



Parenting Styles and Children's Emotional Development during the First Grade: The Moderating Role of Child Temperament

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Abstract

This study investigated the associations between parenting styles (affection, behavioral control, and psychological control) and children's emotional development (emotion expression) during the first grade of primary school, and the moderating role of children's temperament (easy, difficult, and inhibited) in these associations. Mothers and fathers of 152 children responded to a questionnaire concerning their parenting styles and their child's temperament at the beginning of their child's first grade (Time 1). They also filled in a structured diary questionnaire concerning their child's negative and positive emotions over seven successive days (diary) at the beginning (Time 1) and at the end (Time 2) of their child's first grade. The results showed that mothers' psychological control at Time 1 was associated with a subsequent high level of negative emotions among children, independently of the child's temperament. Mothers' high affection, in turn, was associated with subsequently low levels of negative emotions, particularly among children with inhibited temperament. Mothers' behavioral control, on the other hand, was associated with low levels of negative emotions among children with difficult temperament. Fathers' psychological control was associated with subsequently high levels of negative emotions among children with difficult temperament. No associations were found between parenting styles and children's positive emotions.

Keywords: Parenting styles; Temperament; Negative and positive emotions; Differential susceptibility model; Goodness-of-fit

Introduction

Parenting styles, that is, parents' typical attitudes and behaviors which form the emotional climate in which parents raise their children [1], have been suggested to play an important role in children's social and emotional development [2,3]. For example, affective and warm parenting (i.e., parents' responsiveness, supportiveness, and involvement), as well as behavioral control (e.g., clear rules and limit setting) deployed by parents have been shown to be related to low levels of problem behaviors and depressive symptoms among children [3]. High parental psychological control (i.e., controlling child's behavior and emotions through psychological means, such as guilt induction), in turn, has been found to be associated with increased anxiety, distress, and depressive symptoms among both children and adolescents [2,4,5]. It has been suggested, however, that children with different kinds of temperaments—that is, individuals' innate emotional and behavioral style of experiencing, reacting to, and approaching novel and unexpected stimuli—may profit or loss from different kinds of parenting [6,7]. For example, a low level of parental behavioral control has been found to be associated with aggression among children with high temperamental activity but not among children characterized by low or moderate levels of temperamental activity [8]. Although there is some evidence suggesting that child temperament moderates the effects of parenting styles on children's behavior, such as on adjustment and problem behavior in early [9-13] and late childhood [12,14], less is known about the differential impacts of parenting on children's emotional development [15]. The few prior studies that have examined the combined role of parenting styles and temperament in children's emotional development have focused on children's emotion regulation strategies [9,14] rather than emotion expression. Moreover, the studies have been carried out among preschool-aged children [9] or older school-aged children [14], and less is known about the topic after the critical transition to school.

The transition to primary school can be both challenging and stressful for a child [16-18]. During the first grade, children encounter increasing amounts of successes and failures to deal with, not only in the academic area but also in peer relations [19]. Children are also expected to follow the teacher's directions, and they start to form their self-concept of ability and see others' behaviors and points of view [19]. Research on the transition to school suggests that the success of the transition has an important impact on children's social and emotional competence [20] and their stress and anxiety levels [21], as well as their future academic performance and learning capability [20]. Consequently, the present study investigated the extent to which parenting styles (affection, behavioral control, and psychological control) predict children's emotional development in terms of children's expressions of negative and positive emotions after the critical transition to the first grade of primary school. In addition, it was examined whether these predictions are different depending on each child's type of temperament.

Children's Emotional Development

Children's emotional development has been described as consisting of three different components: (1) *cognitive-experiential*, i.e., individuals' thoughts and awareness of feelings (for example, trying to forget a painful emotion); (2) *behavioral-expressive*, i.e., external emotional signs (for example, smiling or crying); and (3) *physiological-chemical*,

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i.e., internal emotional signs (for example, sadness or happiness) [22,23]. In the current study, we focus on the behavioral–expressive component of emotional development—that is, children's positive (e.g., happiness, being proud) and negative (e.g., sadness, distressed) emotions observed by their parents.

The behavioral–expressive component of emotion has been suggested to be a significant factor in child development, interpersonal behavior, and social communication [24], because these external emotional signs provide clues about children's experiences and impact their social interactions [25].

Although both positive and negative emotions are functional in certain situations [26], frequent expressions of negative emotions may have maladaptive consequences. For example, high levels of negative emotions have been related to externalizing problems among children and adolescents [27,28]. Frequent expression of negative emotions may reflect difficulties in emotion regulation, and such difficulties have been related not only to social difficulties and delinquent behavior [29,30] but also to clinical disorders later on in life [23,31,32]. Frequent expressions of positive emotions, in turn, have been shown to be associated with social competence [33,34].

The role of parenting Styles in children's emotional development

Children's early emotional development takes place in the dynamic interaction between the parent–child relationship and the environment that they are developing in [23]. One aspect of this environment is parenting style, where relatively stable parental behaviors and attitudes toward children determine the emotional climate of the family [1]. The dimensional approach to parenting styles has typically focused on the role of three parenting style dimensions in children's development: 1) *affection*, i.e. positive affect, responsiveness, and support in parent–child relationships; 2) *behavioral control*, i.e., the regulation of the child's behavior through firm and consistent discipline (e.g., limit setting, maturity demands, monitoring); and 3) *psychological control*, i.e., parents' control of the child's emotions and behavior through psychological means (e.g., love withdrawal, guilt induction), [3,4,35]. The typological approach to parenting, in turn, has focused on the combinations of the parenting dimensions rather than their unique effects. For example, Baumrind [36] described three different parenting styles: *authoritative parenting*, characterized by a high level of both parental affection and behavioral control; *authoritarian parenting*, characterized by a harsh and punitive control and low affection; and *permissive parenting*, characterized by a high affection but low behavioral control [37].

Research on emotion socialization has revealed that minimizing children's emotional expression or punishing them for expressing negative emotions increases children's intensity of emotional expression, making them more emotionally reactive and less emotionally self-regulating [15,38,39]. Further, authoritative parenting (high parental affection and behavioral control) has been shown to be predictive of more developed emotional functioning, such as empathy-related responding, in children over time [40-42]. Permissive (high affection and low behavioral control) and authoritarian (low affection and high behavioral control) parenting, in turn, have been shown to be related to children's emotional dysfunctioning, reflected, for example, in poor emotion regulation strategies and aggression [15,43].

Moreover, a high level of parental psychological control has been shown to lead to internalizing problems, such as depression, anxiety,

and internalized distress [4]. Consistent with this, Aunola et al. [2] found that both maternal and paternal psychological control was associated with children's high levels of negative emotions. However, this previous study was cross-sectional, and thereby it is not known whether psychological control impacts the development of children's negative and positive emotions over time.

Temperament as a moderator of the relations between parenting styles and children's emotional development

Although there are currently several competing theories and definitions of temperament [44-46], a consensus exists that temperament refers to individuals' innate (biologically based) style of responding behaviorally and emotionally to an environment [47]. Temperament becomes evident in early childhood and is visible, first, in children's emotional arousal and reactivity toward environmental stimuli; secondly, in the expression and form of children's self-regulation in response to aroused emotion; and, third, in children's motivated behavior and associative learning originating from stirred emotions and self-regulation [48-50]. Temperament is relatively stable across different situations and over the course of time [44,45,51-53]. It is seen as raw material that forms an emotional basis for the later development of personality [54,55], which in turn reflects an individual's values, attitudes, and coping strategies learned as a result of socialization within the surrounding environment [56].

According to Rothbart [57], child temperament can be described by three broad factors: *surgency-extraversion* (e.g., approach behavior toward reward, positive anticipating, and sensation seeking), *negative affectivity* (e.g., anger, sadness, and frustration), and *effortful control* (e.g., activation control, attention, and inhibitory control) [58,59]. In turn, Martin and Bridger [60] argued that temperament in early childhood can be organized around two broad behavioral patterns: behavioral inhibition and impulsivity/approach. Children who are rated high on behavioral inhibition have a tendency to physically withdraw or to become emotionally upset when in a social situation that contains persons he or she has not known previously [61]. Impulsive children, in turn, often express negative emotions (particularly negative ones resulting from frustration), are highly active due to lack of ability to modulate physical activity, and lack the ability to sustain attention toward difficult tasks [61]. Martin and Bridger's concepts of behavioral inhibition and impulsivity correspond with Rothbart et al.'s [58] concepts of extraversion/surgency (reversely) and effortful control (reversely), respectively [61]. However, whereas Martin and Bridge included negative emotionality to be a part of impulsivity, Rothbart et al. [58] argued that it is an independent temperamental factor and not part of effortful control.

Aside from specific dimensions or factors of temperament, individual temperament can also be conceptualized as a constellation of the different dimensions [50]. This perspective calls for a person-centered approach to temperament, which considers the ways in which temperament traits are organized and integrated within the individual [62]. In line with this perspective Thomas and Chess [53] identified three patterns of temperament: 1) *easy*, 2) *difficult*, and 3) *behaviorally inhibited*. Each of these temperamental patterns contains dispositional temperamental traits, such as *mood* (i.e., a child's basic mental disposition, varying from being more positive [glad, cheerful, or optimistic] to more negative [grumpy, somber, or pessimistic]), *inhibition* (i.e., a child's tendency to be cautious, wary, and shy with new people and in new situations), *activity* (i.e., the frequency and quality [vigor and tempo] of a child's motor responses), and *negative emotionality* (i.e., a child's tendency to easily get upset, feel anger, or be difficult to soothe)

[53,60,63-65]. Children with an *easy* temperament (positive mood but low inhibition, activity, and negative emotionality) are characterized by optimistic humor, good attention span, mild to moderate activity, intensity and sensitivity, positive response to new situations, and adaptivity to change. Children who have a difficult temperament (high negative emotionality, inhibition, and activity but low positive mood), in turn, are characterized as having negative, pessimistic humor and being very active, intensely reactive, overly sensitive, and resistant to change. Finally, behaviorally inhibited children (high inhibition but low negative emotionality and low activity) are less active, less overtly emotional or intense, and tend to withdraw in new situations.

Difficult and behaviorally inhibited temperament profiles have been identified as potential risk factors for children's adaptive development [66-68]. For example, children with difficult temperamental characteristics during early childhood have been shown to be more likely to have difficulties with respect to emotion regulation and self-regulation in their later childhood and adolescence [49,69,70-72]. Behaviorally inhibited children, in turn, have been found to be highly reactive in stressful situations (e.g., in response to a stranger or unfamiliar objects) and to become easily overstimulated [73,74]. Recently, also the terms "*undercontrolled*" (comparable to the *difficult* classification), "*resilient*" (comparable to the *easy* classification), and "*overcontrolled*" (comparable to the *inhibited* classification) have also been used to refer to children's different types of temperament [75-79].

According to the *bioecological model* (Process–Person–Context–Time model; [80]), characteristics of the *Person* (child or other), characteristics of the *Context* (the broader environment), and elements of *Time* (duration and historical setting) all play a role in how proximal processes influence developmental outcomes. Based on this model, caregiving experiences in combination with children's individual characteristics influence future developmental trajectories [80], and thus caregiving experiences may have different impacts on children with different temperaments. The *goodness-of-fit* concept (i.e., the compatibility or dissonance between the growth environment and the child's innate temperament; [53]) suggests that any temperamental characteristic is neither good nor bad but that changes in the social environment may cause changes in the expression of emotional reactions aroused by temperament [51,53,81,82]. Consequently, adaptive outcomes will result when the temperamental characteristics of the child fit with the expectations and demands of the environment. Goodness-of-fit is seen as an interactive approach considering the child, parents, and environment—that is, the child's and parents' as well as environmental circumstances are taken into account [82].

Recently, it has been suggested that depending on the children's temperamental characteristics, some children are more susceptible than others to the effects of their environment and thus to parental socialization. According to the *diathesis–stress model*, some individuals are more vulnerable than others to the adverse effects of exposure to negative experiences [83,84]. The *differential susceptibility model* [83], in turn, suggests that individuals who are the most vulnerable to negative environmental impacts also gain the most from positive experiences and environments. In line with the aforementioned models, a growing body of research has shown that child temperament moderates the associations between parenting styles and children's development [13,85-88]. For example, children characterized by high levels of negative emotionality, activity, or fearfulness (i.e., a component of behavioral inhibition) have been found to be more susceptible to the effects of parental responsiveness and parental control than children who are less negative, active, or fearful in terms of their adjustment

[6]. In middle childhood and adolescence, harsh parenting control has been shown to be associated with poorer adjustment in children with a difficult temperament [8,55,89]. On the other hand, if parental control is not harsh, it has been shown to have positive effects on children's adjustment, particularly among children showing difficult temperamental characteristics [6,90,91].

However, less longitudinal research has focused on the moderating role of children's temperament in the associations between parenting styles and children's emotional development over time. The few studies carried out have focused on children's emotion regulation strategies (i.e., specific strategies individuals deploy when aiming to, either unconsciously or consciously, regulate the magnitude and/or type of their emotional experience; [92]) rather than emotion expression. For example, in the study by Jaffe and colleagues [14] on children in grades 4 to 6, *easy* temperament (defined as positive mood, approach behavior, and flexibility) combined with high perceived parental care (affection and emotional warmth) was associated with children's greater use of reappraisal in their emotion regulation strategy. In turn, more difficult temperament (defined as negative mood, withdrawal behavior, and rigidity) combined with low perceived parental care was associated with greater use of suppression in the children's emotion regulation strategy [14]. Similarly, Gilliom and colleagues [9] found that for preschool boys who were exposed to harsh and hostile maternal behaviors, negative emotionality (at age 18 months) predicted less adaptive and more maladaptive emotion regulation (at age 3½).

The other limitation of earlier research is that the studies examining the combined role of parenting styles and child temperament in children's emotional development have focused either on preschool-aged children or older school-aged children, and less is known about this development after the critical transition to school. The transition to primary school can be assumed to be an important phase in a child's emotional development since children face various new social and academic challenges during this stage [19]. Success (or failure) in this critical transition has also shown to have an important impact on children's subsequent future social and emotional competence, academic performance, and learning capability [20].

The Current Study

In the present study, the focus is on children's expression of negative and positive emotions and changes in this during the transition to primary school. Particularly, the joint effects of children's temperament and mothers' and fathers' parenting styles in this emotional development are under focus. Because the earlier literature on children's emotions has mainly focused on children's negative emotions [15,38,69,93] and anxiety [94,95], the present study examined both negative and positive emotions. Positive emotions in children have been shown to be associated with higher social interactions and social competence [33,34,96]. Positive emotions are important, not just as moments of flourishing, but also as a means to achieve higher well-being and psychological growth over time [97].

Based on the diatheses–stress and differential susceptibility models [83], we hypothesized that difficult temperament (i.e., high negative emotionality, inhibition, and activity) on the one hand (Hypothesis 1), and psychological control on the other hand (Hypothesis 2; [4,98]) predict increased negative emotion in children during the first grade. Parental affection and behavioral control, in turn, were expected to have positive effects on children's emotions, manifested as increased levels of positive emotion and decreased levels of negative emotion (Hypothesis 3; [4,3]. Based on the diatheses–stress and differential susceptibility

models [83], as well as the goodness-of-fit model [53], we further expected that children with a difficult temperament would suffer from a lack of parental behavioral control more so than others, manifested as an increase in negative emotions (Hypothesis 4). Moreover, we expected that inhibited children benefit more from parental affection than those with an easy temperament (Hypothesis 5; [99]).

Method

Participants and procedure

The sample consisted of 152 first grade children (79 girls, 73 boys; Age $M = 7.5$ years, $SD = 3.61$ months) and their mothers ($N = 152$) and fathers ($N = 118$). Of the participating mothers, 151 were biological mothers, and of the participating fathers, 110 were biological fathers. The sampling was begun by contacting 334 first grade teachers and asking them to participate in the study. One hundred sixty-six teachers agreed and signed a written consent form. Next, one student was randomly selected from each class, and the parents of the student were asked to give their consent for their child's participation. If the parents did not respond or withheld their consent, then another child was selected from the class, again at random, and his or her parents were contacted. This procedure continued until one student was obtained from each class. From this total of 166 children and their parents, 14 families were omitted from the analyses because the children were in special education classes. Thus, the final sample comprised 152 children in normal classes and their mothers ($n = 152$) and fathers ($n = 118$). The schools participating in the study were situated in three medium-sized towns in Finland.

The families were fairly representative of the general Finnish population [100]. A total of 52% of the mothers and 31% of the fathers had completed at least a senior high school education, 47% of the mothers and 66% of the fathers had completed at least a junior high school education (comprehensive school; up to the completion of Grade 9 at age 16), and 1% of the mothers and 3% of the fathers had not completed a junior high school education. Seventy-eight percent of the families were nuclear families (67% married, 11% cohabiting parents), 12% were blended families, and 10% were single-parent families. The number of children per family ranged from 1 to 10 ($M = 2.39$, $SD = 1.03$).

The mothers and fathers of the children were asked to respond to a mailed questionnaire concerning their parenting styles and their children's temperament in the fall (October or November) of the children's first grade (Time 1). At the same time point (Time 1), both parents were asked to fill in a structured diary questionnaire concerning their child's negative and positive emotions over seven successive days (diary). The diaries were filled in separately by the mothers and fathers on seven consecutive days, always just before going to sleep. The parents were again asked to fill in the same diaries regarding their children's emotions during the spring of the children's first grade (April; Time 2). Each parent was paid 50 EUR (about 62 USD) for participating in the study.

Measures

Children's daily emotions: Children's emotions were assessed according to the Daily Emotion Scale (DES; [101]), which is based on the Positive and Negative Affect Scale (PANAS; [102]). Each day across one week (seven days), the parents completed a structured questionnaire measuring their child's *daily emotions* (11 items; e.g., "My child was angry today"; "My child was sad today"; "My child felt distressed today"). Parents rated each item on a 5-point Likert scale

(1 = *not at all*; 5 = *very much*). To create indices regarding children's daily emotions, principal axis factor analyses with oblimin rotation were first carried out separately for mothers' and fathers' ratings. Two factors with eigenvalues over 1 were yielded in regard to both mothers and fathers: The eight *negative emotion* items loaded on one factor, and the three *positive emotion* items loaded on the other. The mean scores for children's negative daily emotions and positive daily emotions were then calculated across seven days based on both mothers' and fathers' ratings. The Cronbach's alpha reliabilities for children's negative emotions were .86 at Time 1 and .87 at Time 2, and for children's positive emotions they were 0.83 at Time 1 and 0.87 at Time 2. More validity and reliability information for the scale can be found, for example, from the studies by Aunola et al. [2,93].

Children's temperament: Mothers and fathers evaluated their children's temperament according to a temperament scale [103] created on the basis of the Temperament Assessment Battery for Children—Revised (TABCR; [60]) and the Revised Dimensions of Temperament Survey—Revised (DOTS-R; [65]). The scale consisted of altogether 41 items, each rated on a 5-point Likert scale (1 = *not at all true*; 5 = *very true*). In the present study, subscales were used for the three temperamental characteristics for which mothers' and fathers' evaluations were consistent (i.e., which significantly correlated statistically): *negative emotionality* (7 items; e.g., "When taken away from an enjoyable activity, my child tends to protest strongly"; "When my child becomes angry, it is difficult to sidetrack him/her"), *activity* (4 items; e.g., "When sitting, my child swings his/her legs, fidgets, or has his/her hands in constant motion"; "My child can sit quietly through a family meal" (revised)), and *inhibition* (8 items; e.g., "My child is shy with unfamiliar adults"; "In a new situation or with new people, my child is still uncomfortable even after a few days"). Mean scores for these three temperament subscales were created calculating the mean of mothers' and fathers' evaluations. The Cronbach's alpha reliabilities for the subscales were, respectively, .84, .75, and .92 for mothers and 0.79, 0.73, and 0.91 for fathers.

Parenting styles: Mothers' and fathers' parenting styles were measured with a Finnish version [104] of the Block's Child Rearing Practices Report (CRPR; [105]). The mothers and fathers were asked to rate 18 items on a 5-point scale (1 = *not like me at all*; 5 = *very much like me*). These items were intended to measure different aspects of parenting styles: *affection* (9 items; e.g., "I often tell my child that I appreciate what he/she tries out or achieves"; "I often show my child that I love him/her"), *psychological control* (4 items; e.g., "I let my child see how disappointed and ashamed I feel when he/she misbehaves"; "My child should be aware of how much I sacrifice for him/her"), and *behavioral control* (5 items; e.g., "My child should learn that we have rules in our family"; "My child should learn how to behave properly toward his/her parents"). The respective Cronbach's alpha reliabilities regarding these dimensions were, respectively, 0.77, 0.81, and 0.66 for mothers and 0.80, 0.79, and 0.61 for fathers.

Analysis strategy

The analyses were carried out along the following steps. First, a two-step clustering analysis was carried out in order to identify homogeneous groups of children according to their temperamental characteristics. In this, each criterion variable (i.e., inhibition, negative emotionality, and activity) was first standardized to make sure that the differences in standard deviations did not affect any distances in forming the clusters. Then, outliers that exceeded the standardized scores by -2.5 or $+2.5$ were identified and then forced within range by moving outliers to the end of the distribution. Finally, a two-step

clustering analysis was carried out. The two-step cluster analysis procedure is an exploratory tool designed to reveal natural clusters within a data set that would otherwise not be apparent. There are two steps: The first is the creation of a cluster tree, in which the first case is located at a node at the base of the tree, and each successive case is added to an existing node or forms a new node, based on its similarity to the existing nodes according to the distance criterion. Thus, the cluster tree provides a capsule summary of the data file. The second step is the grouping of the nodes using an agglomerative algorithm [106]. The number of clusters was determined on the basis of three criteria: 1) BIC value (Bayesian information criterion; smallest BIC value indicates the best cluster solution); 2) theoretical interpretation of the clusters; and 3) the number of cases in each cluster.

Next, covariance analyses (ANCOVAs) were carried out to examine whether parenting styles (i.e., affection, behavioral control, psychological control), children's type of temperament (cluster membership), and the interactions between parenting style variables and types of temperament would predict children's negative and positive emotions at Time 2 after controlling for the level of the same emotion at Time 1. Separate analyses were carried out for negative and positive emotions and for mothers and fathers. In all of the analyses, the parents' level of vocational education was controlled for. This was done because, in the earlier literature, parental socioeconomic status has been shown to be related to parenting styles [107] as well as children's development [108].

Third, if statistically significant interaction terms Parenting X Type of Temperament were found in previous ANCOVA analyses, hierarchical regression analyses were carried out as follow-up analyses to find out how parenting style variables predict emotion development among children with different types of temperaments. All analyses were conducted with SPSS software version 19. The zero-order correlations between the study variables are presented in Table 1.

Results

Temperament groups

This clustering-by-cases procedure identified three clusters showing different patterns of temperamental characteristics: children with a *difficult* temperament (22.67%, $n = 34$), *easy* temperament (42%, $n = 63$), and *inhibited* temperament (35.33%, $n = 53$). Children with a difficult temperament were characterized by high levels of activity, inhibition, and negative emotionality, while children with an easy temperament were characterized by low levels of activity, inhibition, and negative emotionality. Children with an inhibited temperament showed low levels of activity and negative emotionality but a high level of inhibition. The means and standard deviations (z -scores) for the temperament variables in the different groups, as well as the results of the one-way analyses of variance (ANOVAs) for the criterion variables, are reported in Table 2. Children within the difficult temperament group showed statistically significantly higher levels of activity and negative emotionality than the children in the other two groups. Children with a difficult temperament also showed a higher level of inhibition than the children in the easy temperament group. Children in the easy temperament group, in turn, showed a lower level of inhibition than the children in the other groups and lower levels of activity and negative emotionality than the children in the difficult temperament group. In turn, children in the inhibited temperament group showed a higher level of inhibition than the children in the easy temperament group, but they did not differ from the easy temperament group in their levels of activity and negative emotionality.

Cross-tabulation indicated no significant association between cluster membership and child gender.

The role of parenting styles and a child's temperament type in the child's negative emotions

Mothers: Next, we examined the extent to which mothers' parenting styles, children's type of temperament, and the interaction of

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	.13
Negative emotion T1	1.00												
Positive emotion T1	-0.15	1.00											
Negative emotion T2	0.67**	-0.07	1.00										
Positive emotion T2	-0.14	0.63**	-0.15	1.00									
Inhibition	0.17*	-0.13	0.23**	-0.10	1.00								
Activity	0.38**	-0.21*	0.32**	-0.19*	0.13	1.00							
Negative emotionality	0.51**	-0.26**	0.39**	-0.16	0.16	0.56**	1.00						
Affection (mother)	-0.39**	0.31	-0.29**	0.20*	-0.22*	-0.36**	-0.37**	1.00					
Behavioral control (mother)	0.19*	-0.05	0.05	0.01	-0.01	0.11	0.19*	-0.11	1.00				
Psychological control (mother)	0.18	0.09	0.05	0.07	0.09	0.15	0.07	-0.08	0.28**	1.00			
Affection (father)	-0.21*	0.15	-0.15	0.07	-0.19*	-0.31**	-0.28**	0.22*	-0.16	-0.14	1.00		
Behavioral control (father)	0.27**	0.04	0.12	0.10	0.06	0.15	0.30**	-0.11	0.37**	0.18	-0.05	1.00	
Psychological control (father)	0.28**	0.05	0.29**	0.06	0.06	0.24**	0.34**	-0.15	0.12	0.16	-0.18*	0.42**	1.00

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; T₁ = Time 1, Autumn; T₂ = Time 2, Spring

Table 1: Correlations of Study Variables.

Temperament trait	Children's temperament group						F	df	ηp^2
	Difficult (n=34)		Easy (n=63)		Inhibited (n=53)				
	M	SD	M	SD	M	SD			
Activity	1.07	0.93	-0.34	0.71	-0.27	0.86	37.13 ^a	2, 147	0.34
Negative emotionality	1.37	0.74	-0.34	0.63	-0.46	0.69	78.45 ^a	2, 147	0.55
Inhibition	0.42	0.95	-0.83	0.54	0.72	0.69	89.50 ^a	2, 147	0.52

Note: ^a $p < 0.001$; ηp^2 = Partial eta squared values are suggestive of significant effect size. Cohen (1969) classified effect of 0.2 as *small*, 0.5 as *medium*, and .8 or higher as *large*.

Table 2: Mean (M) and standard deviations (SD) (z -scores) for children's temperament variables for the three temperament groups.

mothers' parenting styles and children's temperament predict children's negative emotions. For this purpose, we conducted a univariate analysis of covariance (ANCOVA). The results are shown in Table 3.

The results (Table 3) revealed, first, that after controlling for the effect of negative emotions at Time 1 and the maternal level of vocational education, the main effect of the temperament type (group) was statistically significant. Post hoc Bonferroni tests further revealed that there were significant differences between the children in the difficult and the easy group in regard to negative emotions at Time 2 ($p < 0.01$). Children with a difficult temperament showed higher levels of negative emotion ($M = 1.54, SD = 0.28$) than did the children with an easy temperament ($M = 1.33, SD = 0.24$). In regard to negative emotions, no significant differences were found between the children in the easy and inhibited groups nor between the children in the difficult and inhibited groups. Moreover, mothers' psychological control had a statistically significant main effect on children's emotional development: The higher the level of mothers' psychological control, the more negative emotions children showed at the end of the first grade, after controlling for the children's previous level of negative emotions. In turn, the main effects of mothers' affection and behavioral control were not significant.

The results showed further, however, that the interaction terms *mother's affection x child's type of temperament* as well as *mother's behavioral control x child's type of temperament* were also significant. This suggests that the impacts of mothers' affection and behavioral control depend on their children's type of temperament.

Consequently, follow-up analyses were carried out separately for each temperament group. In these analyses, children's negative emotions at Time 2 were predicted by mothers' parenting style variables, after controlling for the child's negative emotions at Time 1 and the maternal level of vocational education. The results showed, first, that mothers' affection predicted negative emotions at Time 2 only for children with an inhibited temperament (standardized $\beta = -0.36, p < 0.01$): The higher the level of maternal affection, the lower the level of subsequent negative emotions among children with an inhibited temperament. Among children with an easy (standardized $\beta = 0.13$) or difficult (standardized $\beta = 0.10$) temperament, maternal affection had no impact on negative emotions at Time 2. Second, the results revealed that mothers' behavioral control (standardized $\beta = -0.37, p < 0.01$) predicted negative emotions at Time 2 in the difficult temperament group but not regarding children with an easy (standardized $\beta = 0.09$) or inhibited (standardized $\beta = -0.10$) temperament. That is, the lower the levels of mothers' behavioral control, the higher the level of subsequent negative emotions among children with a difficult temperament.

Fathers: Next, a similar ANCOVA as described above was carried out for fathers. The results are shown in Table 4. The results showed that, after controlling for negative emotions at Time 1 and fathers' level of vocational education, none of the main effects of children's type of temperament, fathers' affection, or behavioral and psychological control were statistically significant. However, the results further showed that the interaction term *father's psychological control x child's type of temperament* was significant, suggesting that

	Negative Emotions (T ₂)			
	F	p	df	η ²
Control variables				
Child's negative Emotions (T ₁)	89.41	0.00	1, 120	0.46
Mothers' vocational education	3.32	0.07	1, 120	0.05
Variables of main interest				
Type of a child's temperament	4.84	0.01	2, 120	0.12
Mothers' affection	0.58	0.45	1, 120	0.01
Mothers' behavioral control	3.21	0.08	1, 120	0.04
Mothers' psychological control	4.76	0.03	1, 120	0.05
Mothers' affection X temperament type	6.35	0.00	2, 120	0.10
Mothers' behavioral control X temperament type	3.79	0.02	2, 120	0.09

Note: T₁=Time 1, Autumn; T₂=Time 2, Spring

Table 3: Main and interaction effects (ANCOVA) of Mothers' (n=152) parenting styles and child temperament type predicting children's negative emotions at time 2 (controlled for the negative emotion at time 1 and for parental vocational education).

	Negative Emotions (T ₂)			
	F	p	df	η ²
Control variables				
Child's negative Emotions (T ₁)	76.47	0.00	1, 86	0.46
Fathers' vocational education	2.18	0.14	1, 86	0.02
Variables of main interest				
Type of a child's temperament	0.83	0.44	2, 86	0.06
Fathers' affection	0.18	0.67	1, 86	0.00
Fathers' behavioral control	0.07	0.79	1, 86	0.00
Fathers' psychological control	0.26	0.61	1, 86	0.00
Fathers' psychological control X temperament type	3.87	0.02	2, 86	0.08

Note: T₁=Time 1, Autumn; T₂=Time 2, Spring

Table 4: Main and interaction effects (ANCOVA) of fathers' (n=118) parenting styles and child temperament type predicting children's negative emotions at time 2 (controlled for the negative emotion at time 1 and for parental vocational education).

the impact of the father's psychological control depends on the child's type of temperament.

Consequently, once again, follow-up hierarchical regression analyses were carried out separately for each temperament group. In these analyses, children's negative emotions at Time 2 were predicted by fathers' parenting style variables, after controlling for the child's negative emotions at Time 1 and the father's level of vocational education. The results showed that among children with a difficult temperament, fathers' psychological control (standardized $\beta = 0.34, p < 0.05$) predicted negative emotions at Time 2. That is, the higher the paternal level of psychological control, the higher the level of subsequent negative emotions among children with a difficult temperament. Among children with an easy (standardized $\beta = -0.15$) or inhibited (standardized $\beta = -0.10$) temperament, fathers' psychological control had no impact on negative emotions at Time 2.

The role of parenting styles and a child's temperament type in the child's positive emotions

Mothers: Next, an ANCOVA was carried out regarding mothers' parenting styles, children's temperament type, and children's positive emotions. None of the main effects or interaction terms were statistically significant.

Fathers: Finally, an ANCOVA was carried out regarding fathers' parenting styles, children's temperament type, and children's positive emotions. The results revealed that none of the main effects or interaction terms were statistically significant.

Discussion

The present study aimed to investigate the joint effects of children's temperament and their parents' parenting styles on children's emotional development in terms of expression of negative and positive emotions at the beginning of primary school (after controlling for the parental level of vocational education). The results showed that mothers' and fathers' parenting styles played a different role depending on each child's type of temperament. Mothers' low level of behavioral control and fathers' high level of psychological control at the beginning of the first grade predicted children's subsequent high level of negative emotions at the end of the first grade, but only among children with a difficult temperament. Mothers' high level of affection, in turn, predicted less negative emotions in children with an inhibited temperament. The impact of mothers' psychological control on their child's negative emotions was not dependent on the child's temperament but was evident at the level of the whole sample. No associations were found between parenting styles, children's temperament, and children's positive emotions.

In the present study, three different types of temperament were identified among first grade children: difficult, easy, and inhibited temperaments. These identified types were consistent with the classical Thomas and Chess [53] classification of temperament. Children in the difficult temperament group were characterized by high levels of activity, inhibition, and negative emotionality, while children in the easy temperament group were characterized by low levels of all these characteristics. Children in the inhibited temperament group showed low levels of activity and negative emotionality but high inhibition. The identified types of temperament are also in line with the more recent classifications of "undercontrolled" (comparable to the difficult temperament group), "resilient" (comparable to the *easy* group), and "overcontrolled" (comparable to the *inhibited* group) children [49,76,77].

In the earlier literature, children with a difficult or "undercontrolled" temperament have been characterized by negative emotionality and negative mood [79], and they have also been shown to have difficulties in regulating their negative emotions [14]. The results of the present study are in line with these earlier findings and our Hypothesis 1, as the children with a difficult temperament were reported by their parents as expressing more negative emotions at the end of the first grade than was the case for children with an easy temperament. The results of the present study add to the previous literature by showing that children with a difficult temperament not only expressed more negative emotions than children with an easy temperament, but they also manifested more increases in these emotions during the first grade than did the children with an easy temperament. One explanation for this result may be that it is more difficult for children with a difficult temperament to adapt to all the changes related to the transition to primary school compared to their peers with a more easy temperament. This may, in turn, be reflected in their expression of negative emotions. When interpreting this result it should be noted, however, that although in the present study the difference between children with difficult and easy temperaments in terms of negative emotions was statistically significant, the effect size was only marginal.

The major aim of the present study was to examine whether children with different kinds of temperaments would benefit from different kinds of parenting. According to the goodness-of-fit model of temperament [53], a poor fit of children's characteristics with their environment leads to poor child developmental outcomes, whereas a good fit leads to optimal developmental outcomes. In line with this kind of argumentation, the results of the present study showed that the role of mothers' and fathers' parenting styles in their children's emotional development was mostly found to differ depending on each child's type of temperament. First, although the negative emotions of children with a difficult temperament tended to increase during the first grade compared to children with an easy temperament, mothers' high level of behavioral control protected against this increase: The higher the level of maternal behavioral control, the lower the level of subsequent negative emotions among children with a difficult temperament. Among easy and inhibited children, maternal behavioral control had no impact. This pattern of results is in line with our Hypothesis 3 and with previous evidence showing that high parental control (i.e., regulation of the child's behavior through firm and consistent discipline that is not, however, harsh) predicts less negative behaviors and greater adjustment among children with a difficult temperament [6,90,91,99]. The goodness-of-fit model [53] also stresses that the developmental outcomes can differ depending on the parenting strategies that parents adopt toward their child. Our findings, as well as those of some earlier studies [90,91], suggest that children with a difficult temperament may benefit from clear limits on their behavior—more so than others when it comes to needing to adjust to their school environment.

Furthermore, the results of the present study showed that although the psychological control deployed by mothers predicted increased levels of negative emotions among all children during the first grade, fathers' psychological control was detrimental in particular for children with a difficult temperament. These results are in line with our Hypothesis 2 and with previous evidence showing that high parental psychological control is related to various negative outcomes among children, such as low self-esteem, signs of anxiety, distress, depression, shame, and guilt [4,109,110]. Additionally, these results are in line with recent findings by Aunola and colleagues [2,93] suggesting that a high level of maternal and paternal psychological control is associated with higher levels of negative emotion in children. The present study

provides a supplemental contribution to the previous literature by suggesting that the negative effects of fathers' psychological control may be particularly evident among children with a difficult temperament [8,9,14,89]. Overall, the present findings are in line with the diathesis-stress model and our Hypothesis 4, suggesting that children with a difficult temperament are even more susceptible to parental negative impacts than those with an easy temperament.

Unlike behavioral control (i.e., regulation of the child's behavior through firm and consistent discipline), psychological control is an effort to maintain power over a child and is indicative of a negative parent-child relationship [109]. It has been suggested that high parental psychological control can result in negative emotions among children by promoting negative self-schemas [111], transfusing children's sense of dependency [95], and decreasing their sense of control [94], which in turn can lead to heightened distress in the children [93]. The reason why psychological control deployed by fathers led to an increase in negative emotions particularly among children with a difficult temperament may be due to the fact that these children are biologically more prone to negative emotions and intense emotional reactions overall than other children [66].

The results showed further that children with an inhibited temperament, in particular, benefitted from maternal affection: The higher the level of maternal affection, the less negative emotions these children showed later on. Among other children, these kinds of beneficial effects of maternal affect were not found. This result was partially in line with our Hypothesis 5 (i.e., inhibited children benefit more from parental affection than those with an easy temperament) and can be interpreted in terms of the goodness-of-fit model [53]: In order to reach a goodness-of-fit, children with an inhibited temperament may need high parental affection, and, because of this, they may benefit more from maternal affection than children with other types of temperament. This result is also in line with our previous study [112], where we found that particularly those children who showed signs of social withdrawal were vulnerable to the negative effects of low maternal affection. After infancy, temperamental inhibition is often manifested as withdrawal behavior [113]. Overall, the result of the present study suggests that inhibited children benefit from parental affection. This result is somewhat inconsistent with some earlier findings which suggest that high levels of affection can be problematic for inhibited children under certain conditions [68].

One possible mechanism underlying these results is that children with an inhibited temperament may be more likely to benefit from parental encouragement to explore novel situations [99]. When parents are less warm and more overprotective, children with an inhibited temperament are more likely to remain inhibited and shy [99]. As inhibited children are often rejected by their peers [114], maternal warmth and support can function as an important source of emotional support for them [112] and can have a significant effect on their emotional development. Furthermore, since a positive and warm parent-child relationship is characterized by better parent-child communication and associated with greater usage of problem-focused coping styles and social support [115,116], higher maternal affection can be seen as providing greater emotional support for children with an inhibited temperament, helping them to overcome their fears in new situations and leading to a reduction in their level of negative emotions.

Overall, the results showed no effects of parenting styles on temperamentally easy-going children, except the negative effect of maternal psychological control found at the level of the whole sample. These results are in line with the differential susceptibility framework

in suggesting that children with a difficult or inhibited temperament are more prone to environmental impacts—or parental socialization at least—than other children. According to this model, children with a difficult temperament who are exposed to beneficial parenting may, overall, have better developmental outcomes than other children, but they could also experience poorer outcomes in less advantageous environments [10]. Our finding is also consistent with the findings by Bradley and Corwyn [11] and Stright et al. [13], whose results showed that children with a difficult temperament display more problem behaviors and less adjustment in the first grade when receiving low-quality parenting but fewer problems and better adjustment when receiving high-quality parenting. Among children with a very low level of difficult temperament (easy temperament), the quality of parenting had less or no impact on the children's outcomes [11,13]. Similarly, Kochanska and Kimm [10] found that regarding children with a difficult temperament, maternal responsiveness had a significant impact on such children's developmental outcomes in early childhood (more compliant and less externalizing problems), while for children with a more easy-going temperament, maternal responsiveness and developmental outcomes were found to be unrelated. One possible explanation for this is that although children with a difficult temperament are more challenging to regulate by their parents, they may also be more responsive to parental efforts to socialize them [13]. Consequently, parenting on the whole may have a stronger impact on these children's development than in the case of children with other types of temperaments [13].

The results further showed that parenting styles and children's temperament, as well as the interaction of parenting styles with children's temperament, all had no impact on children's positive emotions during the first grade. This result is inconsistent with findings suggesting that parenting that is more supportive, warm, and responsive, where discipline is based on clear reasoning, and that demands more mature behavior is more likely to promote children's positive social and emotional development [117]. One explanation for our finding is that parents of a child with more negative emotions may experience difficulty when trying to tolerate their child's emotions and are more likely to intrude in the child's activity and to assist the child in emotionally negative situations; on the other hand, in situations where the child shows positive emotions, this kind of behavior is not present [118].

Our results further revealed that mothers and fathers play a different role in regard to children's negative emotions. According to our findings, paternal affection and behavioral control had no impact on the development of children's negative emotions during the first grade, and, moreover, paternal psychological control played a role only among children with a difficult temperament; meanwhile, maternal psychological control had negative effects on children of all types of temperament. These findings are consistent with the results of related research by Hastings et al. [85], Russell et al. [87] and Zarra-Nezhad and colleagues [112], none of whom found any joint effects of fathers' parenting and children's sociability or inhibition on children's socioemotional development. Hudson et al. [118] also found that paternal behavior is not related to the emotion a child experiences. Our results may be due to the fact that the mother is usually the primary caretaker of the child, and for this reason her parenting may naturally play a more important role in her child's emotional development than does the father's parenting. Another explanation is that, because interactions between the mother and her child are typically characterized by more responsiveness, warmth, and intimate exchanges than interactions between the father and his child [119], children tend to be more open to maternal than paternal influence [1,35].

Limitations

The present study involved some limitations that should be taken into account in any generalization of the findings. First, the sample size was small, and our findings should therefore not be generalized with respect to a broader community based on this study alone. The small sample size also limits the power of our statistical tests. Second, the observed effect sizes were relatively small. Although small effect size suggests that there is a real effect, a larger sample size is needed in order to detect the group differences [120]. Third, the children's emotions were measured at two follow-up points within one year. In order to get a bigger picture of the phenomena, longer-term follow-ups are needed. Fourth, all the measures were based only on parental reports. The parents described their children's temperament, their own parenting style, and their children's emotions; this raises the possibility of bias in the reports. That is, some descriptions of the children's emotions may reflect the personal characteristics of the parents and their expectations of their children [121]. The fact that all the measures were based on self-reports also means that the data are subject to common-method variance. Thereby, because it is possible that some of the results are due to the shared method variance, there is evident need to replicate the reported results using different informants when measuring the constructs under interest. Fifth, children's emotions were measured using parent-ratings only, and their own experiences of emotions were not assessed. Consequently, although parent-ratings provide information about children's emotion expression, this emotional expression should be distinguished from emotional experience in a way that it is possible to experience emotions without expressing them (e.g., concealing one's anger), as well as expressing emotions without experiencing them (e.g., conveying genuine affection) [122]. Sixth, parenting styles were measured only once. Thus, it was not possible to examine the bidirectional relationship between parenting styles and children's emotional development. In the previous literature, child behavior and parenting have been shown to show a bi-directional relationship over time [123,124]. It may well be possible, for example, that children's expressions of emotion and their type of temperament influence their parents' style of parenting.

Conclusion

Overall, the results of the present study suggest that mothers' and fathers' parenting styles play a role in their children's negative emotions and related development, particularly among temperamentally inhibited or difficult children. Children with an inhibited temperament, in particular, were found to benefit from high levels of maternal affection, whereas children with a difficult temperament seemed to benefit from maternal behavioral control but suffered from paternal psychological control.

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