal Study

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Abstract: Background: Attachment to parents during adolescence has been identified as an important indicator of psychosocial adaptation. However, the relative importance of the adolescents' behavior problems and the larger relational context likely to influence the quality of these relationships remains relatively underexplored. The present study aims to identify the factors associated with the quality of parent–adolescent attachment relationships and to establish their relative contributions. This study also tested, as a complementary objective, the invariance of the models according to sex. **Method:** 706 (46.9% girls) early adolescents participated in the study at time 1 and then again, two years later. The individual (e.g., behavior problems or temperament) and contextual (e.g., parents' behaviors, history of abuse or environment stability) associated factors were measured at time 1, while the quality of the parent–adolescent attachment relationship was measured at time 2. **Results:** The results showed that a history of emotional abuse, inconsistent discipline, externalized behavior problems and the adolescent's age were negatively associated with the global attachment security score, while internalized behavior problems and peer attachment were positively associated. These variables explained 15.7% of variance. The results also demonstrated that these variables were also associated with the specific dimensions of attachment (trust, communication, alienation). **Discussion:** The study demonstrates the importance of several relational variables in the development of the parent–adolescent attachment relationship.



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1. Introduction

1.1. Attachment in Adolescence

Over the past decades, the concept of attachment has expanded from one that describes the mother–child bond formed during infancy to one that can be applied across the lifespan [1–4]. Throughout adolescence, changes occur in attachment relationships with primary caregivers (parents) and new attachment bonds are formed, mostly with peers and romantic partners [5]. Few studies have examined the role of adolescents' behavior and relational context in their future attachment to their parents, in comparison to studies that have focused on the consequences associated with insecure attachment [6,7].

During adolescence, exploration is more likely to be reflected by an increased need for autonomy than a desire to explore one's physical environment [8]. Secure attachment to parents is marked by high levels of trust and communication and low level of alienation [9]. It allows adolescents to develop their autonomy, whereas insecure attachment is likely to disrupt it [5]. Between childhood and adolescence, attachment relationships move from direct interactions between children and their parents to relationships mostly based on mental representations, expectations and beliefs where the sense of security is central [10].

Observable interactions become more limited but remain important to maintain a sense of security. Adolescents who have a secure attachment relationship with their parents seek autonomy while according great importance to the attachment relationship they have with their parents [11]. Their parents continue to play an important role in helping them successfully adapt to the multiple changes they are confronted with, and, in such cases, distancing from parents does not indicate detachment [5].

Studies suggest that secure parent–adolescent attachment is significantly related to several socioemotional benefits including better emotion regulation [12] and social skills [13]. Secure parent–adolescent attachment is also associated with higher self-esteem and levels of satisfaction with life for adolescents [9]. Conversely, insecure parent–adolescent attachment relationships are associated with several social, behavioral and psychological difficulties, such as externalizing and internalizing behavior problems [14,15], suicidal ideation [16] and interpersonal problems [17]. Longitudinal studies have also revealed that an insecure attachment is a predictor of future behavioral difficulties, both externalizing and internalizing [7,15,18].

1.2. Factors Associated with Attachment Relationship Quality in Adolescence

Although many studies have focused on the consequences of adolescent attachment [13–15,18], it remains important to identify the factors that explain these attachment relationships. Over the last few decades, several authors have examined the associated factors of these attachment relationships using cross-sectional designs e.g., [19–21], but only a few have studied the associated factors using a longitudinal study design, which makes it possible to formulate hypotheses about the predictive role of factors measured during childhood on attachment in adolescence, e.g., [22,23]. The significant individual differences observed in attachment relationship quality during adolescence underlie the need to identify these potential predictors.

1.2.1. Individual Factors

First, several studies show that some adolescent characteristics are associated with the quality of parent–adolescent attachment. Externalizing, such as aggression, delinquent behaviors, opposition, etc., and internalizing behaviors, such as depression, anxiety and social withdrawal, in adolescents, for example, are linked to the quality of parent–adolescent attachment [22–25]. The results of these studies show that the presence of behavioral problems, both internalized and externalized, is generally negatively associated with the quality of attachment relationships with parents. Although these externalizing and internalizing behaviors are often identified as negative consequences of insecure attachment, some of the longitudinal studies cited above suggest that they may also be predictive of the quality of parent–adolescent attachment relationships [22–24].

Some temperamental and personality traits in adolescents, including novelty seeking, reward dependence, cooperativeness, self-transcendence, harm avoidance, negative emotionality and activity level [21,26], and the adolescent's popularity [18,19], are also factors related to the quality of parent–adolescent attachment. Finally, a history of physical or psychological abuse [15,27] or having been exposed to stressful life events [15,28] may also be negatively related to parent–adolescent attachment relationships.

1.2.2. Contextual Factors

The association between parenting behaviors and the quality of attachment relationships is relatively well-documented [24,29–31]. The use of control, whether positive or negative, parental acceptance/involvement and psychological autonomy-granting have been associated with parent–adolescent attachment relationships [21,24,27,29,30].

Some parent–adolescent relationship characteristics, such as the ability to manage conflict and adolescent idealization of a parent [18,19,22], as well as certain family characteristics, namely the presence of spouse conflicts [20,32] and poverty [22] appear to be associated with the quality of parent–adolescent attachment relationships. The findings of

Allen et al. [18] suggest that the quality of peer attachment is significantly associated with the quality of parent–adolescent relationships.

Although the reviewed literature suggests that some individual factors (behavior problems, temperament) and contextual factors (parents' behaviors, peer relationships, poverty, family characteristics, history of abuse) are associated with the quality of parent–adolescent attachment relationships, the available documentation has certain limitations. There are relatively few longitudinal scientific studies examining the associated factors of the quality of parent–adolescent attachment relationships, and those that have been carried out do not allow us to determine the relative contribution of the factors involved. The low number of studies on some of the factors associated with attachment relationship quality, the diversity of behaviors analyzed (parenting behaviors in particular), along with some methodological limitations, make it difficult to come to any clear conclusions regarding the contributions of these factors. Given that the majority of the studies considered used a cross-sectional research design, they were unable to determine the predictive value of the studied variables. Furthermore, some of these studies relied on a single informant to assess study variables e.g., [26,30–32], which does not ensure the independence of observations, while others used small sample sizes ($n \leq 65$), thereby limiting statistical power [21,28]. Given that the majority of the studies reviewed did not consider the full range of relevant factors (individual and contextual factors), it is difficult to determine how they help to explain parent–adolescent attachment. Moreover, existing studies only focused on the factors associated with the global attachment security score, without considering the specific attachment dimensions that are important in adolescence (e.g., trust). In addition, it should be noted that the studies were conducted with fairly heterogeneous samples in terms of age, whereas different factors could be associated with the quality of attachment relationships during early or late adolescence. Early adolescence appears to be an interesting period to examine, considering that it constitutes an important period of transition in terms of parent–adolescent attachment relationships [8,10]. Lastly, in the studies reviewed, very little attention has been paid to sex differences in the factors associated with the quality of attachment relationships. The importance of these associated factors might vary as a function of these specific dimensions or adolescents' sex.

1.3. Present Study

The present study has two main objectives: (1) to identify the factors associated with the quality of parent–adolescent attachment relationships (for both overall attachment security and specific attachment dimensions of trust, communication and alienation) and (2) establish their relative contributions. Given that very few studies have considered sex differences, this study also tested, as a complementary objective, the invariance of the models according to sex.

Based on the literature reviewed, it was expected that high levels of externalizing (e.g., opposition or aggression) and internalizing (e.g., anxiety) behaviors and certain parental behaviors, such as lack of supervision, would be associated with poorer parent–adolescent attachment relationships two years later. It was also expected that peer attachment would be positively associated with parent attachment.

2. Material and Methods

2.1. Study Design and Participants

This longitudinal study is part of an ongoing study on the trajectories of behavior problems in boys and girls. Participants were 744 French-speaking students, recruited between 2008 and 2010 in 155 elementary public schools in four regions of Quebec, Canada (Montérégie, Montréal, Québec (Capitale-Nationale) and Estrie). They were aged between 6 and 9 years at study entry. Fifty percent were recruited from among students referred to specialized school-based services for behavior problems (participation rate = 75.1%). Girls were oversampled and comprised 40% of students with behavior problems. The other participants were randomly selected from the lists of students who did not receive

services at schools for behavior problems and in a way that did not significantly differ based on age or the proportion of girls (participation rates = 71.5%). All participants were assessed yearly.

The sample of the present study consisted of 706 Canadian children (46.9% girls; mean age = 11.29, s.d. = 0.95) who completed their fourth assessment. Participants came from intact families (44.8%), blended families (22.4%) and single-parent families (28.7%). The median family income was between \$50,000 and \$59,999 CAD, which is slightly lower than the median household income in Canada [33]. Finally, 18% of parents reported not having finished high school, 17.3% reported having obtained their high school diploma and 64.7% reported having finished postsecondary studies. Two years later, 634 children were still part of the study (mean age = 13.23, s.d. = 0.96) for an attrition rate of 10.1%. For most of the variables considered, participants who did not complete the second assessment were not different from those who were reassessed. However, those who were not reassessed did have significantly lower levels of internalizing behaviors reported by the parent (F (dL1 = 1, dL2 = 674) = 4.85, p = 0.028) and changed schools more often (F (dL1 = 1, dL2 = 671) = 3.93, p = 0.048).

2.2. Procedures

School staff (generally educators) and research assistants solicited the parents of the students to participate in the study. Before the first assessment, parents and adolescents received a full description of the study. Parents signed an informed consent form that included permission to obtain information from the teacher about the adolescent's behaviors in school. Adolescents had to give their verbal assent to the study. This procedure was repeated for each wave of data collection. Data was collected by way of interviews conducted in family homes by trained research assistants. For each assessment, two separate (60–120 min) interviews were carried out, one with the parent and the other with the adolescent. Teachers were also interviewed by phone, allowing the collection of information about behavior problems in the school context. Attachment-associated factors were measured three years after the inception of the study. Participants' attachment to their parents was measured two years after associated factors were assessed. One measure—history of abuse during childhood—was obtained one year after data on attachment was collected. Since this measure is retrospective, it was nonetheless included as an associated factor. All respondents (parents, adolescents, teachers) were financially compensated for their time. The confidentiality of the data collected was ensured by assigning a numerical code to each participant. The Institutional Review Board of Ethics for Research in Education and Social Sciences of the University of Sherbrooke (Sherbrooke, Québec, Canada) approved all procedures of the current study (N/Ref: 2015-1076, 2015-26-ESS).

2.3. Measures

2.3.1. Dependent Variable

The French version of the Inventory of Parent and Peer Attachment [9] was used to assess the quality of parent–adolescent attachment relationships. The “parent” version of the inventory uses 25 items to measure the adolescent's perception of their attachment relationship with their parent based on three dimensions: (i) the trust they have in their parent's ability to understand and respect their needs and desires (10 items such as “I trust my parent”); (ii) communication, which refers to their perception of how sensitive their parent is toward their emotional needs and the scope and quality of commitment and communication that exists between them and their parent (9 items such as “If my parent knows something is bothering me, he/she asks me about it”); and (iii) alienation, which refers to feelings of isolation, anger and detachment that adolescents experience in their relationship with their parent (6 items such as “I feel angry with my parent”). The score corresponds to the sum of all the items that make up the scale. This tool provides a total score for the parent–adolescent relationship quality calculated by adding the scores for the two positive scales (trust and communication) together and then subtracting the score for the negative scale (alienation). For each item, adolescents used a five-point Likert scale

(0 = almost never or never true, 4 = almost always or always true) to indicate the extent to which they feel that the statement is true. Adolescents' answers referred to the main study respondent, which, in 84.9% of the cases, was their mother. The ordinal coefficient alphas obtained were satisfactory, ranging from 0.77 to 0.95. This measure of internal consistency provides more reliability than Cronbach's alpha for Likert-type scales with seven points or less [34] and was also used for the independent variables' measures described in the following section.

2.3.2. Independent Variables

The French versions of the Child Behavior Checklist (CBCL) and the Teacher's Report Form (TRF), scales that measure externalizing and internalizing behaviors [35], were used to assess the presence of behavior problems. The externalizing behavior scale consists of 35 items for the CBCL (e.g., "Breaks rules at home, school, or elsewhere") and 32 items for the TRF (e.g., "Can't sit still, restless, or hyperactive"). The internalizing behavior scale consists of 32 items for the CBCL (e.g., "Cries a lot") and 33 items for the TRF (e.g., "Fears going to school"). The parent and the teacher used a three-point Likert scale (0 = not true (as far as they know) to 2 = always or often true) to indicate the extent to which each statement corresponds to the adolescent being assessed. The score is calculated as the sum of all the items that make up the scale, and high scores indicate greater behavioral problems. In the present study, only the highest T-score reported, either from the parent or the teacher, was retained. The psychometric properties reported by this tool are excellent [36]. In the present study's sample, the ordinal coefficient alphas were excellent for externalizing and internalizing behavior scales: for both parent and teacher versions, they ranged from 0.93 to 0.97.

Adolescent temperament was measured using the French version of the *Early Adolescent Temperament Questionnaire—Revised* [37]. This 62-item questionnaire assesses the temperament of young adolescents (9–15 years old). For the present study, negative affect (18 items such as "Gets very irritated when someone criticizes him/her") and effortful control (18 items such as "Has a hard time waiting his/her turn to speak when excited") factors were used. For each item, the parent identified the response that best described their adolescent using a 5-point Likert scale (from 1 = almost always false, to 5 = almost always true). The score corresponds to the mean of the items that make up the scale, and high scores indicate greater negative affect and better effortful control. The ordinal coefficient alphas obtained from the sample used in the present study were shown to be very satisfying (0.90 for negative affect and 0.92 for effortful control).

Information on the adolescent's history of abuse was gathered via questions taken from the French version of the *Childhood Trauma Questionnaire* [38]. The present study used a total of fifteen questions to assess physical (5 items), emotional (5 items) and sexual abuse (5 items). The adolescents were asked to indicate if, in their life, they had ever been the victim of these types of abuse using a 5-point Likert scale (from 0 = never true to 4 = always true). The scores correspond to the sum of all the items that make up the scale and higher scores indicate greater frequency of abuse.

Parenting behaviors were measured using the French version of the *Alabama Parenting Questionnaire* [39]. Three scales were taken from the original questionnaire: lack of supervision (10 items such as "You ask your child what his/her plans are for the coming day"), inconsistent discipline (6 items such as "You threaten to punish your child and then do not actually punish him/her") and corporal punishment (3 items such as "You spank your child with your hand when he/she has done something wrong"). The parent indicated the extent to which each statement corresponds to their behavior using a 5-point Likert scale (from 1 = never, to 5 = always). The score corresponds to the mean of the items that make up the scale, and high scores indicate poorer parenting behaviors. Internal consistency for all three scales was more than satisfactory (parental supervision = 0.85; inconsistent discipline = 0.80; corporal punishment = 0.90).

The attitudes parents have towards their adolescent, both positive and negative, were measured using the French version of the *Parental Acceptance-Rejection Questionnaire* [40].

The instrument contains 60 items divided into four scales: warmth/affection (20 items such as “I say nice things about my child”), hostility (15 items such as “I hurt my child’s feelings”), neglect/indifference (15 items such as “I’m too busy to answer my child”) and rejection (10 items such as “I make my child feel unloved”). The parent indicated the extent to which each situation corresponds to their situation in the past year, using a 4-point Likert scale (1 = almost always true, to 4 = almost never true). The scores correspond to the sum of all the items that make up the scale, and high scores indicate more warmth and greater hostility, neglect and rejection. In the present study, the hostility and rejection scales were combined into a single coercion scale due to the strong correlation between the two ($r = 0.77$). Here as well, internal consistency was very satisfactory (warmth = 0.95; neglect = 0.87; coercion = 0.94).

Home and school stability were assessed with two items that counted the number of times the adolescent moved or changed schools. The parent indicated how many times their child changed schools and how many times the family moved in the past year.

The annual income of participating families was measured using an ordinal scale adapted from the Quebec Child Mental Health Survey [41], ranging from 1 (\$0 to \$999) to 20 (more than \$160,000). The scale was completed by parents. For descriptive purposes, parents also completed an ordinal scale on their level of education, also from the Quebec Child Mental Health Survey [42], and answered questions about the configuration of their family.

The French version of the *Inventory of Parent and Peer Attachment* [9] was used to assess the quality of peer attachment relationships. As for the *parent* version of the inventory, this 25-item instrument measures the adolescents’ perception of their peer attachment relationships based on three dimensions: (i) trust (10 items such as “My friends accept me as I am”), (ii) communication (8 items such as “I like to get my friend’s point of view on things I’m concerned about”) and (iii) alienation (7 items such as “I feel alone or apart when I am with my friends”). This version also allows the obtention of a global attachment security calculated by adding the scores for the two positive scales (trust and communication) together and then subtracting the score for the negative scale (alienation). A high score indicates a higher quality attachment relationship. The ordinal coefficient alphas obtained for this measure were very satisfactory (0.84 to 0.96).

2.3.3. Control Variable

The quality of the parent–child relationship at time 1 was assessed using the French version of the *Child’s Attitudes Toward Mother and Father* [42] questionnaire, which includes 25 items such as “I feel I really can trust my mother/father”, “My mother/father doesn’t understand me” and “I feel very angry with my mother/father”. A 5-point Likert scale was used (1 = rarely or never, to 5 = most of the time or always). Participants filled out this questionnaire independently, referring to the main respondent. It assesses the extent to which participants have a problematic relationship with their parent, characterized by elements such as distrust, shame, anger and conflict. The score corresponds to the sum of all the items, and a high score therefore indicates a more problematic parent–child relationship. The ordinal coefficient alpha obtained for this instrument (0.96) demonstrated an excellent internal consistency.

2.4. Data Analysis

2.4.1. Preliminary Analysis

Descriptive statistics (minimums, maximums, means and standard deviations) were calculated for the variables examined to ensure the normality of distributions. Correlations between independent and dependent variables were also calculated to identify which significant independent variables to include in the main analyses. This step also allowed us to verify that there were no multicollinearity problems (that no correlations were higher than 0.70). An analysis of the VIF values, ranging between 1.02 and 1.80, provided further reassurance that there were no multicollinearity problems [43].

2.4.2. Main Analysis

To meet the study's main objective, two types of analyses were carried out using Mplus 7.2 software [44]. First, a multivariate linear regression analysis was performed using the global score for attachment to parents as the dependent variable. Then, a path analysis, including the three specific attachment dimensions, was tested in a structural equation model. In both cases, all independent variables that were significantly correlated ($p < 0.05$) with dependent variables (trust, alienation, communication, global score) during preliminary analyses were included simultaneously. These associations were examined while controlling for the effect of a measure of parent–child relationship quality, administered at time 1, that is conceptually related to these specific attachment dimensions. During these analyses, missing data was treated using maximum likelihood estimations. Model fit indices were examined in order to assess model fit. According to Hu and Bentley [45], a nonsignificant χ^2 value, a CFI value above 0.95 or a RMSEA value below 0.06 indicate a good fit between the data and the model.

To verify the complementary objective, we tested the invariance of the models by sex, following the structural equation modeling approach for testing a moderator effect [46]. Equality constraints were applied to all parameters linking independent variables to dependent variables and by comparing this model to a model where the same parameters were free to vary. A statistically significant difference between the adjusted chi-square values allowed us to reject the hypothesis of sex invariance.

3. Results

3.1. Preliminary Analysis

The descriptive statistics (minimums, maximums, means and standard deviations) of the dependent, independent and control variables are presented in Table 1. With regards to correlations between independent and dependent variables (see Table A1 Appendix A), the preliminary analyses revealed that all of the independent variables examined, except for family income, were significantly correlated to the global attachment score (r varying between 0.09 and 0.35). The attachment variables (trust, communication, alienation and global score) were also significantly correlated, as per our expectations. We also calculated the statistical power of the regression and path models tested in the main analyses. In every instance, the statistical power was sufficient (p values between 0.96 and 1.00).

3.2. Attachment to Parents—Global Model

First, a regression was conducted to explain the global score of attachment to parents, integrating only the quality of the parent–child relationship at time 1 as the independent variable. This model managed to explain 21.8% of the total variance ($p < 0.001$). Secondly, a total of 18 variables, selected from the literature review, were added to the regression model. The independent variables that were not significantly associated with attachment were removed one by one, always based on the least strongly associated variable, so as to obtain a final reduced model that included significant associated factors only (i.e., using the backward method). This final model, shown in Figure 1, has seven variables (including the control variable), all of which were significantly associated with the attachment to parents score. The quality of attachment relationships with peers had a significant positive association with the quality of the attachment relationship with parents ($\beta = 0.19$, $p < 0.001$). The level of externalizing behavior problems, a history of emotional abuse, the use of inconsistent discipline and the age of the adolescent were identified as being negatively associated with the global score for attachment to parents (β between -0.10 and -0.22 , $p < 0.05$).

Table 1. Minimums, maximums, means and standard deviations of the study variables.

Variables	Min	Max	M	SD
Attachment to Parents				
Trust	2.00	40.00	32.40	7.74
Communication	0.00	36.00	24.53	8.14
Alienation	0.00	22.00	5.11	4.35
Global score	−12.00	76.00	51.82	17.75
Independent Variables				
Age	9.25	13.83	11.29	0.95
Externalizing behavior problems—Parent	0.00	51.00	12.98	10.26
Externalizing behavior problems—Teacher	0.00	40.00	8.80	7.79
Internalizing behavior problems—Parent	0.00	38.00	10.12	7.52
Internalizing behavior problems—Teacher	0.00	55.00	10.60	11.70
Negative affect	1.06	4.78	2.83	0.67
Effortful control	1.17	5.00	3.04	0.67
Physical abuse	4.00	20.00	5.38	1.45
Emotional abuse	5.00	20.00	6.39	2.40
Sexual abuse	3.00	17.00	5.13	0.84
Poor monitoring/supervision	1.00	2.80	1.31	0.29
Inconsistent discipline	1.00	4.17	2.23	0.64
Corporal punishment	1.00	3.00	1.19	0.33
Warmth	53.00	80.00	76.10	3.98
Neglect	15.00	33.00	19.09	3.59
Coercion	25.00	71.00	36.98	8.11
Number of moves	0.00	4.00	0.19	0.47
Number of school changes	0.00	4.00	0.27	0.50
Family income	2.00	7.90	9.95	4.11
Attachment to peers	−17.00	72.00	48.73	17.22
Control Variable				
Problematic parent–child relationship	0.00	85.00	15.49	14.80

Lastly, a higher level of internalizing behavior problems was associated with higher quality of attachment to parents ($\beta = 0.15, p < 0.001$). The final regression model managed to explain 37.5% ($p < 0.001$) of the variance of the global score for attachment to parents, which means that the variables added in the second step explained 15.7% of the total variance beyond the effect of the parent–child relationship quality at time 1.

3.3. Attachment to Parents—Three Dimensions Model

With regards to the three-dimensions path model (trust, communication and alienation), the same two steps were conducted (see Figure 2). First, only the parent–child relationship quality was included as an independent variable and this model managed to explain 20.0% of the total variance for the trust dimension, 17.0% for the communication and 11.6% for the alienation. Secondly, seven of the initial 18 variables added to the model were shown to have significant associations in the final model. Some of these variables were identified as associated factors for two or three of the attachment dimensions, while others were only associated with one of the three dimensions. The fit indices obtained demonstrate an adequate fit between the model and the data: $\chi^2(5) = 5.080, p = 0.406$, CFI/TLI = 1.000/1.000, RMSEA = 0.005 90% IC = [0.000, 0.058], according to Hu and Bentler’s standards [45]. A history of emotional abuse contributed to variance in each dimension, but its association was stronger for the positive dimensions (trust and communication). The use of inconsistent discipline and adolescent age were also identified as variables associated with all three dimensions of attachment; they were negatively associated with trust and communication and positively associated with alienation. Conversely, the quality of peer attachment was shown to be positively associated with trust and communication and negatively associated with alienation. The presence of internalizing

behavior problems appears to be positively associated with levels of trust and communication experienced in the parent–adolescent relationship. Lastly, the independent variables that were associated with one dimension only were coercion (negatively associated with trust) and the lack of supervision (negatively associated with communication). The addition of these variables helped to explain, respectively, 13.0%, 13.0% and 9.4% of the trust, communication and alienation dimensions, beyond the effect of the parent–child relationship quality at time 1. The final model retained, including the control variable, explains a similar percentage of variance for the *trust* and *communication* dimensions (33.0%, $p < 0.001$ and 30.0%, $p < 0.001$, respectively) and explains 21.0% ($p < 0.001$) of variance for the *alienation* dimension.

3.4. Model Invariance Test According to Sex

After adding equality constraints for boys and girls to the parameters linking independent variables to dependent variables, the analysis was carried out a second time free of all constraints, thereby allowing parameters to vary within the groups (boys and girls). In both cases, the chi-square values for fit were not significant ($1-\Delta\chi^2 = 7.21$, $\Delta dL = 7$, $p = 0.408$; $2-\Delta\chi^2 = 14.74$, $\Delta dL = 19$, $p = 0.784$), corroborating the hypothesis of invariance based on sex. Therefore, the retained models apply to boys and girls.

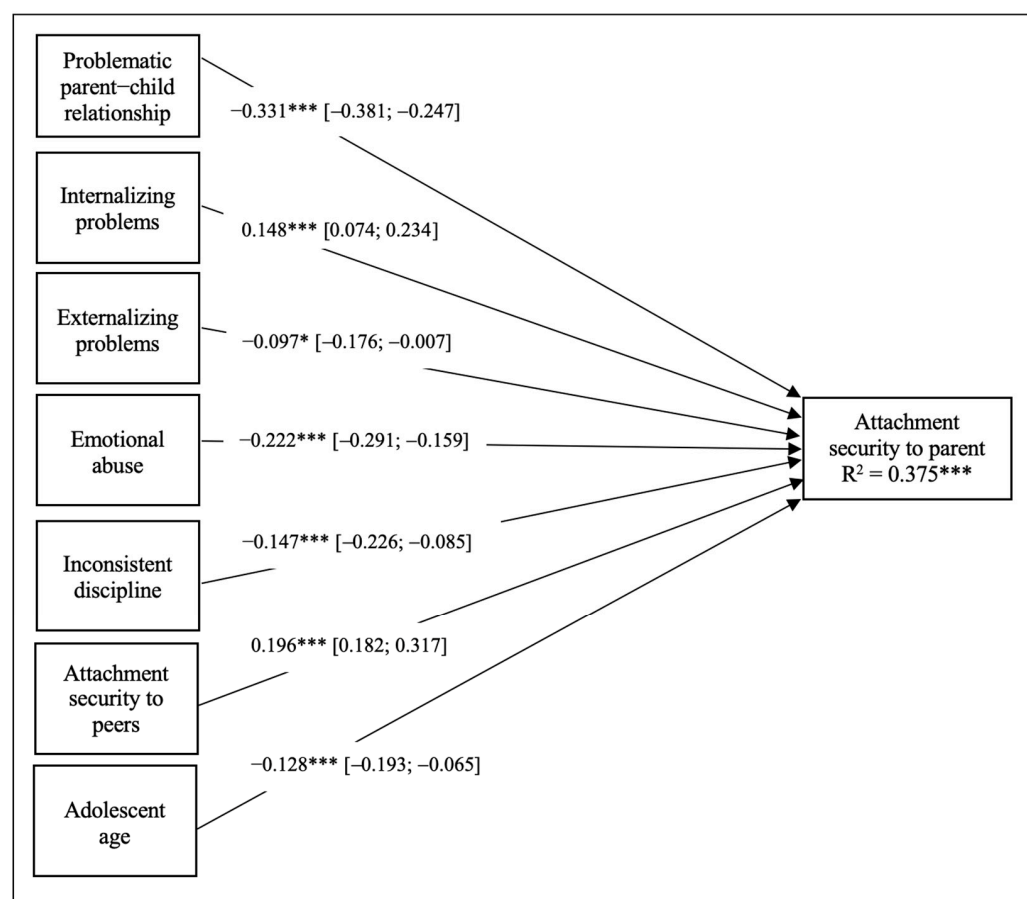


Figure 1. Factors associated with attachment security to parent—global model for boys and girls. Note. * $p < 0.05$; *** $p < 0.001$. The reported coefficients are standardized betas. CI = Confidence interval (95%). R^2 = R-Squared.

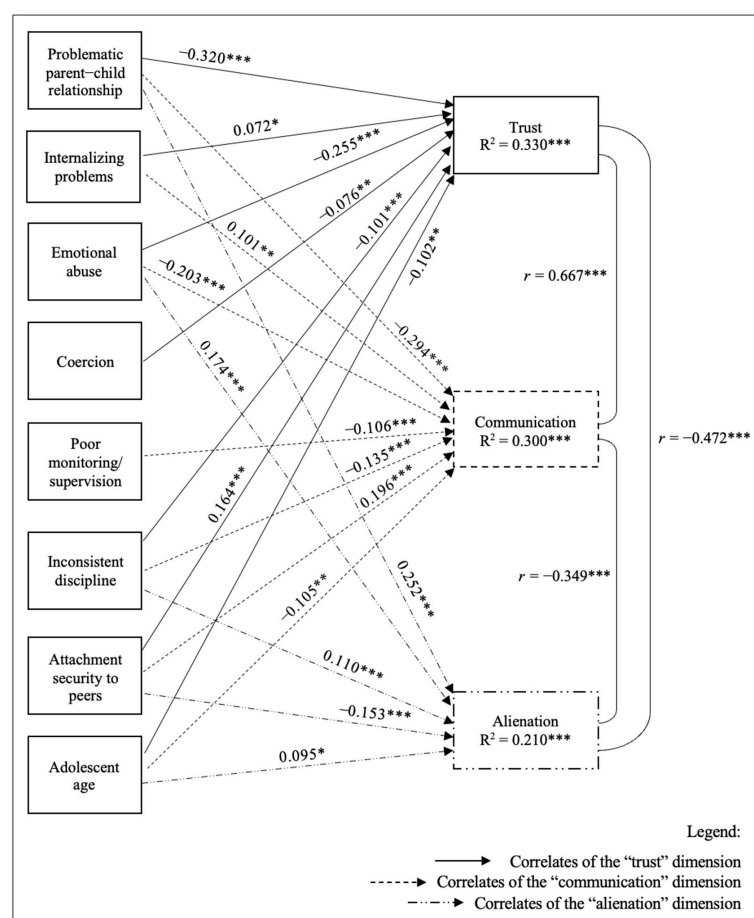


Figure 2. Factors associated with attachment security to parent—three dimensions model for boys and girls. Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. The reported coefficients are standardized betas. R^2 = R-Squared.

4. Discussion

The present study aimed to identify which factors manage to explain the quality of parent–adolescent attachment relationships and to establish their relative contributions, while controlling for the parent–child relationship quality at time 1. To achieve this objective, 18 potential associated factors, identified through a literature review, were included in our analyses. When simultaneously introduced into the same model, only a few of these 18 factors remained associated: six in the global model (internalizing and externalizing behaviors, emotional abuse, inconsistent discipline, attachment to peers and age) and seven in the three-dimensions model (internalizing behavior, emotional abuse, coercion, poor monitoring, inconsistent discipline, attachment to peers and age).

4.1. Factors Associated with the Overall Attachment Security to Parents

Beyond the effect of the parent–child relationship quality at time 1, the quality of adolescents’ attachment relationships with their peers was shown to be a particularly relevant associated factor of the quality of their attachment to their parents at the onset of adolescence. These results corroborate those reported by Allen et al. [18], which demonstrated that the quality of adolescent relationships with peers was positively associated with the quality of parent–adolescent attachment relationship.

The results also indicate that being exposed to emotional abuse in childhood, presenting externalizing behavior problems and being exposed to inconsistent parental discipline are all factors associated with less secure attachment to parents. This suggests that, of all types of abuse, emotional abuse appears to be the most harmful to the parent–adolescent attachment re-

lationship. These results are generally consistent with the results of prior studies [23–25,27,29]. It is possible that the nature of this type of abuse makes it more strongly associated with the quality of attachment relationships due to a stronger conceptual proximity. This result may also be partially explained by the higher prevalence of psychological abuse in comparison to other types of abuse in the sample groups for this study and those previously cited. The mean scores observed in this study support this hypothesis.

With regards to adolescent age, we noted that older adolescents report having a lower quality attachment relationship with their parents, which is consistent with what is generally observed over the course of adolescence [47]. The increased frequency in parent–child conflicts observed at the beginning of adolescence potentially modifies the adolescent’s perception of their relationship with their parent [48]. However, studies show that the quality of the parent–adolescent relationship tends to gradually re-establish itself starting in mid-adolescence, moving towards a relationship that can be described as harmonious by the time adulthood begins [49].

As for the presence of internalizing problems, the results of the present study appear to be counter-intuitive and are inconsistent with the findings from previous cross-sectional and longitudinal studies [22,24,25]. These studies showed an association between the presence of internalizing behavior problems and lower-quality attachment relationships, whereas the results from the present study support the contrary. This may be due to the fact that, in previous studies, only internalizing behavior problems were considered as an associated factor; they did not simultaneously take other possible associated factors into account (with the exception of externalizing problems in the case of the study carried out by Scott et al. [24], which was conducted with an all-girl sample). However, studies show that comorbidity between internalizing problems and other adjustment difficulties, including externalizing problems, is very frequent [49]. It is therefore possible that the negative relationship between internalizing problems and the quality of attachment relationships observed in these studies, could be explained, at least partially, by the percentage of common variance with externalizing behavior problems. These divergent results could also be explained by the fact that the present study was conducted with a sample of adolescents who were younger than those in the samples of the consulted studies.

The results of the present study provide a better understanding of how internalizing behavior problems contribute by examining this particular variable while controlling for pooled variance with externalizing behavior problems. These results also allow us to put forward a hypothesis in which adolescents with profiles characterized by internalizing behavior problems, that is, those that are free of comorbidity issues, might tend to develop better quality attachment relationships with parents than adolescents without internalizing problems. It is possible that these adolescents develop a relationship with their parents that is characterized by a less strong desire or need for independence. They may perceive this as a very positive, high-quality relationship, although it is expected that, during this developmental period, adolescents learn to slowly detach themselves from the primary attachment figures (their parents) and transfer a part of the functions of attachment onto their relationships with their peers and romantic partners [50].

Other associated factors that did not remain significant with regard to the overall quality of attachment relationships were adolescents’ temperament, parents’ attitudes and home and school stability. While some studies, which only considered temperament as an associated factor of attachment relationships, found significant associations between the two [21,26], the present study did not reveal any significant relationships between temperament and attachment relationships in the presence of other predictors. It would, however, be interesting to examine if affiliation and extraversion help explain attachment quality during adolescence, especially because affiliation emerges during this developmental period. It is also worth mentioning that examining the effects of temperament according to factors instead of dimensions could make it more difficult to identify any specific effects.

4.2. Factors Associated with the Specific Dimensions of Attachment to Parents

With regards to the associated factors of the three attachment dimensions (trust, communication and alienation), several similarities were observed with the associated factors of the global attachment score. However, externalizing behavior problems did not explain parent–adolescent attachment quality when dimensions were considered. Furthermore, other factors that were not associated with the global attachment score were shown to be significantly associated. This is the case for coercion, which was associated with a lower level of trust, and for lack of supervision, which was associated with a lower level of communication.

We also noted that these new factors, respectively, helped explain one single dimension of attachment, whereas global-score-associated factors remained significantly associated with two, sometimes even three dimensions. This suggests that some associated factors are specific (i.e., only influence one dimension of attachment), while others are more general, contributing in a significant way to more than one dimensions of attachment. We noted, however, that the specific associations were modest, which probably explains why their effect is not significant for the global score.

In general, we noted that some adolescent traits were identified as significant associated factors of parent–adolescent attachment relationship quality, and others were not. The same can be said for parental behaviors and the adolescent's environment. This underlies the importance of conducting fine-grained analyses of potential associated factors and of considering, in one single model, several variables from each of these categories.

4.3. Strengths, Limitations, Future Research Directions and Practical Implications

The present study has several strengths, particularly with regards to research design. The longitudinal nature of the design makes it possible to form hypotheses about the predictive value of the identified factors. The fact that there are multiple respondents (adolescents, parents, teachers) also lends a degree of independence to the observations, thereby contributing to the internal validity of the study. Furthermore, this study's sample size allows several predictive variables to be integrated into one single model, so as to assess their relative contribution while maintaining the statistical power required to observe large, medium and small effects. This is one of the main strengths of the current study in comparison to previously conducted research.

The present study is not, however, without methodological limitations. First, given that approximately 50% of the adolescents in the sample were receiving services for behavior problems at school at the start of the study, these findings cannot be fully applied to the general population. That said, this specificity of our sample also allowed us to study factors related to attachment to parents in an understudied group. This also allowed us to observe the relationships between some specific factors (e.g., behavior problems) and attachment relationship quality with greater statistical power. Similarly, the present study was conducted with a sample of primarily Caucasian adolescents, which again limits the generalizability of the results to other cultures. Furthermore, the variable used to control for the initial parent–child relationship is not a measure of the attachment strictly speaking. It is therefore possible that the stability of the attachment relationship was not fully controlled in the study. That said, the examination of the items composing this measure nevertheless allows us to say that these two constructs are conceptually very similar.

Although the analyses conducted to explain the quality of attachment to parents were able to account for a significant portion of the observed variance, a large part of this variance still remains unexplained, in spite of the large number of factors considered. Furthermore, when we look closer at the percentages of variance explained for each dimension, we see that the identified associated factors do not explain *alienation* as well as they do *trust* and *communication*. This demonstrates that other factors are surely involved in explaining attachment relationship quality. It is important that these factors be identified in order to promote the development of secure attachment relationships.

Further studies are required to deepen our knowledge and understanding of the factors that explain parent–adolescent attachment relationships. First, it would be worthwhile to verify whether the factors identified in this study are also associated with parent–adolescent attachment relationships in older adolescents (those in the second half of adolescence). During adolescence, things change quickly, and young people renegotiate their role within the family [13]; it is therefore possible that, at the end of adolescence, different factors may better explain attachment relationship quality. To date, studies have not paid particular attention to the fact that different factors may be associated with the quality of attachment relationships in younger and older adolescents. Secondly, all of the data was collected via questionnaires. It would be interesting to use other methods, such as observation or interviews, in order to validate the significant associations that have been identified. Lastly, considering the increasing importance of peer attachment relationships during adolescence [5,50], it would be beneficial to assess whether the same associated factors apply to the quality of peer attachment, and if not, which factors do.

5. Conclusions

This study sheds light on a number of factors that contribute to the quality of parent–adolescent attachment relationship at the onset of adolescence, for both boys and girls: behavior problems, emotional abuse, parents' behaviors, peer attachment and adolescents' age. The findings will be useful in identifying what to focus on in the development of prevention and intervention programs related to attachment relationship at the onset of adolescence. By better understanding the factors that affect the quality of this relationship, it will be easier to prevent the development of relationships characterized by mistrust, communication difficulties and alienation, which in turn could curb the development of associated problems, such as internalizing and externalizing behavior problems [7,12,18] and emotional and interpersonal difficulties [17].

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and has obtained prior approval of the Social Sciences and Education Ethic Committee of the Université de Sherbrooke.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the first corresponding author and are not publicly available to ensure the privacy of the participants and to comply with the instructions of the ethic committee that approved this study.

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Appendix A

Table A1. Correlations between study variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Att. to Parents																								
(1) Trust	–	0.763 ***	–0.587 ***	0.929 ***	0.278 ***	–0.156 ***	–0.265 ***	–0.128 **	–0.216 ***	0.191 ***	–0.160 ***	–0.356 ***	–0.091 *	–0.077	–0.201 ***	–0.097 *	0.200 ***	–0.230 ***	–0.204 ***	–0.201 ***	–0.447 ***	–0.120 **	–0.066	0.029
(2) Comm.		–	–0.490 ***	0.911 ***	0.264 ***	–0.173 ***	–0.217 ***	–0.092 *	–0.187 ***	0.192 ***	–0.099 *	–0.287 ***	–0.083 *	–0.175 ***	–0.222 ***	–0.076	0.213 ***	–0.198 ***	–0.197 ***	–0.168 ***	–0.413 ***	–0.086 **	–0.115 **	–0.007
(3) Alienation			–	–0.726 ***	–0.244 ***	0.140 ***	0.185 ***	–0.115 **	0.163 ***	–0.172 ***	0.118 **	0.280 ***	0.125 **	0.042	0.174 ***	0.036	–0.088 *	0.157 ***	0.120 **	0.105 **	0.341 ***	0.094 *	0.073	–0.007
(4) Global score				–	0.302 ***	–0.181 ***	–0.260 ***	–0.126 **	–0.220 ***	0.213 ***	–0.143 ***	–0.354 ***	–0.108 **	–0.124 **	–0.232 ***	–0.086 *	0.206 ***	–0.230 ***	–0.209 ***	–0.190 ***	–0.476 ***	–0.114 **	–0.099 *	0.011
Independent Variables																								
(5) Peer att.				–		0.046	–0.257 ***	–0.308 ***	–0.115 ***	0.176 ***	–0.100 **	–0.155 ***	–0.006	0.022	–0.076	–0.050	0.049	–0.084 *	–0.049	0.049	–0.206 ***	–0.069	–0.069	0.068
(6) Age					–	–0.032	–0.031	–0.011	–0.021	0.107 **	0.085 *	0.025	0.198 ***	0.008	–0.072	–0.036	0.021	0.035	0.012	0.117 **	0.042	0.187 ***	0.064	
(7) Ext. PB							–	–0.600 ***	0.726 ***	–0.593 ***	0.100 *	0.187 ***	0.076	0.241 ***	0.447 ***	0.180 ***	–0.320 ***	0.403 ***	0.292 ***	0.337 ***	0.304 ***	0.194 ***	0.092 *	–0.136 ***
(8) Int. PB								–	0.518 ***	–0.437 ***	0.043	0.143 ***	0.018	0.134 ***	0.337 ***	0.122 **	–0.199 ***	0.313 ***	0.241 ***	0.237 ***	0.215 ***	0.125 ***	0.072	–0.262 ***
(9) NA									–	–0.639 ***	0.045	0.158 ***	0.088 *	0.240 ***	0.512 ***	0.195 ***	–0.307 ***	0.475 ***	0.346 ***	0.404 ***	0.280 ***	0.182 ***	0.103 **	–0.278 ***
(10) EC										–	–0.082 *	–0.135 **	–0.076	–0.241	–0.483 ***	–0.161 ***	0.307 ***	–0.381 ***	–0.288 ***	–0.291 ***	–0.232 ***	–0.161 ***	–0.131 **	0.245 ***
(11) Phy. abuse											–	0.477 ***	0.184 ***	0.051	0.034	0.123 **	–0.051	0.065	0.083 *	0.100 *	0.091 *	0.206 ***	0.092 *	–0.081 *
(12) Emo. abuse												–	0.183 ***	0.055	0.096 *	0.101 **	–0.075	0.136 **	0.114 **	0.127 **	0.270 ***	0.123 **	0.048	–0.136 **
(13) Sex. abuse													–	0.021	0.063	0.011	–0.045	0.059	0.018	0.061	0.102 *	0.223 ***	0.059	–0.074
(14) Lack of sup.														–	0.342 ***	0.079 *	–0.312 ***	0.310 ***	0.359 ***	0.291 ***	0.143 ***	0.091 *	0.079 *	–0.084 *
(15) Inc. dis.															–	0.205 ***	–0.297 ***	0.505 ***	0.398 ***	0.433 ***	0.195 ***	0.130 **	0.075	–0.160 ***
(16) Cor. pun.																–	–0.228 ***	0.331 ***	0.217 ***	0.363 ***	0.074	0.099 *	0.085 *	–0.053
(17) Warmth																	–	–0.433 ***	–0.604 ***	–0.418 ***	–0.204 ***	–0.101 **	–0.110 **	0.112 **
(18) Hostility																		–	0.571 ***	0.765 ***	0.229 ***	0.130 **	0.029	–0.090 *
(19) Neglect																			–	0.550 ***	0.202 ***	0.076 *	0.027	–0.101 **
(20) Reject																				–	0.194 ***	0.072	0.026	–0.075
(21) P–C relation.																					–	0.089 *	0.096 *	–0.065
(22) Moves																						–	0.368 ***	–0.173 ***
(23) Sch. changes																							–	–0.022
(24) Income																								–

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Att. = Attachment. Comm. = Communication. Ext. PB = Externalizing problem behaviors. Int. PB = Internalizing problem behaviors. NA = Negative affectivity. EC = Effortful control. Phy. abuse = Physical abuse. Emo. abuse = Emotional abuse. Sex. abuse = Sexual abuse. Lack of sup. = Lack of supervision. Inc. dis. = Inconsistent discipline. Cor. Pun. = Corporal punishment. PC relation. = Problematic parent–child relationship. Moves = Number of moves. Sch changes = Number of school changes.

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