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Title: Maternal Affection Moderates the Associations Between Parenting Stress and Early Adolescents' Externalizing and Internalizing Behavior

Year: 2020

Version: Accepted version (Final draft)

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Please cite the original version:

Silinskas, G., Kiuru, N., Aunola, K., Metsäpelto, R.-L., Lerkkanen, M.-K., & Nurmi, J.-E. (2020). Maternal Affection Moderates the Associations Between Parenting Stress and Early Adolescents' Externalizing and Internalizing Behavior. Journal of Early Adolescence, 40(2), 221-248. https://doi.org/10.1177/0272431619833490

Running Headline: PARENTING STRESS AND AFFECTION

Maternal Affection Moderates the Associations between Parenting Stress and Early Adolescents' Externalizing and Internalizing Behavior

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This study has been financed by the Academy of Finland (Nr. 296082).

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Abstract

The present study investigated the role of parenting stress in early adolescents' externalizing and internalizing behavior and, particularly, the moderating effect of maternal affection on these associations. The data of 992 early adolescents (M_{age} = 12.71; 454 girls) and their mothers during the transition from primary school to lower secondary school were analyzed. The results showed that when maternal affection was low, parenting stress was not related to the changes in early adolescents' externalizing or internalizing behavior. In contrast, when maternal affection was high, low parenting stress related to a decrease and high parenting stress to an increase in such behaviors. The results were statistically significant and stronger for internalizing behavior; for externalizing behavior they were marginally significant but showed the same pattern. Overall, the results support the idea that maternal affection provides a context which intensifies (rather than ameliorates) the influence of parenting stress on early adolescents' externalizing and internalizing behavior.

Keywords: parenting stress, parental affection, externalizing, internalizing, school transition

Maternal Affection Moderates the Associations between Parenting Stress and Early Adolescents' Externalizing and Internalizing Behavior

During the transition from primary to lower secondary school, many students are exposed to a new school environment (e.g., a new school building, a lot of new subject teachers, and new classmates). This transition often coincides with the start of puberty, which typically includes a greater detachment from parents and may cause a greater manifestation of externalizing and internalizing behaviors (Eccles et al., 1993). Before the transition, parents might worry about how well they will able to support their children and how well their children will adjust to the new school environment (Barrett & Fleming, 2011; Swain, Lorberbaum, Kose, & Strathearn, 2007). Parents may find their children's transition to lower secondary school challenging and stressful because they have less control over their children's school lives than when the children were in primary school. Indeed, according to recent studies, mothers of adolescents report the highest stress levels when compared with mothers of children at other developmental stages (Luthar & Ciciolla, 2016).

Previous research has shown that parenting stress is related to an increase in adolescents' externalizing behavior (Mackler et al., 2015). Previous research has also shown that supportive parenting, in terms of affection, can be a buffer against an increase in both externalizing and internalizing adolescent behavior (Aunola & Nurmi, 2005). On the other hand, there is some evidence to suggest that in close and affectionate parent–adolescent relationships, parental negative emotions and stress may be even more strongly transferred to the child than in a relationship that is cold and aloof (Bandura, 1979, 1986; Simons, Simons, Lei, Hancock, & Fincham, 2012). Following this line of reasoning, high parental affection may even increase the negative impacts of parenting stress on adolescents' psychological well-being. Consequently, the present study was set up to investigate the associations between mothers' parenting stress and early adolescents' externalizing and internalizing

behavior during the critical transition from primary school to lower secondary school and, in particular, the moderating role of maternal affection in these associations.

Parenting Stress and Early Adolescents' Externalizing and Internalizing Behavior

One key concept—*parenting stress*—is increasingly receiving attention in psychological research on parenting and its role in children's behavior. Parenting stress has been defined as an aversive psychological reaction resulting from a mismatch between perceived parenting demands and available parenting resources (Deater-Deckard, 1998; Deater-Deckard & Scarr, 1996; Mackler et al., 2015; Rantanen, Tillemann, Metsäpelto, Kokko, & Pulkkinen, 2015). Following previous research, we conceptualize parenting stress from the point of view of parental perceptions of their own (1) distress (i.e., being overwhelmed by the demands of parenting, and experiencing feelings of guilt), and (2) incompetence and inadequacy (i.e., feeling unable to meet the challenges of child-rearing, and feeling inadequate as a parent) (Abidin, 1992; Rantanen et al., 2015).

Research tells us that parenting stress relates to a number of maladaptive early adolescent outcomes, such as externalizing and internalizing behavior (Crnic, Gaze, & Hoffman, 2005; Crnic & Greenberg, 1990). *Externalizing behavior* is often represented by symptoms of attention-deficiency/hyperactivity, defiant oppositional behavior, and other behavior/conduct problems (Beauchine & McNulty, 2013; Bongers, Koot, van der Ende, & Verhulst, 2004; Metsäpelto et al., 2015; Pinquart, 2017). Externalizing behavior can also be defined as disinhibited behavior or otherwise expressed under-socialization, when negative emotions (e.g., anger, aggression, frustration) are directed towards others (Roeser, Eccles, & Strobel, 1998). In contrast, *internalizing behavior* is typically defined as the manifestation of withdrawal, fearfulness, inhibition, and anxiety (Roeser et al., 1998), when negative emotions are directed towards oneself rather than others (Kovacs & Devlin, 1998; Roeser et al., 1998).

Concerning a number of maladaptive behaviors related to parenting stress, the most robust evidence comes from research demonstrating the predictive power of parenting stress on externalizing behavior (Baker et al., 2003; Crnic et al., 2005; Neece, Green, & Baker, 2012). For instance, among preschoolers and primary school children, Mackler et al. (2015) found a direct relation between maternal parenting stress and an increase in students' externalizing behavior. Similarly, Anthony et al. (2005) found that parenting stress was cross-sectionally related to high levels of externalizing behavior among 2- to 6-year-olds. Also, daily parenting hassles have been found to be related to child behavioral problems at preschool and 2 years later (Crnic et al., 2005; Crnic & Greenberg, 1990). Unfortunately, the links between parenting stress and externalizing behavior among early adolescents are less well understood.

Nor is much known about how parenting stress predicts internalizing behavior. It could be argued, however, that children's internalizing behavior is exacerbated by the fact that stressed mothers demonstrate less warmth and more negative parenting. It might also be that when early adolescents observe negative emotions and worrying in their mothers, the negative emotions get transferred to them, which is then evidenced as increasing symptoms of internalizing behavior. For instance, Davis, Votruba-Drzal and Silk (2015) found that mothers' depressive symptoms increased the likelihood of their children being on a trajectory with more expressed internalizing symptoms, such as anxiety, depression, withdrawal, or somatic complaints, across child ages 4.5 to 15.

Previous studies have mainly examined parenting stress among parents of young children, toddlers and newborns (Anthony et al., 2005; Crnic et al., 2005; Mackler et al., 2015; see Putnick et al., 2008, Seginer et al., 2002, for exceptions). Many previous studies have also examined children coming from special populations, for instance, children with special needs (Hutchinson, Feder, Abar, & Winsler, 2016), individuals with clinical samples

of hyperactivity disorder (Hutchinson et al., 2016; Yousefia, Far, & Abdolahian, 2011), problem behavior (Conger, Petterson, & Ge, 1995), or children from families with low socioeconomic status (Conger et al., 1995). There is therefore a clear need to find out more about the role of parenting stress among early adolescents in non-clinical community samples.

Maternal Affection as a Moderator of the Association between Parenting Stress and Early Adolescents' Behavior

Parenting stress has been found to be related to negative developmental outcomes among children and adolescents. However, it has also been suggested that it is not parenting stress as such that predicts externalizing behavior, but rather that parenting stress relates to dysfunctional parenting, such as negativity towards the child (Deater-Deckard, 1998; Deater-Deckard & Scarr, 1996), which promotes externalizing and internalizing behavior (Abidin, 1992; Bradley & Corwyn, 2007; Conger et al., 1995; Qi & Kaiser, 2003). Following this line of reasoning, parental affection—the degree to which parents support their children emotionally and provide them with love and warmth (Aunola, Sorkkila, Viljaranta, Tolvanen, & Ryba, 2018; Galambos, Barker, & Almeida, 2003; Kanat-Maymon & Assor, 2010; Kiuru et al., 2012; Wood et al., 2003; Wouters, Doumen, Germeijs, Colpin & Verschueren, 2013)—could be assumed to protect adolescents against the possible negative developmental impacts of parenting stress. That is, it is possible that parental affection may compensate for or diminish the negative effects of parenting stress.

On the other hand, there is some evidence to suggest that, in a close and affectionate relationship with the parent, parental negative emotions and stress may be even more strongly transferred to the children than in a relationship that is cold and aloof (Bandura, 1979, 1986; Simons, Simons, Lei, Hancock, & Fincham, 2012). Following this line of reasoning, high parental affection might even be assumed to strengthen the negative impacts of parenting

stress on adolescents' behavior. There is also recent empirical evidence suggesting that positive parenting in terms of affection can intensify rather than ameliorate the impact of a range of parental variables on child and adolescent behavior (Aunola & Nurmi, 2004, 2005; Aunola et al., 2018; Kanat-Maymon & Assor, 2010; Wouters et al., 2013). For example, in Aunola and colleagues' work, a combination of high affection and high psychological control (rather than low affection and high psychological control) was related to an increase in child and adolescent internalizing and externalizing behavior.

Overall, apart from the main and indirect effects, a combination of parenting stress and the context in which it takes place (affection, in the present study) may be responsible for the changes in early adolescents' externalizing and internalizing behavior (Darling & Steinberg, 1993). Consequently, in the present study, we examined the role of parenting stress in adolescents' externalizing and internalizing behaviors and the moderating role of maternal affection in these associations. Based on earlier literature, two alternative hypotheses were set. According to the first one, high parenting stress in combination with low affection would promote externalizing and internalizing behavior in early adolescents (i.e., the cumulative effect of parenting stress and low affection would result in an increase in early adolescents' externalizing and internalizing behavior; Crnic et al., 2005). This would be in line with previous research showing that the cumulative effect of negative emotionality together with negative parenting (e.g., low affection) makes children susceptible to internalizing behavior (Brendgen, Wanner, Morin, & Vitaro, 2005; Crockenberg & Leerkes, 2006). As an alternative hypotheses, high parenting stress was assumed to increase early adolescents' externalizing and internalizing behavior particularly when parenting is characterized by positive attributes such as warmth and responsiveness. This would be in line with previous research showing that high parental affection rather intensifies than ameliorates the impact of other parenting characteristics on child development (Aunola & Nurmi, 2004; 2005; Aunola

et al., 2018; Davis et al., 2015; Kanat-Maymon & Assor, 2010; Simons et al., 2012; Wouters et al., 2013). This assumption would further support the view that a strong parent–child bond (evident in high maternal affection) can expose early adolescents to parental feelings of insufficiency and distress and increase the detrimental effect of such parenting on their children's development.

The Present Study

The aim of the present study was to investigate the role of parenting stress in early adolescents' externalizing and internalizing behavior across the transition from primary school to lower secondary school and, in particular, the moderating effect of parental affection on these associations. The following research questions guided our longitudinal investigation:

(1) To what extent does mothers' parenting stress predict changes in early adolescents' externalizing and internalizing behavior during the transition from primary school to lower secondary school? We hypothesized (Hypothesis 1) that high parenting stress before the transition would be associated with an increase in adolescents' externalizing and internalizing behavior after the transition.

(2) To what extent does maternal affection predict changes in early adolescents' externalizing and internalizing behavior during the transition from primary school to lower secondary school? We hypothesized (Hypothesis 2) that high parental affection would relate to a lower manifestation of externalizing and internalizing behavior across the transition.

(3) To what extent does maternal affection moderate the association between parenting stress and early adolescents' externalizing and internalizing behavior? Two alternative hypotheses were formed concerning affection as a moderator. First (Hypothesis 3a), the detrimental effects of parenting stress on early adolescents' externalizing and internalizing behavior would be particularly acute when combined with low affection. High

parenting stress and low affection would represent a cumulative risk for early adolescents' externalizing and internalizing behavior, whereas high affection could be assumed to compensate or buffer against the negative effects of stress on early adolescents' externalizing and internalizing behavior (Brendgen et al., 2005; Crnic et al., 2005; Crockenberg & Leerkes, 2006). In contrast (Hypothesis 3b), the detrimental effect of parenting stress on early adolescents' externalizing and internalizing behavior could be particularly strong when parents display warmth and are affectionate and the parent–child bond seems strong. That is, mothers' parenting stress might increase early adolescents' externalizing or internalizing behavior particularly when the parent–child relationship is positive (e.g., high affection; Aunola & Nurmi, 2005; Davis et al., 2015). Along these lines, we also expected that if the parent–child relationship was not close (low affection), mothers' parenting stress would not affect early adolescents' behavior.

Method

Participants and Procedure

Data from 992 mother–child dyads during the transition from primary school to lower secondary school were analyzed. In Finland, primary school consists of Grades 1 to 6, lower secondary school of Grades 7 to 9; thus, the transition happens between Grades 6 and 7. However, the timing of the transition from primary school to lower secondary school varies depending on the country, and, at times, the individual state and school district. The participants were drawn from an on-going large-scale longitudinal study (*AUTHORS 2006–2017*), in which Finnish children have been followed from kindergarten to Grade 12. Finnish-speaking children from four municipalities (two in Central Finland, one in Western Finland, and one in Eastern Finland) were followed. The ethical approval to conduct this study was obtained (*removed for reviewing purposes*). At the beginning of the study, the children's parents gave their written consent for their child's and their own participation in the study.

Data from mothers and from their early adolescents were gathered at the end of Grade 6 (T1; April, 2013), before the transition to lower secondary school took place. Data from the early adolescents were gathered again after the transition to lower secondary school, towards the end of Grade 7 (T2; April, 2014). Only mother–child dyads with reports available from the mother in their child's Grade 6 (T1) were selected for this longitudinal investigation.

Mothers. A total of 992 mothers answered a self-report questionnaire during the spring semester of their children's Grade 6 (April, 2013). Analyses showed that mothers whose self-reports were not available in Grade 6 had children who were somewhat higher in externalizing behavior ($p < .05$) in comparison to mothers whose reports were available. Concerning mothers' socio-economic status, 2.4% of mothers were entrepreneurs, 37.2% worked in higher white-collar positions, 49.2% of mothers worked in lower white-collar positions, 8.9% were blue-collar workers, and the remaining 2.5% were "others" (e.g., pensioners, students). Thus, overall, the participants came from SES families that were above the national average.

Early adolescents. A total of 992 early adolescents (538 boys, 454 girls), who were from 11.67 to 14.17 years of age (M_{age} = 12.71, SD = .32) on the assessment day in Grade 6 (April, 2013), answered questionnaires concerning their own externalizing and internalizing behavior in Grade 6; a total of 929 students answered identical questions concerning their own externalizing and internalizing behavior in Grade 7. Attrition analyses revealed that the early adolescents whose reports were available in Grade 6 but not available in Grade 7 reported more externalizing behavior in Grade 6 ($p < .05$) and had mothers who reported somewhat less affection in Grade 6 ($p < .01$).

Measures

At the first measurement point (Grade 6), mothers answered questionnaires concerning their parenting stress and affection. Also, at both time-points (Grade 6 and Grade 7) early

adolescents answered identical questions measuring their own externalizing and internalizing behavior. Table 1 presents the psychometric properties of all of the study variables for the whole sample (i.e., a valid number of cases for each measure, means, standard deviations, reliabilities [Cronbach's α], the potential and actual ranges of the values, and skewness).

Mothers' Questionnaire (Grade 6)

Parenting stress. Maternal parenting stress was assessed by four questions on a 5-point scale (*1 = not like me at all; 5 = very much like me*). The items are presented in Table 2. The questions were based on the items in the Parenting Stress Inventory (PSI; Abidin, 1992, 1995), and have previously been published in another Finnish study (see Rantanen et al., 2015, for validity and reliability information among Finnish parents).

Affection. Maternal affection was measured by a short Finnish version (Aunola & Nurmi, 2004) of Block's Child Rearing Practices Report (CRPR; Roberts, Block, & Block, 1984). Validity and reliability information concerning the short version of the questionnaire among Finnish parents has been published previously (e.g., Aunola & Nurmi, 2004, 2005; Kiuru et al., 2012). The mothers were asked to rate 10 items on a 5-point scale (*1 = not like me at all; 5 = very much like me*); Cronbach's alpha was .86. To reduce the number of items for our subsequent SEM analyses, we applied the parceling procedure called *Item-to-Construct Balance* (Little, Cunningham, Shahar, & Widaman, 2002). This means that assigning the 10 items to one of three parcels was based on the magnitude of the initial loadings on the affection factor. That is, items with the 1st, 4th, 7th, and 10th highest loadings formed Parcel 1 (Cronbach's alpha .69); items with the 2nd, 5th, and 8th highest loadings formed Parcel 2 (Cronbach's alpha .68); and items with the 3rd, 6th, and 9th loadings formed Parcel 3 (Cronbach's alpha .72). Items of Parcel 1 were: *I often tell my child how much I appreciate it when s/he tries to do something or accomplishes something; I often joke with my child; When my child behaves badly we work things out by talking; I am straightforward and*

relaxed when being with my child; items of Parcel 2 were: *I respect my child's opinion; I have a good relationship with my child; I take into account my child's thoughts when planning my family's matters*; and items of Parcel 3 were: *I believe that a 'thank you' is more effective than a punishment; I show my child my feelings by hugging and holding her/him in my arms; I often show my child that I love her/him*. Cronbach's alpha of the composite of the three parcels was .84, which was similar to the Cronbach's alpha for the composite of the 10 items (i.e., .86).

Early Adolescents' Questionnaire (Grades 6 and 7)

The Finnish version (Koskelainen, Sourander, & Kaljonen, 2000) of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was used to measure early adolescents' externalizing and internalizing behavior.

Externalizing behavior was measured by two scales: (1) conduct problems and (2) hyperactivity (Goodman, Lamping, & Ploubidis, 2010; Metsäpelto et al., 2015). The items on both scales were assessed/rated on a 3-point scale (*1 = not true, 2 = somewhat true, 3 = certainly true*). The scale for conduct problems consisted of 5 items (e.g., *I fight a lot*). The hyperactivity scale consisted of 5 items (e.g., *I find it difficult to concentrate*). The Cronbach alpha reliability for the composite of externalizing behavior was .64 and .65 in Grades 6 and 7, respectively.

Internalizing behavior was measured by an emotional symptoms scale which consists of five items, presented in Table 2. The items were rated on a 3-point scale (*1 = not true, 2 = somewhat true, 3 = certainly true*). The Cronbach alphas were .78 and .73 in Grades 6 and 7, respectively.

Analysis Strategy

The data were analyzed within the Structural Equation Modeling (SEM) framework, using the M*plus* statistical package (Version 8; Muthén & Muthén, 1998–2017). The final

SEM model (Figure 1) was constructed in the following steps. First, two measurement models were specified: (1) a longitudinal measurement model for early adolescent variables (i.e., externalizing and internalizing behaviors) across Grades 6 and 7 and (2) a measurement model for parental variables (i.e., parenting stress and affection) in Grade 6. When constructing the longitudinal model for early adolescent outcomes, to ensure time invariance, the factor loadings of the same items were set equal across both measurement points (Grades 6 and 7). We also specified the autocorrelations of the residuals of the same items across time. Second, we combined measurement models into one final measurement model containing all latent constructs of the further analyses. Third, we specified a structural equation model where early adolescents' externalizing and internalizing behavior in Grade 7 were simultaneously regressed on the previous level of the same behavior and both parenting variables in Grade 6. Also, concurrent correlations among each construct within the same time-point were specified. Finally, to answer our main research question concerning moderating effect of affection on the associations between parenting stress and early adolescents' externalizing and internalizing behavior, we specified an interaction term of latent parenting stress and affection variables (Maslowsky, Jager, & Hemken, 2015; Muthén & Muthén, 1998–2017) and estimated paths from this interaction term to both externalizing and internalizing behavior in Grade 7 . If the interaction term Stress × Affection was found to be statistically significantly related to externalizing or internalizing behavior ($p < .05$, and $p < .10$ for marginal significance,), we applied Aiken and West's (1991) procedure to interpret these joint effects. In this procedure, simple slopes for parenting stress in the prediction of early adolescents' externalizing and internalizing behavior were calculated and presented using standardized scores separately for mothers who scored either low (–1 *SD*) or high (+1 *SD*) on affection.

The M*plus* function “TYPE = COMPLEX” was utilized to control for the hierarchical structure of the data (i.e., to account for the nesting of multiple early adolescents in each class). The proportion of missing data for the main study variables (mean-scores) ranged from 0% to 6.40% (*M* = 2.32%, *SD* = 3.17%). The data were not missing completely at random: Little's (1988) MCAR test was significant, χ^2 (15) = 25.30, *p* = .046. Therefore, the standard procedure of full-information maximum-likelihood (FIML) was applied. FIML estimates a likelihood function for each individual person based on all available data, without imputing data (Collins, Schafer, & Kam, 2001). The distributions of the variables were skewed; the model parameters were therefore estimated using the MLR estimator (maximum likelihood with robust standard errors), which is implemented in M*plus* and provides less biased estimates than, for example, listwise deletion. The MLR estimator produces standard errors and chi-square test statistics for missing data with non-normal outcomes and non-independent observations.

In the analyses, model fit was assessed by four model-fit statistics: comparative fit index (*CFI*), the Tucker-Lewis index (*TLI*), root mean square error of approximation (*RMSEA*), and standardized root mean square residual (*SRMR*). *CFI* and *TLI* values above .95, a *RMSEA* value below .06 and a SRMR value below .08 indicate good model fit (Hu & Bentler, 1999). Also, *CFI* and *TLI* values above .90 and *RMSEA* and *SRMR* values below .10 indicate an adequate model fit (Kline, 2015). For comparisons between the models, chi-square (χ^2) was estimated, and Satorra-Bentler scaled chi-square test was used (Satorra & Bentler, 2010). To evaluate the model fit of the models where the interaction term of the latent variables was used, the regular model fits (*CFI*, *TLI*, *RMSEA*, and *SRMR*) are not available. Instead, the M*plus* calculates log-likelihood estimates, which do not have standard criteria for evaluating their model fits.

Results

The measurement model of parenting variables (maternal parenting stress and affection) in Grade 6 showed a good fit to the data: *TLI* = .98; *CFI* = .99; *RMSEA* = .04; *SRMR* = .02. The freely estimated measurement model of early adolescents' externalizing and internalizing behavior across Grades 6 and 7 (χ^2 [64] = 188.607, $p < .001$; *TLI* = .96; *CFI* = .94; *RMSEA* = .04; *SRMR* = .04) was compared to the measurement model where the same factor loadings at different time-points were fixed to be equal (χ^2 [69] = 194.075, $p < .001$; *TLI* = .96; *CFI* = .95; *RMSEA* = .04; *SRMR* = .04). As Satorra-Bentler test (Satorra & Bentler, 2010) did not detect significant difference between the models, we continued with the more restricted model. Also, the final measurement model of all constructs in one model had a good model fit (*TLI* = .97; *CFI* = .97; *RMSEA* = .03; *SRMR* = .04). Therefore, no modifications were implemented on any of the measurement models. The factor loadings from the final measurement models are presented in Table 2. The correlation matrix between latent constructs is presented in Table 3.

The results showed that the early adolescents' latent constructs were highly stable across Grade 6 to Grade 7 (externalizing behavior .71, $p < .001$; internalizing behavior .70, $p < .001$). Parenting stress was cross-sectionally and longitudinally related to externalizing (*r*s range .23–.24, $p < .001$) and internalizing (*r*s range .14–.17, $p < .001$) behavior: the more parenting stress mothers reported in Grade 6, the more externalizing and internalizing behavior was reported by the early adolescents themselves in Grade 6 and Grade 7. Maternal affection related negatively to early adolescents' externalizing (*r*s = –.18, $p < .001$) and internalizing (*r*s range –.09 to –.10, $p < .05$) behavior: the higher the level of maternal affection in Grade 6, the less externalizing and internalizing behaviors adolescents reported both in Grade 6 and 7.

To answer our first and second research questions about the main effects of parenting stress and affection in Grade 6 on early adolescents' externalizing and internalizing behavior

in Grade 7, we constructed a structural equation model (*TLI* = .97; *CFI* = .97; *RMSEA* = .03; *SRMR* = .04). The results showed that apart from the stability paths of the early adolescents' behavior (β = .69, $p < .001$ for externalizing and β = .70, $p < .001$ for internalizing), none of the cross-lagged paths were significant. That is, parenting stress and parental affection in Grade 6 did not predict early adolescents' externalizing and internalizing behavior in Grade 7.

To answer our third, and main, research question concerning affection as a moderator of the association between parenting stress and early adolescents' externalizing and internalizing behavior, a latent interaction term Stress × Affection in Grade 6 was added to the previous model (a model which included main effects to predict early adolescents' externalizing and internalizing behavior in Grade 7) (see Figure 1 for the final model). The results showed that the latent interaction term Stress × Affection in Grade 6 positively predicted internalizing behavior (*unstandardized estimate* = .090, *SE* = .031, $p = .003$) and marginally ($p < .10$) predicted externalizing behavior (*unstandardized estimate* = .072, *SE* = .039, $p = .064$) in Grade 7.

To interpret the relation of the interaction term Stress × Affection in Grade 6 to the early adolescents' internalizing and externalizing behavior, we applied Aiken and West's (1991) procedure. The results are demonstrated in Figure 2. In Figure 2, simple slopes for parenting stress in the prediction of early adolescents' externalizing behavior were calculated and presented using standardized scores separately for early adolescents whose mothers showed either low (–1 *SD*) or high (+1 *SD*) levels of maternal affection. Simple slopes analysis showed that with high (+1 *SD*) values of maternal affection the slope of parenting stress on externalizing behavior was significant (*unstandardized estimate* = .058, *SE* = .025, $p = .018$), whereas with low values of maternal affection (–1 *SD*) the slope was not significant (*unstandardized estimate* = .001, *SE* = .025, $p = .967$) (Figure 2). This suggests that when

maternal affection is high, high parenting stress increases externalizing behavior, and low parenting stress decreases externalizing behavior. When maternal affection was low, parenting stress was not related to adolescents' externalizing behaviors.

The same Aiken and West's (1991) procedure was applied for the prediction of the internalizing behavior. Figure 3 presents maternal affection as a moderator in the association between parenting stress and internalizing behavior. Simple slopes analysis showed that the slope of parenting stress on internalizing behavior was significantly different from zero when maternal affection was high (+1 *SD*) (*unstandardized estimate* = .054, *SE* = .023, p = .019), but not when maternal affection was low (–1 *SD*) (*unstandardized estimate* = –.018, *SE* = .021, p = .380). This suggests that when maternal affection was high, the higher the level of parenting stress was in Grade 6, the higher the early adolescents' subsequent level of internalizing behavior was in Grade 7; and the lower the level of parenting stress was in Grade 6, the lower the level of internalizing behavior was in Grade 7. When maternal affection was low, parenting stress was not related to adolescents' internalizing behaviors.

Taken together, the results for internalizing behavior were stronger than those for the externalizing behavior. That is, the latent interaction term Stress × Affection significantly predicted internalizing behavior, and the slope of high values of maternal affection in this prediction (+1 *SD*) was significantly different from zero. In contrast, although the slope of high values of maternal affection (+1 *SD*) in predicting externalizing behavior was also significantly different from zero, the overall predictive relation between the latent interaction term Stress × Affection and externalizing behavior was only marginally significant. Therefore, although showing similar tendencies, the results for externalizing behavior should be interpreted with caution. Future studies, perhaps with larger samples, are needed to replicate these results.

Discussion

The present study examined the role of parenting stress on early adolescents' externalizing and internalizing behavior across the transition from primary school to lower secondary school and the moderating role of maternal affection on this association. Overall, our results showed that it was not parenting stress as such that predicted changes in early adolescents' externalizing and internalizing behavior across the educational transition but rather the combination of parenting stress and affection. That is, lack of parenting stress was related to a decrease in early adolescents' externalizing and internalizing behavior but only if combined with a high level of maternal affection. In turn, a high level of parenting stress was related to increases in both internalizing and externalizing behavior across the transition from primary school to lower secondary school but only when combined with a high level of maternal affection. When maternal affection was low, parenting stress was not related to changes in externalizing or internalizing behavior. These results suggest, interestingly, that high affection, warmth, and responsiveness, as reported by the mothers, amplifies the influences of high parenting stress on the behavioral outcomes of early adolescents.

Our study focused on examining the extent to which parenting stress predicts adolescents' externalizing and internalizing behavior across the transition from primary school to lower secondary school, on the one hand, and whether these associations would be moderated by parental affection, on the other hand. Although we found that parenting stress positively correlated with early adolescents' internalizing and externalizing behavior, parenting stress did not predict changes in these behaviors across Grades 6 and 7. This result was inconsistent with previous literature on associations between parenting stress and child/adolescent externalizing and internalizing behaviors (Baker et al., 2003; Crnic et al., 2005; Neece et al., 2012; Mackler et al., 2015) and with our hypotheses that high parenting stress would increase early adolescents' internalizing and externalizing behavior. However, previous studies mainly included subjects with special needs, toddlers, and small children.

They also rarely investigated change in behavior across time. Thus, more studies on the longitudinal relation between parenting stress and externalizing and internalizing behavior among early adolescents are needed to replicate our results, especially given the fact that mothers of this age group have reported higher levels of stress than mothers with children at any other developmental stage (Luthar & Ciciolla, 2016).

Although parenting stress as such was not found to predict adolescents' subsequent behaviors, our results demonstrated further that this was nevertheless the case when mothers' reported high levels of affection. When mothers showed a high level of affection, parenting stress was positively related to both forms of behaviors as expected, whereas when mothers showed a low level of affection, parenting stress was unrelated to adolescent externalizing and internalizing behaviors. Overall, this pattern of results is in contrast to our Hypotheses 3a according to which high parenting stress and low affection would represent a cumulative risk for early adolescents' externalizing and internalizing behavior. In turn, the results support our hypotheses 3b according to which the detrimental effect of parenting stress on early adolescents' externalizing and internalizing behavior are particularly strong when parents display warmth and the parent–child bond is strong.

One possible explanation for the pattern of our results is that—as suggested by social learning theory (Bandura, 1979, 1986)—when the bond between the child and parent is strong, the child is more likely to imitate his/her parent. When mother–adolescent bond is strong, adolescents may be more susceptible to the well-being or ill-being of their mother, for example through emotional contagion (Hatfield, Cacioppo, & Rapson, 1993; Davies & Windle, 1997; Larson & Almeida, 1999). For instance, if the mother is stressed and not confident, it can cause internal distress and negativity also in adolescents. Early adolescents' internal distress and negative emotions have been found to provoke particularly internalizing behavior (see also Olsen et al., 2002; Yang et al., 2004). However, we found that high

maternal parenting stress together with high affection also contributed to an increase in externalizing behavior, although to a lesser degree than to an increase in internalizing behavior (i.e., marginally significant results). This suggests that, the confusion arising from the mother's affection and her distress about her role as a mother may also translate into under-controlled/externalizing behavior, such as disobedience, anger, or easily losing one's temper.

Another explanation for our results is that parenting stress in combination with high maternal affection foster confusion in mother–child communication (Aunola & Nurmi, 2004, 2005). On the one hand, mothers can express affection and provide support and closeness to their offspring, but on the other hand, they signal distress and feelings of incompetence. This may communicate a discrepancy or double message (Humphrey, 1989) about maternal unconditional approval to the adolescent which is then reflected on adolescents' symptoms of externalizing and internalizing behaviors.

Still one more explanation for our results is that parents who are kind and responsive to their offspring (i.e., show high affection) also demonstrate greater levels of stress when their children are suffering and/or acting out, which then foster increase in externalizing and internalizing behaviors among adolescents. Indeed, previous research has shown that parents may react to their children's internalizing and externalizing behaviors by increased negative emotions (Silinskas et al., 2015; same for teachers, Nurmi et al., 2018, 2014, 2012). In turn, parents who demonstrate low affection toward their children may be not so reactive to the symptoms of their offspring. In future research, the relation between parental affection and increased stress as a reaction to children's challenges warrants the need for in-depth investigation.

The findings of the present study can also be interpreted in the light of the adolescents' developmental stage as students transit from primary to lower secondary school. First, the

individual's developmental stage—early adolescence—is often determined by the onset of puberty. A close mother–child relationship (i.e., high affection) together with maternal parenting stress (i.e., negativity) has been shown to be harmful in middle childhood (Aunola & Nurmi, 2004, 2005), because at that age children have not yet begun to separate themselves emotionally and psychologically from their parents (Barber et al., 1994). However, the detrimental effect of the combination of parenting stress and maternal affection can extend into early adolescence, as is shown in our study. During adolescence, especially across the transition from the more intimate primary school environment to the junior secondary school environment, which requires more independence, young people gain increasing separation from their parents. Therefore, parenting stress probably has less effect for early teens who are more detached from their parents than for those whose parent–child relationship is still close and intense.

Strengths and Limitations

The strengths of the present study should be acknowledged. The present study adds to the existing literature by examining the role of maternal affection as a moderator of longitudinal associations between parenting stress and early adolescents' externalizing and internalizing behavior. Although the literature provides evidence of parenting stress being related to certain types of parenting and children's behavior, the moderating effect of parental affection on the association between parenting stress and externalizing and internalizing behavior has not been investigated before. Also, parenting stress and its relations have not previously been examined among typically developing early adolescents experiencing the transition from primary to lower secondary school. Methodologically, most of the previous studies report cross-sectional evidence, whereas this study adds to the field by examining longitudinal changes in early adolescents' externalizing and internalizing behavior across transition to lower secondary school. The present study has also used a large sample and

multiple informants (i.e., mothers reported their parenting stress and affection towards their children; early adolescents reported their externalizing and internalizing behavior).

There are at least five limitations that should be acknowledged before making any generalizations based on the findings of this study. First, externalizing and internalizing behaviors were assessed by early adolescents' self-reports. This could have been one of the reasons for why internal consistency of externalizing and internalizing behaviors was somewhat low. Unfortunately, we did not collect mother reports of adolescent externalizing and internalizing behavior. The use of early adolescents' own reports can be partly justified by previous findings that show that children are able to assess their own behavior reliably already at quite a young age (Edelsohn, Ialongo, Werthamer-Larsson, & Crockett, 1992; Ialongo et al., 2001). However, future research would benefit from gathering information from several sources, for example, using early adolescent, parent, or teacher reports, or observational data.

The second limitation is that parent-reported questionnaires were used to measure parenting stress and maternal affection. Although measures of this kind provide information about parental attitudes and behaviors, there is an obvious advantage to be gained from using observational methods that assess parents' actual behaviors during interactions with their early adolescents. Moreover, although maternal reports on their affection toward their children are interesting and important, it is possible that adolescent perceptions/reports of maternal affection or parenting stress have even stronger effects on their own externalizing and internalizing behavior. Unfortunately, the present study did not collect data on adolescents' perceptions on their mothers' affection or stress. It has been shown that studies using observational methods and those that use self-report measures of parenting provide fairly consistent results in terms of associations with early adolescent behavioral outcomes

(for a review, see Hart et al., 2003). However, in the future, a dyadic analysis that includes parent and adolescent perceptions of relationship quality is needed.

Third, the specificity of our sample needs to be acknowledged before generalizations to other samples can be made. For instance, our sample was biased concerning SES, because the study participants mostly came from families of above average socioeconomic status. Also, the adolescents most at risk were not included to the final analysis. For example, adolescents who dropped out in Grade 7 reported more externalizing behavior in Grade 6 and had mothers who reported less affection in comparison to those adolescents whose reports were available both in Grade 6 and Grade 7. Consequently, following students from low SES and students with higher levels of externalizing problems should be targeted in the future research.

Fourth, the results for internalizing behavior were significant given the two-tailed significance level ($p < .05$). However, the results for externalizing behavior (i.e., moderation results for externalizing behavior) were only marginally significant with the two-tailed significance level ($p < .05$). Research shows that in recent years it became more acceptable to report marginally significant results (Pritschet, Powell, & Horne, 2016). Marginally significant results are important because they show certain tendencies concerning directions of the relations. Moreover, in our case, they closely resembled the significant results for the internalizing behavior and supported our hypotheses. Before larger sample sizes are available for verifying our findings, the results for externalizing behavior should be nevertheless interpreted with caution.

Finally, the concept of parenting stress can come quite close to other related concepts in the field, such as parental self-efficacy (Glatz & Buchanan, 2015) or psychological control (Barber, 1996). Nevertheless, it is widely regarded as a separate construct (Bloomfield &

Kendall, 2012), clearly different from other related concepts because of its combination of affective and cognitive components (Deater-Deckard, 1998; Rantanen et al., 2015).

Conclusions

The main results of this longitudinal study show that it is not parenting stress as such but rather a combination of parenting stress and maternal affection that relate to changes in early adolescents' externalizing and internalizing behavior across the transition. The results show that it is parenting stress, but only together with high maternal affection, that has an effect on early adolescents' externalizing and internalizing behavior: low parenting stress was found to be related to a decrease in early adolescents' internalizing and externalizing behavior, whereas high stress increased early adolescents' externalizing and internalizing behavior. Taken together, the results support the notion that parental affection provides a context in which parenting stress may exert an influence on early adolescents' externalizing and internalizing behavior (Baumrind, 1991; Darling & Steinberg, 1993; Maccoby & Martin, 1983).

From the practical point of view, the results of the study suggest that parents should be made aware that, when the parent–child bond is strong, their uncertainty and distress concerning their parenting may easily be transmitted to their early adolescents. However, high affection should not be discouraged. Rather, it should be emphasized that lack of stress is beneficial for children's well-being in the context of high affection. A strong parent–child relationship, although generally encouraged, also allows parenting stress (distress and uncertainty) to be transmitted to early adolescents. Because of the emotional contagion that a strong parent–adolescent relationship entails, early adolescents may report a higher prevalence of their own externalizing and internalizing behavior as a reaction to high parenting stress. Early adolescents may react with an increase in uncertainty, anxiety and worrying (internalizing behavior); also, they may react with an increase in disobedience,

anger, and impatience (externalizing behavior). This means that an important component in traditional parent-training intervention programs that deal with how to handle early adolescents' behavioral problems could in fact be managing parenting stress (Kazdin & Whitley, 2003).

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Table 1

Psychometric Properties/Descriptive Statistics of Observed Study Variables

Variable	*n*	*M*	*SD*	Reliability (Cronbach's α)	Range		Skewness
					Potential	Actual	
Mothers' questionnaire							
Parenting stress (Grade 6)	992	1.96	.73	.83	1–5	1–5	.73
Affection (10 items; Grade 6)	992	4.31	.46	.86	1–5	2.5–5	–.43
Early adolescents' questionnaire							
Externalizing behavior (Grade 6)	987	1.46	.27	.64	1–3	1–2.6	.86
Externalizing behavior (Grade 7)	929	1.48	.29	.65	1–3	1–2.7	.73
Internalizing behavior (Grade 6)	986	1.50	.42	.73	1–3	1–3	.94
Internalizing behavior (Grade 7)	929	1.51	.44	.73	1–3	1–3	.96

Table 2

Factor Loadings (Standardized Estimates) of the Confirmatory Factor Analysis

Items	Grade 6	Grade 7
Mothers' questionnaire in Grade 6		
Parenting stress		
1. *In rearing my children, I have many more problems than I expected beforehand.*	.77	
2. *When I think what kind of parent I am, I often feel guilt and insufficiency.*	.72	
3. *Child rearing often feels like an overwhelming task to me.*	.84	
4. *My ability to take care of my children is poorer than I had thought beforehand.*	.67	
Affection		
1. *Parcel 1 (mean score of 4 items)*	.78	
2. *Parcel 2 (mean score of 3 items)*	.76	
3. *Parcel 3 (mean score of 3 items)*	.87	
Early adolescents' questionnaire in Grades 6 and 7		
Externalizing behavior	.75	.73
1. *Hyperactivity (mean score of 5 items).*	.60	.64
2. *Conduct problems (mean score of 5 items).*		
Internalizing behavior		
1. *I suffer from frequent headaches, stomach pain, or nausea.*	.42	.43
2. *I worry about many things.*	.73	.75
3. *I am often unhappy, down-hearted or fearful.*	.64	.67
4. *I am nervous in new situations, I lose my confidence easily.*	.51	.51
5. *I have many fears, I am easily scared.*	.55	.56

Table 3

Correlations between the Latent Constructs of the Study Variables

	Mothers' questionnaire		*Early adolescents' questionnaire*		
	1.	2.	3.	4.	5.
Mothers' questionnaire					
1. Parenting stress (Grade 6)	–				
2. Affection (Grade 6)	–.51***	–			
Early adolescents' questionnaire					
3. Externalizing behavior (Grade 6)	.23***	–.18***	–		
4. Externalizing behavior (Grade 7)	.24***	–.18***	.71***	–	
5. Internalizing behavior (Grade 6)	.17***	–.10*	.48***	.39***	–
6. Internalizing behavior (Grade 7)	.14***	–.09*	.33***	.47***	.70***

Note. * $p < .05$; *** $p < .001$.

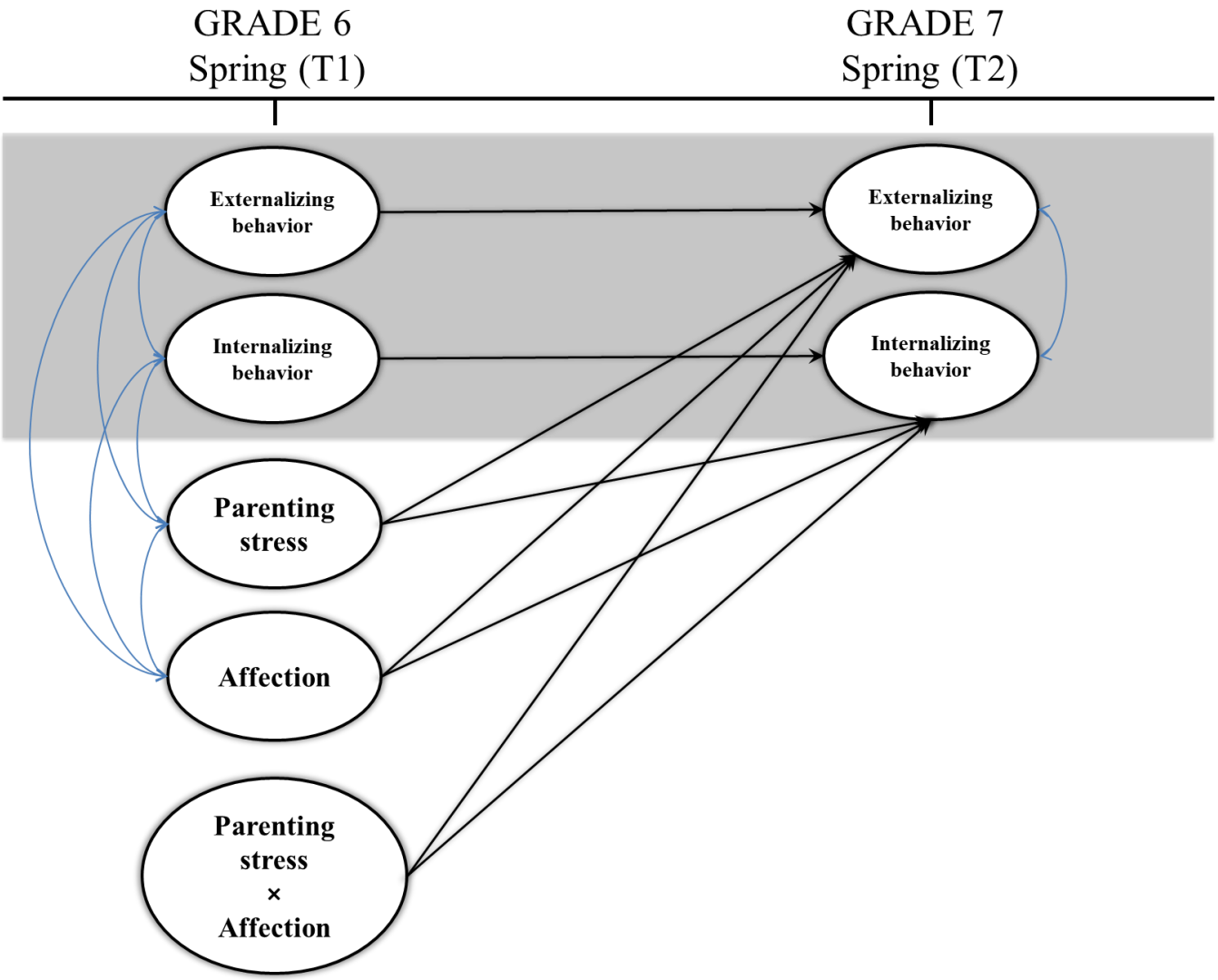

Figure 1. The theoretical model of parenting stress and affection in Grade 6 predicting children's behavioral outcomes in Grade 7.

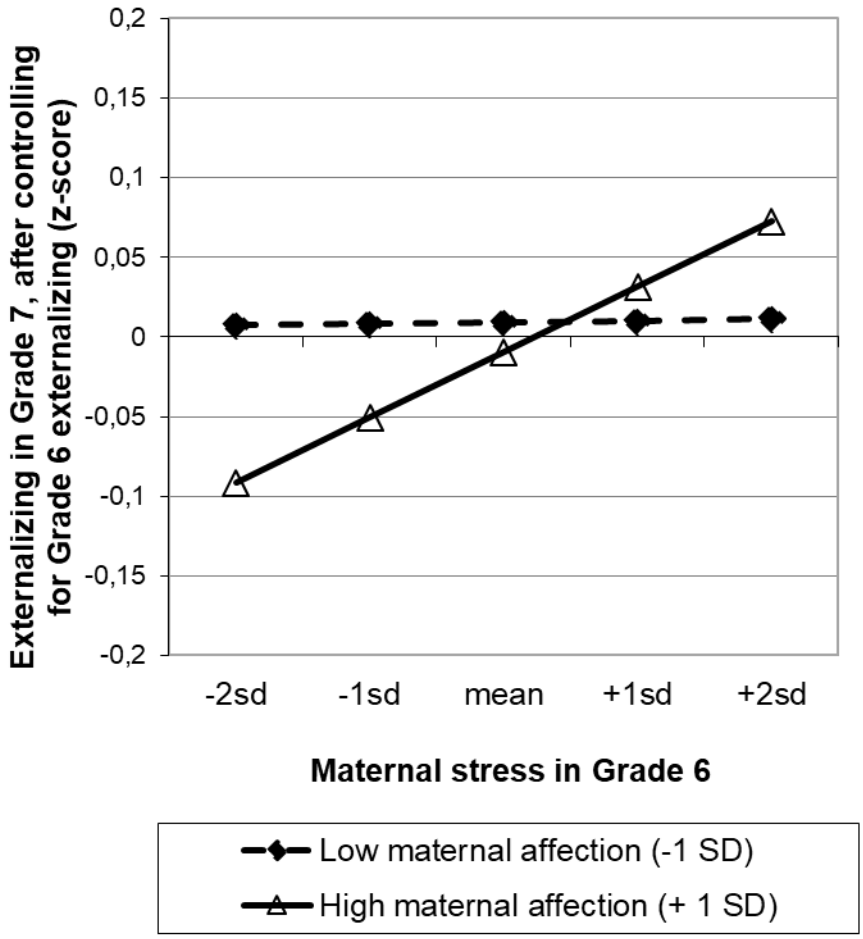

Figure 2. The moderating effect of maternal affection in Grade 6 on the association between maternal parenting stress in Grade 6 and children's externalizing behavior in Grade 7.

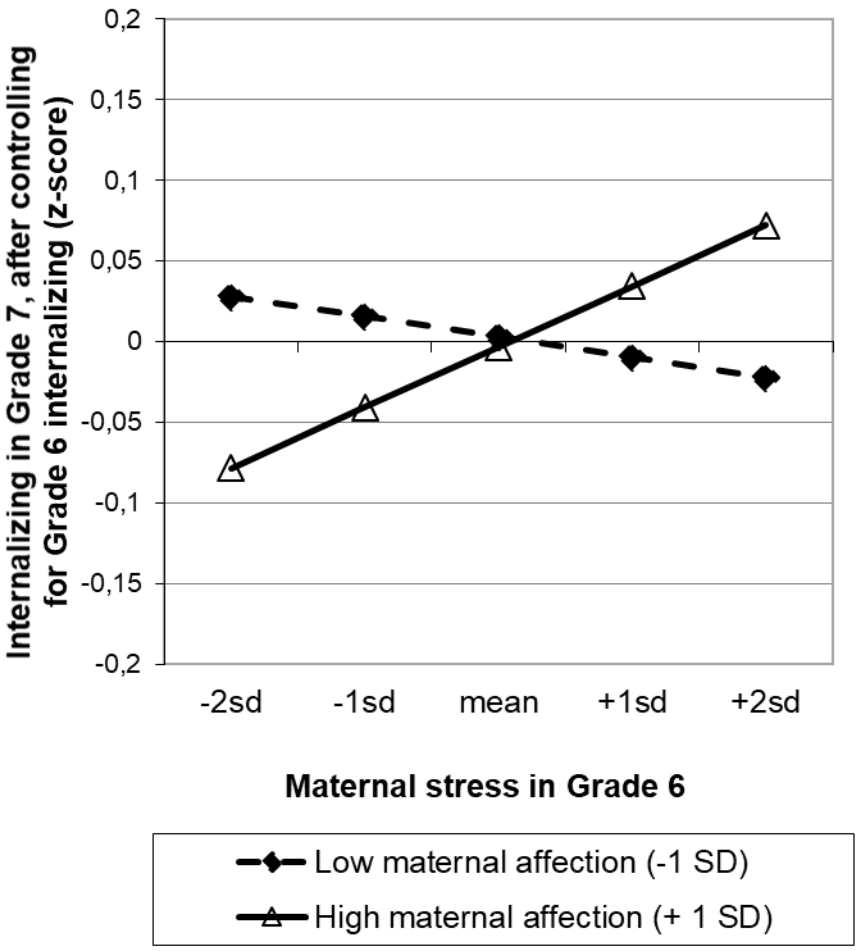

Figure 3. The moderating effect of maternal affection in Grade 6 on the association between maternal parenting stress in Grade 6 and children's internalizing behavior in Grade 7.