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Parental Involvement in Math Homework: Links to Children's Performance and Motivation

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ABSTRACT

The present study examined the longitudinal associations between children's perceptions of parental involvement in math homework (control and support) and their math performance and motivation (task-persistent homework behavior and math self-concept). Children (n = 512) reported their perceptions concerning parental involvement in sixth-grade math homework. In grades 3 and 6, children completed math tests, evaluated own math self-concept, and their mothers (n = 420) evaluated task persistence during homework. The results showed that low self-concept in math predicted increased parental control, which in turn related to low math performance, task persistence, and math self-concept. Second, perceived parental support was related to increased task persistence during homework. Finally, parental control was especially detrimental for boys' task persistence and math self-concept.

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KEYWORDS
Perceived parental control; perceived parental support; homework; math; task persistence; math self-concept; gender

Helping children with homework is the most typical form of parental involvement (e.g., 1.14 hours per week in fourth through sixth grades for math in the USA [Pezdek, Berry, & Renno, 2002]), which is assumed to contribute to children's success and motivation in school subjects. However, research on the efficiency of parental involvement in homework on children's academic performance has shown mixed results (for an overview, see Cooper, Lindsay, & Nye, 2000; Hoover-Dempsey et al., 2001; Patall, Cooper, & Robinson, 2008; Pomerantz, Moorman, & Litwack, 2007), and a much smaller number of studies have investigated the relations between parental involvement in homework and children's motivation (e.g., academic self-concept and homework persistence [Dumont, Trautwein, Nagy, & Nagengast, 2014]). Several other important issues also require further attention. First, too few longitudinal studies follow both children's performance and motivation (not only performance) across time in relation to perceived parental assistance with homework (Dumont et al., 2012, 2014). Second, previous research typically relied on parents' reports of the frequency of homework assistance, making it impossible to determine children's perceptions and interpretations of such involvement. Third, most studies have analyzed homework involvement in general, without focusing on a specific subject (see Dumont et al., 2012; Trautwein & Lüdtke, 2009, for exceptions). However, parental assistance with homework may vary depending on the subject. Finally, to the best of our knowledge, no studies have examined if and how children's gender moderates the associations between the children's perceptions of parental involvement in homework and children's performance and motivation.

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Thus, the aim of the present study is to examine the longitudinal associations between children's perceptions of parental involvement in math homework and children's math-related performance and motivation (task persistence during homework and math self-concept; see Figure 1) and the differences in the longitudinal associations between boys and girls. Based on sociocultural and social cognitive frameworks that emphasize that people's actions are influenced by their interpretations of the situations (e.g., Bandura, 1993; Luria, 1976), we examined children's perceptions of parental involvement in homework. Drawing on self-determination theory (e.g., Ryan & Deci, 2000), we differentiated between two types of parental involvement: controlling and autonomous supportive assistance with homework (Dumont et al., 2012, 2014; Núñez et al., 2015; Pomerantz et al., 2007). We chose math homework because children often struggle with math tasks; thus, math-related motivation may play an important role in math achievement (Dumont et al., 2012, 2014; Kikas & Mägi, 2017; Trautwein & Lüdtke, 2009).

Perceived Parental Involvement in Homework

Parental involvement in homework is a multidimensional construct and forms a part of parenting. While studies examining general parenting have differentiated either between parenting styles (authoritative, authoritarian, permissive [see Baumrind, 1966]) or parenting dimensions (warmth/emotional support, behavioral and psychological control [see Barber, 1996; Skinner, Johnson, & Snyder, 2005]), research on parenting in school context is often based on the theories that explain parental involvement in their children's homework. One of the most popular theoretical frameworks is proposed by self-determination theory (Ryan & Deci, 2000). According to the theory, the feelings of competence, autonomy, and relatedness are essential for the development of a child's motivation and skills (Ryan & Deci, 2000), and two distinct forms of parental involvement in homework have been examined (control and support) that differentially satisfy a child's needs for competence, autonomy, and relatedness. Parental control in homework situations can be defined as control and pressure on children to complete assignments (e.g., check if children have completed their homework assignments; get involved in homework without being asked by the children; punish children if homework is not done), whereas parental support can be defined as the value of parental assistance as determined by their children (e.g., sensitivity to children's need for support while doing homework;

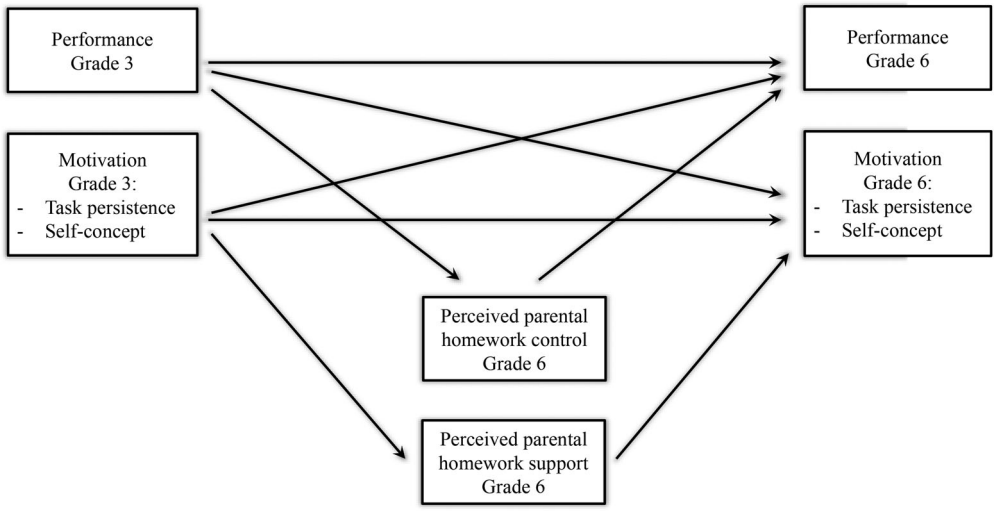

Figure 1. Theoretical model of the role of child-perceived parental control and support in children's math performance and motivation.

availability in solving problems with homework when requested [Dumont et al., 2012, 2014; Núñez et al., 2015; Pomerantz et al., 2007]). Autonomy support is related to an authoritative parenting style, high emotional support, and low psychological control, while control is related to authoritarian parenting style, low emotional support, and high psychological and behavioral control.

It has been shown that parental control decreases children's sense of autonomy, sense of competence, and effort in challenging learning situations (Pomerantz et al., 2007). In contrast, allowing children to solve problems by themselves and being available for help if needed (i.e., providing children with autonomy) increase children's sense of autonomy, sense of competence, and persistence in learning (Moorman & Pomerantz, 2008). Thus, by undermining feelings of autonomy, competence, and relatedness, parental control can inhibit, whereas parental support can enhance children's academics-related motivation and performance. As it is possible that children and parents perceive homework involvement differently (for attitudes, see Henry, Mashburn, & Konold, 2007), and children's interpretations of the situations guide their own actions (Bandura, 1993; Luria, 1976), it is necessary to focus on children's perceptions of their parents' involvement rather than parental reports of "objective" measures of parental involvement.

Role of Perceived Parental Involvement in Children's Math Performance and Motivation

Previous research findings on the association between parental involvement in homework and children's performance are mixed (for an overview, see Hill & Tyson, 2009; Patall et al., 2008). In their meta-analysis, Patall et al. (2008) examined three types of studies on the frequency of parental involvement—studies with experimental manipulations of parental involvement as well as naturalistic cross-sectional studies that did and did not control for confounding variables—and concluded that parental involvement in homework had "at best a slightly positive overall impact on achievement" (p. 1062). Recent theoretical approaches and empirical studies have emphasized that it is not quantity but quality (i.e., how parents help) that matters (for a review, see Pomerantz et al., 2007). Empirical studies have shown a direct link between the perceived parental involvement in homework and children's achievement: Perceived parental homework control negatively relates to children's academic performance (Dumont et al., 2012; Karbach, Gottschling, Spengler, Hegewald, & Spinath, 2013; Levpuscek & Zupancic, 2009; Núñez et al., 2015), whereas perceived parental homework support (e.g., avoiding direct involvement when children do not need help but assisting when children do need help) positively relates to academic performance (e.g., Cooper et al., 2000; Dumont et al., 2012; Núñez et al., 2015; Pomerantz et al., 2007).

It has also been suggested that parental involvement in homework can be more related to achievement-related motivation than to academic performance *per se* (Patall et al., 2008). The motivation literature describes a few types of such achievement-related motivation. One such motivational construct is task persistence (as opposed to task avoidance), which can be characterized as a type of behavior that a child exhibits when completing learning tasks, such as by showing effort and staying determined when facing challenges (Onatsu-Arvilommi & Nurmi, 2000; Zhang, Nurmi, Kiuru, Lerkkanen, & Aunola, 2011). Task persistence in school tasks is a form of effortful control (e.g., Drake, Belsky, & Fearon, 2014) and has mainly been studied as a general construct, not subject-specific. Task persistence has consistently been found to be related to children's math achievement (Kikas, Peets, & Hodges, 2014; Kikas, Peets, Palu, & Afanasjev, 2009). Regarding the links between parental involvement in homework and children's task persistence, it can be expected that children's perceptions of supportive homework involvement may relate to autonomous learning and higher task persistence, whereas children's perceptions of controlling homework involvement may relate to higher task avoidance (Dumont et al., 2012; Ryan & Deci, 2000).

Another achievement-related motivational construct is academic self-concept. Typically, academic self-concept is subject-specific (Marsh et al., 2015; Valentine, DuBois, & Cooper, 2004); thus, in this study, we use the term *math self-concept* to refer to a collection of self-perceived beliefs

and attitudes about one's own abilities and competences in math (Bong & Skaalvik, 2003; Chiu & Klassen, 2010; Marsh et al., 2015). Math self-concept has been shown to be positively related to children's achievement (Kikas & Mägi, 2017; Levpuscek & Zupancic, 2009; Valentine et al., 2004). The links between children's math self-concept and parental involvement have been documented to a lesser degree than those for task persistence. However, some evidence suggests that parental control may inhibit self-concept of ability (Dumont et al., 2012). It can also be assumed that parental support for child's learning may enhance self-concept, although empirical evidence has thus far failed to demonstrate this association (Dumont et al., 2012; Levpuscek & Zupancic, 2009).

Role of Math-Related Performance and Motivation in Children's Perception of Their Parents' Homework Involvement

Despite the basic assumption in the previous research that parental involvement in homework predicts children's outcomes, it is also possible that children's characteristics (e.g., performance and motivation) impact the ways parents are involved in their children's homework (Levin et al., 1997; Pomerantz & Eaton, 2001; Silinskas, Kiuru, Aunola, Lerkkanen, & Nurmi, 2015). This "evocative effect" of children's characteristics, not only the active efforts of the child (e.g., specific invitations [Green, Walker, Hoover-Dempsey, & Sandler, 2007]), can influence the reaction of significant others (e.g., parents and teachers [Nurmi, 2012; Nurmi & Kiuru, 2015]). Thus, also based on the previous research (Levin et al., 1997; Pomerantz & Eaton, 2001; Silinskas et al., 2015), it can be assumed that children's poor performance makes parents apply more controlling and less autonomy supportive strategies when assisting their children with homework.

Apart from numerous studies on the evocative effect of children's performance on parental involvement in homework, much less is known about the evocative effect of children's motivation on the types of parental involvement in homework. As an exception, a few studies found that low task persistence predicted higher maternal controlling help (Kikas & Silinskas, 2016). Regarding the evocative effect of self-concept, Dumont et al. (2012) did not find that general academic self-concept would predict perceived parental support. In contrast, self-concept and homework persistence in French as a second language were found to predict general perceived parental support (positively) and general perceived parental control/interference (negatively) (Dumont et al., 2012). Thus, children's learning-related motivation is likely to evoke certain types of parental involvement in homework—that is, children's low task persistence during homework and math self-concept can be an implicit call for help, causing parents to react by providing more control and granting less autonomy to their children concerning homework.

Moderating Role of Children's Gender

It has been suggested that associations between parental involvement and children's performance and motivation can be different for boys and girls (Carter & Wojtkiewicz, 2000; Grolnick & Slowiaczek, 1994). Some research has indicated that, overall, parents are more involved in their daughters' education (versus sons' education [Keith & Lichtman, 1992, 1994]). Moreover, the type of involvement may also differ between boys and girls. For instance, parents tend to help their sons more than daughters in completing homework assignments (Cooper et al., 2000) and check their sons' homework more frequently than that of their daughters (Carter & Wojtkiewicz, 2000). Parental involvement in boys' homework, compared to girls' homework, has been shown to be more controlling and intrusive (Bhanot & Jovanovic, 2005; Dumont et al., 2012), whereas girls tend to receive more parental support than boys (Dumont et al., 2012).

Studies examining gender differences in math have shown mixed results, due in part to children's age and specifics of the task (Else-Quest, Hyde, & Linn, 2010). In primary school, some studies have found no gender differences in math (e.g., Kikas et al., 2009; Lachance & Mazzocco, 2006), whereas others have demonstrated a small difference favoring girls (see Halpern et al., 2007). Gender

differences in math may become more evident when children get older; for instance, Dumont et al. (2012) found that boys get higher grades in math than girls in eighth grade. Concerning gender differences in academics-related motivation, boys tend to have higher academic self-concept (Dumont et al., 2012), especially in math and science, whereas girls have been found to show more task-persistent learning behavior than boys (Onatsu-Arvilommi & Nurmi, 2000; Pajares, 2002).

Thus far, research on how gender moderates the association between parental involvement in homework and children's motivation is scarce, and findings are inconsistent. Some research suggests that the overall effect of parental involvement on students' academic achievement is similar for both boys and girls (Hong, Yoo, You, & Wu, 2010; Silinskas, Niemi, Lerkkanen, & Nurmi, 2013), while other studies have shown that the associations between parental assistance on homework and children's outcomes are stronger for boys than for girls (Pomerantz et al., 2007; Silinskas et al., 2012). Finally, it has been suggested that the associations between parental involvement in homework and children's performance are more negative for girls because girls are more affected by negative feedback that diminishes perceived autonomy (e.g., Kast & Connor, 1988; Koestner, Zuckerman, & Koestner, 1989).

The Estonian Educational System

Estonia, where the study was carried out, is a good country for studying the relations between parental involvement and achievement as a great variety exists in parental value systems and practices (Tulviste & Kikas, 2010). Estonia's social system has changed from authoritarian to democratic since regaining independence from the Soviet Union in 1991. However, as social changes take time, parents still hold values and beliefs more characteristic of the authoritarian society (see Tulviste & Kikas, 2010), which may have an effect on parental practices in homework involvement and their associations with children's math performance and motivation as well. In Estonia, children enter primary school (first through sixth grades) at the age of 7. Typically, children are required to complete homework from the beginning of their school career, and teachers usually express strong expectations that parents should get involved in their children's homework. One classroom teacher teaches almost all the main subjects (including math) during the first three or four years, while starting from fifth grade subject teachers teach separate subjects. The content of math becomes more demanding, with new topics added between third and sixth grades. Estonian children have shown good results in math in international comparative studies (e.g., Organisation for Economic Co-operation and Development, 2012), but their test scores on national-level tests vary a lot (INNOVE, n.d.). Moreover, in one Estonian study on homework problems in second and seventh grades, parents mentioned math as the main subject in which children needed help with homework (unpublished data).

The Present Study

The purpose of this study is to examine the links between perceived parental involvement in homework and children's math performance and motivation across third and sixth grades, and to understand how children's gender moderates these associations. The following research questions and hypotheses were investigated.

(1) To what extent is perceived parental involvement in homework related to children's math performance and motivation? Based on previous research, we expected perceived parental control to be negatively related to children's performance and motivation (Hill & Tyson, 2009; Silinskas et al., 2015), whereas perceived parental support is positively related to the children's performance and motivation (Cooper et al., 2000; Pomerantz et al., 2007) in sixth grade. Moreover, we expected low performance and low motivation in third grade to have a positive effect on perceived parental control and a negative effect on perceived parental support in sixth grade (Levin et al., 1997; Silinskas

et al., 2015). We also examined to what extent the development of children's math skills and motivation across third to sixth grades are mediated by perceived parental control and support.

(2) To what extent are the associations between perceived parental involvement in homework and math-related performance and motivation moderated by children's gender? Based on the mixed previous findings and lack of evidence on gender moderation in the math domain, we did not develop specific hypotheses, but, rather, considered three possibilities: (2a) no differences exist between boys and girls (Hong et al., 2010), (2b) stronger associations exist between perceived parental involvement and children's outcomes for boys (versus girls [Pomerantz et al., 2007; Silinskas et al., 2012]), and (2c) stronger associations exist for girls (versus boys [Kast & Connor, 1988]).

We also controlled for the possible influence of children's cognitive ability and maternal education on children's math achievement, motivation, and perceived parental assistance with homework. It has been shown that children's higher general ability relates to higher math skills (Karbach et al., 2013; Silinskas et al., 2013; Su, Doerr, Johnson, Shi, & Spinath, 2015) and less frequent controlling help with homework (Silinskas et al., 2013; Su et al., 2015). Similarly, higher parental education predicts better math performance (Karbach et al., 2013; Su et al., 2015), less frequent help with homework (Silinskas et al., 2013), and higher homework support (Moroni, Dumont, Trautwein, Niggli, & Baeriswyl, 2015; Su et al., 2015).

Methods

Participants and Procedure

This study is a part of a large-scale longitudinal study (the Kindergarten-School Study) following children from kindergarten to ninth grade. Participants were selected from kindergartens from different parts of Estonia, both the countryside and towns. In school, their classmates were also included. The participating 28 schools (53 classrooms) were from different parts of Estonia. The sample was highly homogeneous in terms of their ethnic and cultural background (e.g., Estonian-speaking schools and students). Mothers were asked to give their written consent for their children's participation in the study. Only children whose parents gave their written consent to participate (93%) were included.

In this study, we included only the children who participated in third and sixth grades and reported that their parents at least sometimes assist with math homework in sixth grade (n = 512). Then, the study participants (n = 512) were compared to the children who reported no parental homework involvement at all (n = 115). The results showed that across both grades (grade 3 and grade 6) the study participants were lower in math performance ($p < .001$), math self-concept ($p < .001$), and maternal ratings of task persistence ($p < .01$), suggesting that higher achieving and more motivated students reported their parents not to be involved with their math homework at all.

Children

In the present study, children's data (249 boys, 263 girls) from two measurement points were selected: the end of third grade (9–10-year-olds; April 2010 and 2011; n = 379) and the end of sixth grade (12–13-year-olds; April 2013 and 2014; n = 512). In Estonia, the composition of classes stays similar across the beginning of primary school (first to third grades) but tends to change later in primary school (fourth to sixth grades). In sixth grade, we included also new classmates of earlier participants, therefore, the sample size in the sixth grade increased compared to the sample size in the third grade. Trained research assistants administered questionnaires in classroom settings. Math tests were administered either by class teachers (third grade) or research assistants (sixth grade).

Mothers

The mothers of the children were asked to fill out questionnaires at home at the same time in third and sixth grades. Questionnaires were received from 473 third grade mothers and 338 sixth grade mothers. A total of 34 of the mothers had a basic education (9 years or less of formal education), 270 had completed secondary education (10–12 years), and 169 either studied in or had completed a college or university.

Measures

The psychometric properties of the mothers' questionnaire and the children's measures (i.e., valid number of cases, means, standard deviations, reliabilities [Cronbach's α], potential and actual ranges of the values, and skewness) are presented in Table 1. The items of the questionnaires are presented in Table 2.

Children's questionnaire

Perceived parental involvement in homework (sixth grade). First, children were asked to report how often their parents help them with math homework. Children had to mark one of the following six possibilities: *each day*, *once per week*, *a couple of times per month*, *once per month*, *less frequently*, or *not at all*. Those who responded *not at all* were asked to skip the rest of the questions concerning their perceptions of parental involvement in homework.

Second, children were asked about the ways parents help with math homework (see Table 2 for exact items). The questionnaire was developed based on earlier questionnaires (Dumont et al., 2012, 2014), but formulated to be math-specific. The questionnaire assessed two dimensions of involvement: (1) perceived parental control and (2) perceived parental support. Perceived parental control corresponded to the scale of "control" (Dumont et al., 2014) and perceived parental support corresponded to the scale of "support" (Dumont et al., 2012) and "responsiveness" (Dumont et al., 2014), which were created and based on self-determination theory (Ryan & Deci, 2000). Our questions were discussed within a group of researchers with educational and psychological educational backgrounds. The questionnaire was piloted in two classrooms including children of the same age. As this was the first time that the questionnaire was used in the Estonian context, we conducted an

Table 1. Psychometric properties of all study variables.

Variable	*N*	*M*	*SD*	Reliability (Cronbach's α)	Range		Skewness
					Potential	Actual	
Perceived parental homework involvement during math homework							
Control (Grade 6)	509	2.09	.79	.79	1–4	1–4	.35
Support (Grade 6)	510	3.54	.51	.74	1–4	1.25–4	−.1.22
Child outcomes							
Math performance (Grade 3)	379	16.98	4.34	.92	0–26	0–26	−.55
Math performance (Grade 6)	510	8.92	2.48	.53	0–14	0–14	−.55
Task persistence (Grade 3)	338	3.31	.78	.88	1–5	1–5	−.07
Task persistence (Grade 6)	420	3.56	.83	.89	1–5	1–5	−.28
Math self-concept (Grade 3)	369	3.78	.85	.85	1–5	1–5	−.59
Math self-concept (Grade 6)	511	3.26	1.01	.87	1–5	1–5	−.28
Control variables/ Moderators							
Gender:	512	1.51	.50		1–2	1–2	−.05
Boys	249						
Girls	263						
Maternal education:	473	2.28	.59		1–3	1–3	−.17
Low	34						
Medium	270						
High	169						
General ability (Grade 3)	367	7.41	2.63	.90	0–12	0–12	−.87

Table 2. Factor loadings (standardized estimates) of the confirmatory factor analysis for major study variables.

Items	Grade 3	Grade 6
Perceived parental homework involvement during math homework		
Control		
1. My parents help me with math homework even when I don't need any help		.63
2. My parents often interfere when I'm doing math homework		.53
3. When I'm doing math homework, my parents ask if I need help		.75
4. My parents afford opportunity to do math homework together		.77
Support		
1. My parents help me with math homework, if I ask them		.40
2. When I'm doing math homework, I can ask my parents for help at any time		.82
3. When I'm doing math homework, I can ask my parents for help if I do not understand something		.84
4. My parents help me with math homework, if I'm having difficulties.		.44
Child outcomes		
Math performance		
1. Calculation	.95	.56
2. Word problems	.90	.64
Task persistence during homework		
1. If difficulty arises in doing assignments, does the child easily start doing something else? *(reversed)*	.79	.77
2. Does the child actively try to manage even the difficult assignments?	.75	.75
3. Does the child easily give up trying? *(reversed)*	.78	.77
4. Does the child show activeness or endurance when doing the assignments?	.76	.75
5. If the assignment does not go well, does the child begin to busy her/himself with this and that? *(reversed)*	.80	.79
Math self-concept		
1. I do well in math, compared with my classmates	.78	.85
2. I'm capable in math	.86	.82
3. I am good at math	.78	.83

exploratory factor analysis by employing a principal axis factoring with oblimin rotation on the eight items. The two distinct factors emerged with eigenvalues greater than 1, confirming the final versions of the questionnaire. The confirmatory factor analysis provided further support for the proposed factor structure, as the good model fit was obtained (χ^2 [17] = 46.31, $p < .001$; Tucker-Lewis index (*TLI*) = .94; comparative fit index (*CFI*) = .97; root mean square error of approximation (*RMSEA*) = .06; standardized root mean square residual (*SRMR*) = .05). Table 2 presents the factor loadings of the confirmatory factor analysis in structural equation modeling (SEM). Both dimensions were assessed using four questions, with responses on a 4-point Likert-type scale ranging from 1 (completely disagree) to 4 (completely agree).

Math self-concept (third and sixth grades). Math self-concept was assessed using three identical items in third and sixth grades (e.g., "I do well in math, compared with my classmates" [Dumont et al., 2012; Kikas & Mägi, 2017]). Children rated their math self-concept on a 5-point rating scale (1 = does not apply to me at all, 5 = applies to me to a great extent). Math self-concept was specified as a latent variable (see Table 2 for the specific items and factor loadings of the confirmatory factor analysis).

Children's Tests

Math performance (third and sixth grades). Math tests were developed based on the National Curriculum for Basic Schools and Upper-Secondary Schools (Vabariigi Valitsus, 2002/2010) and tapped both calculation and problem-solving skills. The third-grade math test included 16 calculation tasks (e.g., 63–26 = ?) and 10 word problems (e.g., "The heights of four girls are 75 cm, 100 cm, 125 cm, and 150 cm. We know that Liis is the tallest. Ann is the shortest. Kai is taller than Sandra. How tall is Sandra?"). The sixth-grade math test included eight calculations and six word problems. To create a total math performance score, the scores of the calculation test and word problems were first standardized (Z-scores), and the latent variables of both standardized scores were specified (see Table 2 for the factor loadings of the confirmatory factor analysis).

General ability (third grade). Students' general ability was assessed using the D-set of the Raven progressive matrices (Raven, 1981). The set consisted of 12 tasks, and the sum of the correct answers was used in the analysis.

Mothers' Questionnaire

Task persistence (third and sixth grades). At both time points, mothers rated their children's task-persistent behavior using the Behavioral Strategy Rating Scale (for the original scale, see Zhang et al., 2011), which has been used in several earlier studies in Estonia (e.g., Kikas et al., 2014). Unlike Dumont et al. (2012, 2014), we decided to use mothers', not the children's, reports of homework behavior as third graders may not be very skillful in evaluating their behavior. Mothers were first asked to think about and recall how their children typically behaved when completing their homework and then to rate the children's behavior on a 5-point rating scale (1 = not at all, 5 = to a great extent). Two statements were positively worded and measured the degree to which children engaged in active and persistent behaviors (e.g., "shows activity and persistence in activities and solving tasks"). Three items were negatively worded and dealt with children's lack of persistence and helplessness (e.g., "easily loses his/her focus when the activity or task is not going well"). Before continuing with the analyses, the three negatively worded items were reversed (maximum score = 5) (see Table 2 for the specific items and factor loadings of the confirmatory factor analysis).

Analysis Strategy

To answer our first research question, we used SEM. The model construction was carried out according to the following steps. First, a set of measurement models was estimated (i.e., three separate models across two time-points for children's math performance, task persistence during homework, and math self-concept; one model including two correlating constructs of perceived parental involvement). Second, all four measurement models were combined into the final measurement model. Third, an SEM was constructed by including the stabilities of the three child outcomes and their longitudinal cross-lagged associations; both types of perceived parental involvement (control and support) were added to predict all child outcomes in sixth grade and be predicted by all child outcomes in third grade. Concurrent associations across the same time-point were also specified (Figure 1). In addition, all possible indirect effects from the child outcomes in third grade to the child outcomes in sixth grade via perceived parental control and support were estimated. Fourth, we controlled our model for children's general ability and mothers' education. Control variables were entered into the model to predict children's variables in third grade and perceived control and support in sixth grade. This was our final model for the whole sample. To answer our second research question on differences between boys and girls, we applied a multi-sample procedure by freely estimating a model for boys and a model for girls.

The SEM analyses were performed using the Mplus statistical package (Version 7.3; Muthén & Muthén, 1998–2010). The proportion of missing data for all study variables ranged from 0 to 34% (M = 13.03%, SD = 13.22%). We applied the Little's (1988) Missing Completely at Random (MCAR) test to investigate whether our data missingness was completely at random or not. The significant value of the test (Little's MCAR test: χ^2 (133) = 171.460, p = .014) indicated that our data were not missing completely at random. This made us consider other ways of treating missingness. Thus, we assumed that our data was missing at random (not completely at random), and a standard missing at random procedure was applied. All available data were used to estimate the model without imputing data. The distributions of the variables were skewed, and the model parameters were estimated using the MLR estimator (an Mplus option for maximum likelihood estimation with robust standard errors), which produces standard errors and chi-square test statistics for missing data with non-normal outcomes by means of a sandwich estimator (a method for estimating the covariance

matrix of parameter estimates without making assumptions about distributions nor assuming that the underlying model is correct).

As our data were hierarchical in nature (i.e., individuals nested within classrooms), but a multilevel structure was not the focus of the present study, we applied the TYPE = COMPLEX approach of Mplus (Muthén & Muthén, 1998–2010). This approach allows for adjusting the standard errors of the regression coefficients to the multilevel structure of the data without treating different levels as objects of analyses (e.g., within/individual and between/classroom level). Model fit was examined using five indices: the chi-square (χ^2), *CFI*, *TLI*, *RMSEA*, and *SRMR*. Non-significant χ^2, *CFI* and *TLI* values above .95, a *RMSEA* value below .06, and a *SRMR* value below .08 indicate good model fit (Hu & Bentler, 1999; Muthén & Muthén, 1998–2010). Only *CFI* and *TLI* values below .90 and *RMSEA* and *SRMR* values above .10 are indications of poor model fit (Kline, 2005).

Results

Descriptive Analyses

The psychometric properties of the key variables for the whole sample are presented in Table 1. The paired-samples *t*-test showed a significant increase in mean-level for task persistence, $t(286) = -6.58$, $p < .001$, and a significant decrease in math self-concept, $t(367) = 8.94$, $p < .001$, across third to sixth grades for the whole sample. The same pattern was true after running the test separately for boys and girls as well.

We also examined the mean-level gender differences in all study variables. The independent-samples *t*-test showed that, compared to girls, boys were higher in perceived parental control ($t[507] = 2.26$, $p < .05$), lower in task persistence during homework ($t[336] = -4.68$, $p < .001$ and $t[418] = -5.57$, $p < .001$, in third and sixth grades, respectively), and higher in self-concept ($t[367] = 3.03$, $p < .01$ and $t[509] = 1.79$, $p < .08$, in third and sixth grades, respectively). Boys and girls did not differ in terms of perceived parental support, math performance in third and sixth grades, or levels of maternal education and general ability in third grade.

Measurement Models

Before conducting analyses to answer our key research questions, we constructed a set of measurement models for children's outcomes across third and sixth grades as well as for children's perceptions about their parents' homework involvement. For child outcomes, we started by estimating a separate measurement model for each construct. In order to ensure time invariance, the factor loadings of the same items were set equal across both measurement points (third and sixth grades). We allowed autocorrelations between the residuals of the same items across time. Finally, latent factors were allowed to correlate with each other. For the constructs of children's perceptions about their parents' homework involvement (i.e., control and support), latent factors were correlated as well. The separate measurement models were then combined to form the final measurement model. The separate and the final measurement models showed good model fits (i.e., model fits within criteria range of *TLI* > .95; *CFI* > .95; *RMSEA* < .08; *SRMR* < .06). The factor loadings of the final measurement model are presented in Table 2; the correlation matrix between latent constructs and control variables is presented in Table 3.

Structural Model of Perceived Parental Involvement and Children's Math-related Performance and Motivation

The final structural equation model was constructed following the steps described in the Analysis Strategy section. The final structural equation model showed good fit (χ^2 [363] = 640.01, $p < .001$; *TLI* = .94; *CFI* = .95; *RMSEA* = .04; *SRMR* = .05). The results (i.e., only significant paths and significant

Table 3. Correlations between the latent constructs of the main study variables and observed control variables.

		1	2	3	4	5	6	7	8	9	10
	Perceived parental homework involvement during math homework										
1	Control (Grade 6)										
2	Support (Grade 6)	.31***									
	Child outcomes										
3	Math performance (Grade 3)	−.24***	.01								
4	Math performance (Grade 6)	−.39***	−.11†	.70***							
5	Task persistence (Grade 3)	−.19**	−.04	.28***	.26***						
6	Task persistence (Grade 6)	−.25***	.02	.22***	.27***	.72***					
7	Math self-concept (Grade 3)	−.26***	−.03	.43***	.45***	.27***	.20***				
8	Math self-concept (Grade 6)	−.27***	.01	.45***	.56***	.18**	.33***	.48***			
	Control variables/ Moderators										
9	Gender (1 = boy; 2 = girl)	−.09†	.02	−.07	.03	.27***	.28***	−.16**	−.07		
10	Maternal education	−.09†	−.09†	.19***	.22***	−.06	.01	−.02	.09†	.03	
11	General ability (Grade 3)	−.12*	−.05	.32***	.35***	.13*	.13*	.21***	.32***	.06	.04

Note: † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

concurrent associations) are presented in Figure 2. The first research question concerned the extent to which perceived parental involvement relates to the math performance, math self-concept, and task persistence across third through sixth grades. First, as presented in Figure 2, perceived parental control in sixth grade negatively predicted children's math performance, self-concept, and task persistence: The more children perceived their parents to be controlling in homework situations, the lower were the children's math performance and math self-concept as well as task persistence in homework situations. The results showed that perceived parental support positively related to task persistence: The more children perceived their parents to be supportive, the higher task persistence children demonstrated in homework situations.

Second, the results showed (Figure 2) that self-concept in math in third grade negatively predicted perceived parental control in sixth grade: The lower the math self-concept was, the more children perceived their parents' involvement in homework to be controlling.

Third, we were interested to find whether perceived parental involvement in homework mediated the relation between children's math performance and motivation across third to sixth grades. The results identified three instances when the development of children's outcomes was marginally ($p < .10$) mediated by perceived parental control. Perceived parental control fully mediated two relations: (1) self-concept → control → performance (*standardized indirect estimate* = .034, $SE = .020$, $p = .094$), and (2) self-concept → control → task persistence (*standardized indirect estimate* = .029,

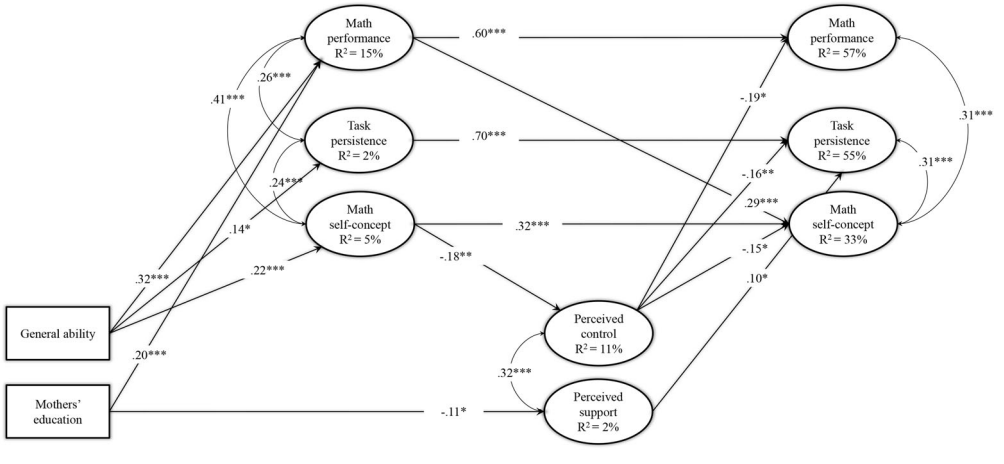

Figure 2. Links of child-perceived parental control and support to children's math performance, task persistence in homework, and math self-concept after controlling for children's general ability and mothers' education. Note: Standardized solution of structural equation model, non-significant paths and correlations are not shown ($n = 512$); *$p < .05$; **$p < .01$; ***$p < .001$.

SE = .016, *p* = .079). In addition, perceived parental control partly mediated one relation: self-concept → control → self-concept (*standardized indirect estimate* = .026, *SE* = .015, *p* = .074). Taken together, these results indicate that low self-concept in math predicts children's increased perceived control during homework, which in turn predicts poor math performance and low motivation (i.e., low task persistence and low self-concept in math).

Moderating Role of Children's Gender

Our second research question concerned the extent to which the associations were moderated by children's gender. Applying multi-sample procedure by splitting the data set by gender, produced a good model fit (χ^2 [759] = 1161.33, *p* < .001; *TLI* = .92; *CFI* = .93; *RMSEA* = .05; *SRMR* = .06). First, the results showed (Figure 3) that some of the previously described associations are more relevant for boys than for girls. For instance, perceived parental control in sixth grade negatively predicted homework task persistence and math self-concept in boys, but not in girls. Second, one association became significant for girls, but not for boys: Math self-concept in third grade negatively predicted girls' perceived parental control. Third, a few significant associations for the whole sample became non-significant for both boys and girls: The relation between perceived control and math performance in sixth grade and between perceived support and task persistence in sixth grade. Fourth, a few new associations emerged as significant: For boys, low task persistence in homework in third grade predicted higher perceived control while high math self-concept predicted higher math performance in sixth grade. Finally, in the multi-group analyses, only one mediation effect was marginally significant: For boys, perceived control in sixth grade mediated the association between task persistence in third and sixth grades (*standardized indirect estimate* = .044, *SE* = .025, *p* = .086).

Additional Analyses

Apart from treating the motivational variables and the performance at the same level (allowing only for correlations between them in sixth grade), we also estimated an alternative model, where performance appeared as an outcome of the motivational factors. That is, parental control/support in sixth grade was set to predict motivation in sixth grade, which, in turn, was set to predict student

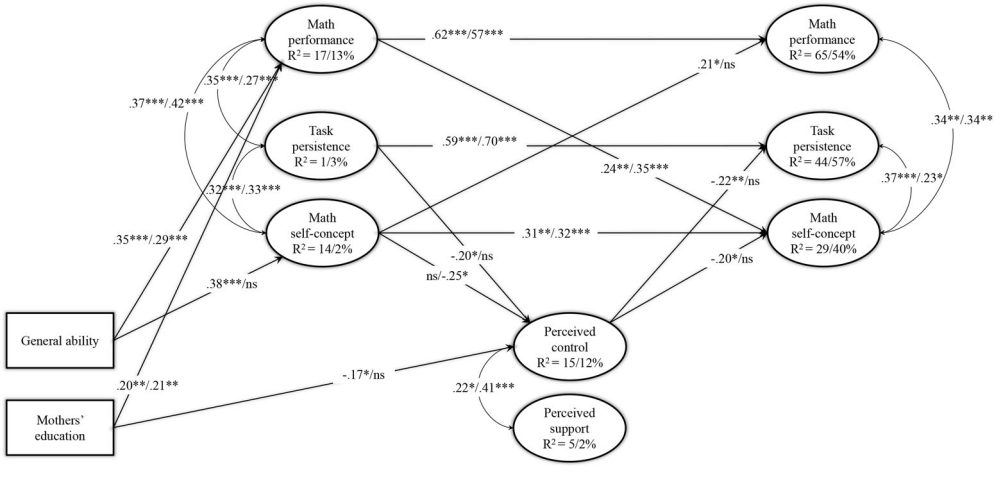

Figure 3. Child-perceived parental control and support and children's math performance, task persistence in homework, and math self-concept after controlling for children's general ability and mothers' education. Note: Standardized solution of Structural Equation Model, non-significant paths and correlations are not shown. The first coefficient is for the boys (*n* = 249), the second coefficient is for girls (*n* = 263); *p < .05; **p < .01; ***p < .001.

math achievement. This was done by applying two modifications to our final model: (1) math performance in sixth grade was predicted by task persistence in sixth grade (not third grade), and (2) math performance in sixth grade was predicted by self-concept in sixth grade (not third grade). Because of that, math performance in sixth grade was left to be uncorrelated with task persistence in sixth grade and self-concept in sixth grade. With a slight variation in the chi-square statistics, χ^2 [365] = 640.64, $p < .001$; *TLI* = .94; *CFI* = .95; *RMSEA* = .04; *SRMR* = .05, the model fit remained similar to the model fit of the previously reported final model. The findings showed that the math performance in sixth grade was predicted by math self-concept ($\beta = .262$, $p < .001$), but not by task persistence in sixth grade ($\beta = .021$, $p = .737$). We also calculated the indirect paths between motivation and performance measures in third grade and math performance in sixth grade both via only control/support and via control/support and motivation measures in sixth grade. None of the indirect paths reached significance ($p < .05$).

Discussion

Research based on self-determination theory (Ryan & Deci, 2000) has differentiated between two types of parental homework assistance: parental control and support (Grolnick & Pomerantz, 2009; Pomerantz et al., 2007), the former of which has been shown to have detrimental effects and the latter of which is supposed to enhance children's educational outcomes (Dumont et al., 2012, 2014; Karbach et al., 2013; Moroni et al., 2015; Silinskas et al., 2015). Our study contributed to the topic by examining the role of children's perceptions about controlling and supportive assistance with math homework and its longitudinal relations with math performance and motivation (i.e., task persistence during homework and self-concept in math) across third and sixth grades. We found support for the inhibiting effects of perceived control and some support for the positive role of children's perceptions of support with math homework on children's performance and motivation. In addition, when examining the relations separately for boys and girls, we found that perceived parental control was more detrimental for boys' motivation (i.e., task persistence in homework and math self-concept) than for that of the girls.

Perceived Parental Involvement Predicts Children's Math Performance and Motivation

In line with our expectations and earlier studies, we found that higher perceived parental control was related to lower math performance (Dumont et al., 2012; Hill & Tyson, 2009; Núñez et al., 2015) and motivation (i.e., task persistence and math self-concept) (Levpuscek & Zupancic, 2009; Rogers, Theule, Ryan, Adams, & Keating, 2009) in sixth grade. These negative effects may be related to children's perceptions of interference, intrusiveness, and negativity during parental controlling homework assistance (Pomerantz & Eaton, 2001; Silinskas et al., 2015). Our study only partially confirmed the importance of autonomy supportive involvement. Although higher perceived parental support was related to more persistent learning behavior during homework, it was related to neither math self-concept nor math performance. Although supporting children's autonomy is emphasized in middle school, its value has not been concordantly demonstrated by empirical studies. While some researchers (e.g., Núñez et al., 2015; Patall et al., 2008) have found its enhancing effect, others (e.g., Dumont et al., 2012) have not found significant links between perceived parental support and math performance, task persistence, and academic self-concept. Similarly, Karbach et al. (2013) found no relation between children's perceptions of support (i.e., autonomy and responsiveness) and math achievement, after children's cognitive ability and parental education were taken into account.

Taken together, for both types of homework involvement, the associations were stronger with motivational outcomes than those with performance. This pattern of associations is in accordance with empirical evidence of previous research (e.g., Dumont et al., 2012; Rogers et al., 2009) and the meta-analysis of Patall et al. (2008), in which the authors concluded that parental involvement in homework relates to proximal performance-related outcomes (e.g., motivation) rather than the

achievement itself. Our results also confirmed the conclusion of other studies that not all kinds of parental involvement are beneficial for children's outcomes (Cooper et al., 2000; Moroni et al., 2015; Silinskas et al., 2015). For instance, it has recently been emphasized that it is not how often parents help, but rather in what ways parents help that matters (Moroni et al., 2015 [see Pomerantz et al., 2007, for a review]). That is, homework assistance is beneficial for children's learning if it supports autonomy, supports competence, is well structured, and is emotionally responsive to children's needs; alternatively, if parental homework assistance is controlling, intrusive, or interfering, accompanied by negative parental emotions and the frequent taking over of children's responsibilities, then it may have paradoxically negative links to children's learning outcomes (Cooper et al., 2000; Dumont et al., 2012, 2014; Hill & Tyson, 2009; Grolnick & Pomerantz, 2009; Silinskas et al., 2015).

Our results are also in line with self-determination theory (Ryan & Deci, 2000), according to which parental assistance with homework first affects children's intrinsic motivation by satisfying or not satisfying children's psychological needs for competence, autonomy, and relatedness. As such, intrinsic motivation affects children's performance. The results of the present study confirm that, indeed, perceived parental control may reduce children's intrinsic motivation (e.g., feeling of competence, ability to learn and to perform certain tasks). However, we found only limited support for the enhancing role of support in achievement and motivation. Several reasons for these differential findings for controlling and supportive help may exist. One possibility is that parental control is generally inhibiting whereas the enhancing effect of support is more subtle and may depend on a number of child and parent characteristics. That is, it is quite easy to engage in controlling behavior concerning homework (e.g., demand that the homework be completed; check if homework is correct). Studies have shown that it is more common among parents with lower education (Silinskas et al., 2013; Su et al., 2015). In contrast, support behavior is more nuanced: One should carefully observe the needs and skills of the child in order to provide as much support as needed. Supportive behavior is taught to teachers to apply it effectively in classroom settings (Hornstra, Mansfield, van der Veen, Peetsma, & Volman, 2015; Reeve, Jang, Carrell, Jeon, & Barch, 2004). Yet, unlike teachers, not all parents may be skillful in applying support, as it requires considering children's perspective when responding to their needs.

Role of Math-Related Performance and Motivation in Children's Perception of Their Parents' Homework Involvement

We also investigated the extent to which children's characteristics (e.g., math-related performance and motivation) predict perceived parental involvement in homework. We expected low performance and low motivation to increase the perception of parental control and decrease perceived parental support (Levin et al., 1997; Silinskas et al., 2015). Contrary to our expectations, math performance—although significantly correlated with perceived parental control (Table 3)—did not have a significant effect on perceived parental control after considering children's general ability and maternal education. This finding is surprising because previous literature has been consistent in interpreting that parents provide more help by monitoring and teaching if their children's performance is poor (Pomerantz & Eaton, 2001; Silinskas et al., 2015). There might be a few explanations for this finding. First, previous studies mostly asked parents to report on their own involvement in children's homework, whereas in this study we used children's reports. Thus, it seems that children's motivation (versus performance) plays a larger role in their own ratings about how controlling their parents are concerning math homework. Second, in this study, the associations were controlled for in terms of children's general ability in third grade and maternal education, which might have reduced the strength of association of math performance in third grade on perceived parental involvement in sixth grade. A closer investigation of the zero-order correlations provided support for this notion. For instance, high general ability and high maternal education significantly related to high math performance. Also, as in previous studies (Moroni et al., 2015; Silinskas et al., 2013; Su

et al., 2015), children with lower cognitive ability tended to report more parental control in sixth grade.

In line with our expectations, higher math self-concept in third grade was related to lower perceived parental control in sixth grade. This result aligns well with some previous results that students less confident in academic subjects reported more conflict and more parental interference during homework (Dumont et al., 2012). Low academic self-concept is evident in uncertain learning behaviors, such as hesitating when solving tasks or having doubts about the correct answer. These behaviors may evoke controlling behaviors from parents. In addition, it is possible that children with low self-concept in math have a tendency to perceive their parents' involvement as controlling.

Perceived parental support was not predicted by children's math performance or motivation. This result is in line with the previous findings by Dumont et al. (2012), who found that parental support in homework in eighth grade was not related to math grades in fifth grade or academic self-concept in fifth grade. Thus, children's perceptions of parental support concerning math homework may be related to some other parental behaviors or stable characteristics, such as self-efficacy, parenting stress, warmth, and behavioral and psychological control (Bandura, 1993; Darling & Steinberg, 1993) rather than their reaction to children's math-related outcomes. Almost 40% of children's reports ($n = 203$) reached the ceiling in perceived parental support, suggesting restrictions in obtaining significant associations with children's outcomes. Furthermore, it is possible that sixth graders, specifically those with lower abilities, may have difficulties answering questionnaires; thus, their evaluations of maternal help—that is, differentiations between control and support—may be inaccurate. For instance, German 12-year-olds were not able to distinguish between supportive structure and controlling behavior (Karbach et al., 2013), suggesting the possibility that highly supportive parents can also be perceived as overprotective and interfering with students' autonomy (Karbach et al., 2013; Levpuscek & Zupancic, 2009). Age-specific restrictions and capabilities when answering questionnaires and distinguishing between parental behaviors should be taken into account when interpreting our results.

Finally, we expected the development of children's math skills and motivation across third and sixth grades to be mediated by perceived parental involvement. Overall, we found support for this expectation, as a low math self-concept related to increased children's perceptions of parental control, which then decreased children's math performance, task persistence during homework, and math self-concept. These indirect associations were marginally significant. However, such a finding is not surprising because math achievement, math self-concept, and task persistence in homework are relatively stable constructs and determined by a great variety of factors not assessed in our study (Ahadi & Diener, 1989).

Moderating Role of Children's Gender

Children's gender moderated associations between their motivational outcomes in third grade and perceived parental control in sixth grade. In boys, task persistence predicted perceived parental control, whereas in girls, math self-concept predicted perceived parental control. There might be several reasons for such findings. For instance, boys who give up easily or lose focus and interest in completing homework assignments when the tasks are difficult perceive their parents to be controlling during homework situations. This is not surprising given the findings of the previous research that girls display significantly better self-regulation than boys (Pajares, 2002; Zimmerman & Martinez-Pons, 1990). This is also true in the domain of math, where boys typically show higher self-efficacy and interest (Meece & Painter, 2008). Thus, parents may provide more unrequested help with homework to task-avoidant boys and those low in self-regulation during homework (versus girls) as well as to boys who lack persistence in homework may perceive their parents' involvement as restricting their autonomy. In contrast, consistent with previous research, girls were found to be more task persistent than boys, but having a lower self-concept than boys (Eccles et al., 1993; Pajares, 2002), which

may explain why parents of girls with a low self-concept in math become involved by providing unrequested help with homework.

Moreover, gender differences emerged in the associations between perceived parental control and motivation in sixth grade: Higher perceived parental control was related to lower task persistence and lower math self-concept for boys, but not for girls. These results are interesting as they show a tendency for boys to be especially sensitive to the effect of perceived parental control. A similar result was obtained in the study of somewhat smaller children in the domain of reading (Silinskas et al., 2012), where the detrimental effect of parental teaching in first grade was also more evident for boys than girls. This result might be due to the fact that, consistent with the previous literature, boys get more direct homework help, which is often more controlling and intrusive (Bhanot & Jovanovic, 2005; Cooper et al., 2000; Dumont et al., 2012, 2014), than girls. Thus, this increased unrequested parental control undermines feelings of autonomy, competence, and relatedness, thereby inhibiting boys' learning-related motivation to a greater degree than that of the girls.

Limitations and Future Directions

Some limitations need to be taken into account before generalizing the results of the present study. First of all, most of the data were collected from children. Ideally, in future research, empirical studies should measure both actual parent behavior and student perceptions (see, e.g., Gonida & Cortina, 2014). However, we did our best to justify our choice of children's reports on their parents' involvement by highlighting the focus of our study—it is not an objective measure of involvement, but rather children's interpretation of involvement that matters (Bandura, 1993; Luria, 1976). In addition, it has been shown that children's reports may be less affected by social desirability bias than parental reports (Sessa, Avenevoli, Stainberg, & Morris, 2001). Moreover, 9–10-year-old children's reports on parental homework control correlated strongly with parents' perceived homework control ($r = .67$ [Su et al., 2015]), suggesting an agreement in perceiving parental control concerning homework.

The second limitation of the present study concerns the specifics of the scale of parental control and support. Our scale of parental support captured the construct of parental support as a content-oriented rather than autonomy-oriented support (Xu, Fan, Du, & He, 2017). The choice of the scale may explain why there were too few significant positive associations of children's perceptions of parental support on their motivation and performance (as compared with the inhibiting effects of their perceived control). Therefore, future studies should differentiate between content-oriented and the autonomy-oriented support in an attempt to relate parental support to children's outcomes. Relatedly, it should be acknowledged that although we operationalized our measures of parental involvement as type of involvement with homework, child-perceived parental control and support represent parental styles of parent-child interaction during homework rather than instructional quality of such involvement. That is, different instructional-type practices during homework may be provided in an interfering way (e.g., the parent does the homework, and the child simply listens [see Patall et al., 2008]) or in an autonomy supportive way (e.g., the parent gives facilitating cues or metacognitive probes). However, although it seems reasonable to assume that interference is associated with the controlling style (Gonida & Cortina, 2014), the instructional quality of homework involvement and its relation to the styles of parent–child interaction during homework remain the target for the future studies.

Third, all variables were math-related, but task persistence was not. Although we assume that parents also take math-related task persistence into account when evaluating children's overall task persistence during homework situations, task persistence can indeed be subject specific. Therefore, in our study, estimating overall task persistence could have reduced the chances of finding significant associations with math specific-constructs. Future studies could take this into account and estimate all constructs as one-subject specific.

Fourth, although this study presents predictive relations, our longitudinal data cannot imply any inference on causality. In particular, caution should be taken when interpreting relations between perceived parental involvement and children's outcomes in sixth grade, because these measures were administered at the end of sixth grade. However, we did our best in phrasing the questions about their parents' involvement in such a way so as to capture the time span from before the actual data collections were implemented.

Finally, the specifics of the cultural environment of Estonia—the country in which the data were collected—should be noted. Children are expected to do homework from the beginning of their school career, and there might be strong expectations for parents to become involved in children's homework. Still, parents vary a lot in their value systems and practices (Tulviste & Kikas, 2010), and the high level of math content in the curriculum may be incomprehensible for some parents who, thus, are not capable of supporting their children with math homework. It remains a challenge for the future research to investigate the extent to which cultural differences may shape the role of perceived parental involvement in math. However, our results and conclusions are similar to those made in different cultural contexts (Germany: Dumont et al., 2012; Karbach et al., 2013; the USA: Cooper et al., 2000).

Conclusion and Educational Implications

The results of the present study add to the existing literature in several ways. First of all, the results highlight the importance of the differential effect of two types of parental involvement in homework (i.e., children's perceptions of parental control support) on children's motivation (not only performance, as it has been consistently shown in the previous research). The results also highlighted a great importance for parents to consider how their sons in particular (versus daughters) interpret parental efforts to help with homework. For instance, boys' motivation (i.e., task persistence during homework and math self-concept) is reduced if boys perceive their parents to be controlling their homework efforts. Furthermore, we found some tentative gender differences in perceiving parental control: Girls who did not feel confident in their math abilities and boys who did not show persistence during homework rated their parents as being controlling during homework three years later.

In sixth grade, math topics become more demanding, children start getting more math homework than before, and more time is needed to complete homework tasks. Therefore, more parental help might also be needed to succeed in acquiring new math skills. Thus, based on the results of the present study, parents should be advised to pay a special attention to how their children perceive and interpret parental help with homework. This is crucially important because it is neither parental intentions nor the frequency of actual involvement, but rather children's perceptions of such involvement, that matter for the subsequent development of math performance, homework task persistence, and math self-concept. Another educational implication that follows the results of the present study suggests that quality of parental involvement with homework matters. The growing body of literature suggests that the quality of parental homework assistance can be improved by parent training programs (e.g., Chang, Park, Singh, & Sung, 2009). Finally, strong school-family partnerships and cooperation is an important factor improving the quality of parental involvement in children's homework (Haris & Goodall, 2008). This way, through cooperating with families, teachers can guide parents on how to assist their children with homework so that it does not trigger negativity in homework situations.

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