

## Investigation of Parental Involvement Tasks as\* **Predictors of Primary Students' Turkish, Math, and Science & Technology Achievement**

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### Abstract

*Problem statement:* Parental involvement is used as an umbrella term to imply parents' efforts to take an active role in their children's education. In this sense it takes many forms ranging from parent-child communication to participating/volunteering in school activities. Although parental involvement is one condition for students' success, the relation between parental involvement and academic achievement must be studied through a task- and grade (age)-specific approach.

*Purpose of the study:* It was aimed to investigate the parental involvement tasks as predictors of primary students' (1<sup>st</sup> to 5<sup>th</sup>) Turkish, math, and science & technology achievement in the form of end-of-the-year scores.

*Method:* The study was designed as an associational model employing the correlation method. The participants were 1590 parents. They were parents of first to fifth grade students from six primary schools in Malatya province. Turkish Parental Involvement Scale (TPIS), which includes 39 items under 8-factors (parental involvement tasks), was used to gather data from parents as the predictive (independent) variable. Also, these parents' children's end-of-the-year achievement scores from Turkish, math, and science & technology courses were used in regression analyses as the predicted (dependent) variable.

*Findings and results:* This research found significant low-to-moderate correlations (ranging between  $r=.103$  and  $r=.338$ ), either in a positive or negative direction, between parental involvement and students' Turkish, math, and science & technology achievement scores through different grades. Relatively the strongest predictors of Turkish achievement scores

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were parental *support for child's personality development* and *support for child's socio-cultural development, volunteering, communication with child, and helping with homework*. Relatively the strongest predictors of math achievement scores were the same with Turkish except for *helping with homework*. Relatively the strongest predictors of science & technology achievement scores were *parental support for child's personality development, volunteering, and communication with child*. Tasks such as *communication with teacher/school, personal development, helping with homework* (except for fifth grade Turkish scores), and *enabling home-setting* were not found as significant predictors of academic achievement. Parents' support for their children's socio-cultural development and volunteering together explained 18.6% of the variance in students' Turkish achievement scores and 24.2% of the variance in math achievement scores in first grade. The predictive powers of other associations were generally low ( $R^2 < .096$ ).

*Conclusions and Recommendations:* It was concluded that parents' support for their children's personality and socio-cultural development, volunteering, and communication with child were found to be significant predictors of pupils' academic achievement. Thus, it was considered important that children should be addressed directly in terms of parental involvement. Parents were recommended to support their children's socio-cultural development and volunteer during the first years of school, and next were recommended to support their personality and especially during the fifth year have effective communication with their children.

*Keywords:* Parental involvement, primary students, academic achievement, Turkish, math, science & technology.

Engaging parents into their children's education has long been regarded as an important policy to improve the total quality of education (Domina, 2005; Epstein, 1995; Fan and Chen, 2001; Driessen, Smit, and Slegers, 2005; Edwards and Warin, 1999; Harris and Goodall, 2008; Lee and Bowen, 2006). Above all, as parents are their children's earliest teachers, they have both the right and the motives to take an active part in the child's achievement development (Slaughter and Epps, 1987), and they bring "a lifelong commitment to the child's well-being and deep caring" (Hiatt-Michael, 2008, p. 41). From a more pragmatic and pedagogical perspective, parental involvement has been reported to lead to higher school achievement and attainment (Aslanargun, 2007; Driessen et al., 2005; Edwards and Warin, 1999; Harris and Goodall, 2008; Hiatt-Michael, 2008; Muller, 1998; Stewart, 2008), better social functioning (Driessen et al., 2005), higher student attendance, less suspension and expulsion, better graduation rates, higher satisfaction with the school, student improved goal-setting and pride in school work (Hiatt-Michael, 2008), and pupils' increased motivation, attachment to school, responsive behaviors, and self-esteem (Yıldırım and Dönmez, 2008).

Parental involvement is also highlighted as one of the fifteen principles considered in shaping the curriculum components and content in Turkish primary

curricula (Ministry of National Education [MoNE], 2005). It is acknowledged in the curriculum that parental involvement is obviously important for better student performance; thus, parents should be part of instruction especially in activities out of the school and can trace their children's progress using the measurement and evaluation instruments in the curriculum (MoNE, 2005, p. 25). In a similar vein, General Directorate of Teacher Training and Education (GDoTTE) (2006) defined *provision of parental involvement and coordination* as one of the general capabilities of teachers, expecting teachers to involve parents into school and classroom activities or to exchange information regarding the progress of the pupil.

#### *Defining parental involvement*

Parental involvement is used as an umbrella term to imply parents' efforts to take an active role in their children's education. In this sense it takes many forms (Muller, 1998). Epstein (1995, 2004), as a leading researcher in the field, sorts out the types of parental involvement as parenting skills, communicating with school, volunteering in school, helping their children learn at home, taking part in the school decision making process, and collaborating with the school community. The spectrum of parental involvement is very large ranging from home-based to school-based tasks and the tasks independent of space. The mostly referred home-based tasks include parent-child communication/discussion, help in or supervision of homework (Green and Hoover-Dempsey, 2007; Gürbüztürk and Şad, 2010; Lee and Bowen, 2006; Muller, 1995, 1998), structuring home activities (Lee and Bowen, 2006), home supervision (limiting TV, going out, etc.) (Sui-Chu and Willms, 1996), providing favorable home-settings/home resources or home learning environment (Begüm, 2007; Gürbüztürk and Şad, 2010; Lee and Bowen, 2006; Sabancı, 2009; Slaughter and Epps, 1987), or homeschooling (Green and Hoover-Dempsey, 2007). Those school-based involvement tasks are usually defined as school contact and participation/volunteering activities (Green and Hoover-Dempsey, 2007; Gürbüztürk and Şad, 2010; Lee and Bowen, 2006; Sabancı, 2009; Stewart, 2008; Sui-Chu and Willms, 1996), parent-teacher conferences (Domina, 2005; Gürbüztürk and Şad, 2010; Lee and Bowen, 2006; Stewart, 2008; Sui-Chu and Willms, 1996), and attending PTA meetings (Domina, 2005). Some other parental involvement tasks can be categorized as parental aspiration/expectations for the child's achievement (Fan and Chen, 2001; Green and Hoover-Dempsey, 2007; Lee and Bowen, 2006; Muller, 1998; Sohn, 2007), parents developing themselves personally and supporting their children's personal and socio-cultural development (Gürbüztürk and Şad, 2010).

#### *Parental involvement and academic achievement*

Although parental involvement, as mentioned earlier, has been reported to be one of the conditions for students' success, a holistic approach seems to be misleading as parental involvement (tasks) is (are) operationally defined differently (Fan and Chen, 2001; Mau, 1997). The association between parental involvement and positive student outcomes can be through different mechanisms such as socializing with the child (e.g., supervising homework and marking the importance of school), generating social control over children thanks to relations with teachers and other parents (thus monitoring child's behaviors and teaching practices), and having access

to insider information (thus knowing better about problems and possible solutions in advance) (see Domina, 2005, p. 235-236). Also what makes successful involvement **may change according to a child's age (Muller, 1995)**. That means parental involvement can be associated with positive student outcomes across elementary, middle, and high school if developmentally appropriate (as cited in Hoover-Dempsey et al., 2005, p. 107). Therefore, the relation between parental involvement and success must be studied through a task- and grade (age)-specific approach.

One of the marked parental involvement tasks highly associated with student achievement is talking about or discussing school-related issues. Jeynes (2005) found discussing school issues is positively correlated with adolescent academic achievement. Lee and Bowen (2006) reported a similar association between parent-child educational discussions and elementary European American students' achievement (but a negative one with Hispanic/Latino ones). Muller (1998) found parent-student talking about school is associated positively with math scores of eighth graders but not tenth graders. Stewart (2008) reported parent-child discussions (about activities and events at school) play a substantial role in increasing **tenth grade students' achievement**. Sui-Chu and Willms (1996) found discussing school activities had a strong impact on academic achievement of middle school students. On the contrary Chen (2008) found that parental support represented by helping students find ways to resolve school problems had a negative association with academic performance of Hong Kong students at grade ten.

Attending/volunteering in school activities is another well-documented parental involvement task associated with achievement. Begüm (2007) found parents' participation in school activities had an impact on the math and reading performance of preschool, first, third, and fifth grade European American, Hispanic, and African American children, but not on Asian children. Similarly Jeynes (2005) reported the **positive impact parents attending school functions had on adolescent students' academic achievement**. Both Lee and Bowen (2006) and Sohn (2007) found an **association between parents' school involvement and better success of young pupils**. Also, Mau (1997) reported a positive association between parents participation in school events, meetings, or acting as volunteers and school performance of white American high school students, but it was vice versa for Asian American students. Yet, in different contexts, there may be no connection as reported by Sui-Chu and Willms (1996) for U.S. middle school students or the association can take a reverse direction as reported by Muller (1998) for tenth grade boys in particular. Similarly, Muller (1995) found volunteering a negative predictor of math achievement of adolescents.

Parents' aspiration and expectation for achievement also have a moderate level of association ( $r \approx .40$ ) with students' academic achievement as reported in a meta-analysis by Fan and Chen (2001). Lee and Bowen (2006) found that higher educational expectations of parents for their children were associated with higher academic achievement of primary students. Slaughter and Epps (1987) put that family influences high-school students' achievement indirectly via high educational aspirations. Sohn (2007), too, defines parental expectations about children's

education as a major mediating factor leading to more frequent parent involvement at home, in school, and in the community. Unlike these findings, Goldenberg, Gallimore, Reese, and Garnier (2001) found no positive impact of even high educational expectations of Latino immigrant parents' on their child's school performance.

One of the most controversial relationships seems to be between parental supervision and student performance. Fan and Chen (2001) found in their meta-analysis that a child's academic achievement has the weakest correlation ( $r = \approx .09$ ) with parental home supervision. Parental supervision in the form of checking on the child's friends or homework (Jeynes, 2005); limiting TV time, limiting going out, monitoring homework, and expecting to come home after school (Sui-Chu and Willms, 1996); managing children's activity time (Lee and Bowen, 2006); or providing structure and setting limits for nonacademic activities (Mau, 1997) did not have a positive (sometimes had even negative) effect on student academic achievement. Moreover, Chen (2008) found parental support is negatively related to academic achievement of adolescent Hong Kong students. On the contrary, Muller (1998) reported parents' restriction of activities with friends and weekday television watching was the only form of involvement associated with higher tenth grade scores (especially with boys). Also, Fehrmann et al. (1987) found monitoring and supervision positively related to children's academic achievement (as cited in Sui-Chu and Willms, 1996).

As one of the most common parental involvement tasks, helping with homework is also associated with achievement. Surprisingly, this association was found by Driessen et al. (2005) to be negative considering math achievement of the eighth graders. Mau (1997) reported that the more parents check on and help with the child's homework, the less likely the child is to perform well. Lee and Bowen (2006) found parental homework help was negatively associated with European American children's academic achievement and positively associated with African American and Latino/Hispanic children's achievement. The negative part of the association is reasonably interpreted as parents' intervention as a result of the child's poor academic performance or parents' lack of intervention as a result of the child's high performance (Fan and Chen, 2001; Driessen et al., 2005; Sui-Chu and Willms, 1996; Mau, 1997).

Another association is reported between academic achievement and interaction/communication with teachers/schools either in a positive (Çelenk, 2003; Lahaie, 2008; Muller, 1998) or negative direction (Domina, 2005; Muller, 1998; Sui-Chu and Willms, 1996). Some other functions of a child's academic achievement include parents' positive communication with children (Çelenk, 2003; Jeynes, 2005), and providing convenient home resources or settings (Begüm, 2007; Lahaie 2008; Slaughter and Epps, 1987).

### *The purpose of the study*

Although parental involvement is reflected as a necessarily positive function of student achievement (Stewart, 2008), the literature provides controversial findings about what kind of parental involvement tasks are positive predictors of achievement in different subjects. As Lahaie (2008) puts it, even teachers and researchers may not be aware of some forms of parental involvement that contribute to a child's achievement. Also, the research on this issue handles middle school and high school students more than elementary school students (Domina, 2005). Thus, in this study it was aimed to investigate the parental involvement tasks as predictors of primary students' (1<sup>st</sup> to 5<sup>th</sup>) Turkish, math, and science & technology achievement in the form of end-of-the-year scores.

### Method

The study was designed as an associational model employing the correlation method (Büyüköztürk, Çakmak, Akgün, Karadeniz, and Demirel, 2010). The participants were 1590 parents (806 mothers and 784 fathers; aged 37.7 years on average and ranging between 21–52 years). They were parents of first to fifth grade students (178 first grade, 390 second grade, 452 third grade, 260 fourth grade, and 310 fifth grade) from six primary schools in Malatya province (100. Yıl Primary School, Atatürk Primary School, Cumhuriyet Primary School, Hayrettin Sönmezay Primary School, Kazım Karabekir Primary School, and Private TED Primary School). These schools were chosen purposefully from different socio-economical stratum to represent the general population. After required permissions were obtained from provincial directorate of national education, the parents were accessed through their children's schools during the second semester of the 2009-2010 school year.

### *Instruments*

The data about parents' type and level of involvement came from a five-point (never-to-always) Likert type scale, Turkish Parental Involvement Scale (TPIS), developed by Gürbüzürk and Şad (2010). The scale includes 39 items with eight factors confirmed generally with acceptable-to-perfect goodness of fit indexes:  $X^2=1334.85$ ,  $df=636$  ( $X^2/df=2.09$ ),  $GFI=.90$ ,  $AGFI=.88$ ,  $NNFI=.92$ ,  $CFI=.93$ ,  $RMSEA=.042$ ,  $RMR=.057$ ,  $SRMR=.043$ . The subscales of TPIS had internal consistency coefficients (Cronbach Alpha) ranging between  $\alpha=.617$  and  $\alpha=.914$ . In the present study the Cronbach Alpha internal consistency coefficients estimated for eight subscales of TPIS using data from 1590 parents were  $\alpha=.670$  min. and  $\alpha=.908$  max. Following are the explanations about TPIS subscales and some sample items (Gürbüzürk and Şad, 2010).

The *communication with teacher/school* subscale includes eight items measuring parents' frequency of contacting teachers or administrators at school to exchange information about their child's progress and mutual suggestions (e.g., I ask my child's teacher to inform me about my child's level of achievement). The *helping with homework* subscale, which includes five items, measures parents' frequency of monitoring and providing feedback effectively for assignments, schoolwork, and

similar home-based activities (e.g., I review my child's assignments/works, and check for flaws or mistakes). The *personal development* subscale includes five items about parents' self-development in order to be better involved in their children's education (e.g., I read resources about child development and psychology). The *volunteering* subscale includes four items about voluntarily taking an active part in curricular and extracurricular activities (e.g., I volunteer in classes to help the teacher or students). The *communication with child* subscale includes five items about having an encouraging and democratic communication with the child based on trust (e.g., even if my child fails, I encourage him/her saying he/she can succeed next time if he/she works diligently). The *enabling home-setting* subscale with four items measures parents' ability to set the home environment both physically and emotionally to facilitate the child's studying (e.g., I create a silent and convenient setting for my child to study). The *parental support for child's personality development* subscale includes four items about helping the child become a responsible, confident, self-reliant, questioning, researching person (e.g., I encourage my child to investigate and inquire the reasons of events instead of memorizing information). Finally, the *parental support for child's socio-cultural development* subscale includes four items about supporting and encouraging children for partaking in social, cultural, artistic events and activities such as theatre, scouting, poetry, music, and sport (e.g., I take my child to cultural and artistic events like concerts, exhibitions, theatres, and cinemas).

Students' end-of-the-year achievement scores from Turkish, math, and science & technology courses were used to represent their academic achievement. All TPIS forms were marked with relevant students' school numbers and next relevant students' achievement scores were obtained from a computer-based automation system or from the course teachers. Since the achievement scores were not obtained from a common standardized test, each student's achievement scores (Turkish, math, and science & technology) were first converted into standardized z scores using the pooled within-groups standard deviations for the class the student belongs to (Tabachnick and Fidell, 2007, p. 314). Next, the scores were converted into t scores for statistical consideration.

#### *Data analysis*

To test the extent to which parents' levels of involvement predict their children's academic achievement in Turkish, math, and science & technology courses through first to fifth grades, a multiple linear regression analysis was used. For this purpose, the data set was checked for *normality assumption* and *multi-collinearity* problem. Thus, first Mahalanobis distances for every case were estimated and outliers were eliminated. As the inter-correlations between subscales of TPIS were below .80 (between  $r=.155$  and  $r=.608$ ), tolerance values were over .20, variance inflation factors were less than 10, and lastly condition indices were less than 30 (Büyüköztürk, 2007, p.100), no collinearity problem was detected. Findings from regression analyses were reported using  $\beta$ s, significance (95%, 99%, and 99.9%), and partial correlation coefficient (r) statistics. The baseline descriptive statistics about parents' level of involvement tasks and achievement scores are shown in table 1.

Table 1-Descriptive Statistics for the Parental Involvement Tasks and Achievement Scores

Variable	Max-Min	1 <sup>st</sup> grade (N=178)		2 <sup>nd</sup> grade (N=390)		3 <sup>rd</sup> grade (N=452)		4 <sup>th</sup> grade (N=260)		5 <sup>th</sup> grade (N=309)		
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	
<b>Parental Involvement</b>												
Communication with teacher/school	40-8	32.50	7.14	30.22	8.08	30.12	8.34	30.30	7.48	29.14	7.67	
Helping with homework	25-5	22.83	2.92	21.92	3.62	21.68	3.76	21.92	3.15	21.20	3.75	
Personal development	25-5	19.37	4.65	17.94	4.78	17.93	4.98	18.26	4.57	17.71	5.05	
Volunteering	20-4	12.22	4.61	9.23	4.54	9.32	4.56	8.84	4.38	8.81	4.21	
Communication with child	25-5	23.48	2.24	23.07	2.64	22.91	2.87	23.03	2.62	23.02	2.55	
Enabling home-setting	20-4	18.29	2.25	17.85	2.64	17.88	2.50	18.39	2.16	18.17	2.20	
Support for personality development	20-4	17.61	2.62	17.44	2.44	17.55	2.36	17.60	2.40	17.71	2.21	
Support for socio-cultural development	20-4	13.74	3.81	13.21	3.69	13.35	3.85	13.53	3.41	13.31	3.65	
<b>Achievement (standardized t scores)</b>												
Turkish		48.66	9.12	52.22	7.09	52.09	7.19	50.64	7.83	50.55	8.64	
Math		51.88	6.70	51.37	7.60	52.19	7.13	50.60	7.92	50.01	8.75	
Science & Technology		-	-	-	-	-	-	51.81	7.13	51.21	8.21	



## Results

As it is seen in table 2 parental involvement in terms of *parental support for child's personality development*, *parental support for child's socio-cultural development*, *helping with homework*, *volunteering*, and *communication with child* has varying impacts on students' achievement in Turkish lessons with significant low positive and negative partial correlation coefficients ranging between .283 and .103. It is surprising that *communication with school*, *parental development*, and *enabling home-setting tasks* were insignificant predictors of Turkish lesson achievement. The strongest effect of parental involvement is seen at first grade limited to only two tasks, *parental support for child's socio-cultural development* ( $r=.183$ ) and *volunteering* ( $r=.283$ ), which explains 18.6% of the variance in students' literacy-based academic achievement. In the second grade, while the *parental support for child's socio-cultural development* ( $r=.111$ ) and *communication with child* ( $r=.161$ ) type of parental involvement tasks have a positive impact on Turkish academic achievement with significant low partial correlations, *parental support for child's personality development* ( $r=-.180$ ) and *volunteering* ( $r=-.130$ ) have a negative impact on achievement. At third grade negative impact of *parental support for child's personality development* is reversed ( $r=.111$ ) and positive impact of *parental support for child's socio-cultural development* ( $r=.103$ ) and *communication with child* ( $r=.118$ ) persist. *Parental support for child's personality development* ( $r=.150$ ) is the only significant predictor of fourth graders' academic achievement in Turkish lessons. Finally, in the fifth grade again *parental support for child's personality development* ( $r=.152$ ) and *communication with child* ( $r=.174$ ) have significant low positive correlations and, for the first time, *helping with homework* ( $r=-.126$ ) has a significant negative low correlation with academic achievement. Begüm (2007) also found an impact of parent participation in home enrichment activities on reading performance of kindergarten, first grade, third grade, and fifth grade for European American, Hispanic, and African American children. In a similar vein, Hara and Burke (1998) found the positive impact of a parental involvement program on third graders' reading achievement in a short time. A review by Hiatt-Michael (2008) reveals that teachers' and principals' efforts to involve families give way to higher academic achievement in reading. While these are findings about the positive impact of parental involvement in general, more specifically Çelenk (2003) stressed the positive impact of home-based support and close relations with school on students' comprehension during literacy education, which is inconsistent with the present study as home-based tasks, e.g., *helping with homework* or *enabling home-setting*, and *communication with school/teacher* were found to be insignificant predictors of Turkish academic achievement. Similarly the finding by McWayne et al. (2004) about the positive association of supportive home learning environment with kindergarten students' reading achievement is not consistent with the findings here as *enabling home-setting* was not a significant predictor. Sohn (2007) found generally positive associations between reading achievement and school and community based involvement, but negative associations between reading achievement and home based parental involvement in early grades. Though not studying the same age group, Jeynes (2005) found associations between 12<sup>th</sup> graders' reading test scores and

parents' discussing the school events with their child (.22,  $p < .0001$  when SES variables are controlled and .13,  $p < .0001$  otherwise) (which can be regarded as similar with the results of the present study with regard to *communication with child* in second, third, and fifth grades), parents' attending school events (.11,  $p < .01$  only when SES variables are controlled) (which is consistent with present findings for *volunteering* in first grade, but not second grade), and no significant association with parents' checking on a child's homework and his or her friends (-.04,  $p > .05$ ) (which is consistent with the findings about *helping with homework* for all but fifth grade). Similarly, Sui-Chu and Willms (1996) found that parental participation at school (*volunteering*) had a moderate effect on reading achievement of middle school students, which is consistent with present findings for first graders, but not second graders.

Table 2.

Results of Multiple Linear Regression Analysis for Turkish Subject

Factors	1 <sup>st</sup> grade (N=178)			2 <sup>nd</sup> grade (N=390)			3 <sup>rd</sup> grade (N=452)			4 <sup>th</sup> grade (N=260)			5 <sup>th</sup> grade (N=310)		
	$\beta$	p	R	$\beta$	p	R	$\beta$	p	r	$\beta$	p	r	$\beta$	p	r
PERSONALITY	.124	.128	.117	-.219	.000***	<b>-.180</b>	.134	.019*	<b>.111</b>	.178	.017*	<b>.150</b>	.169	.008**	<b>.152</b>
SOCIOCULTURAL	.209	.017*	<b>.183</b>	.142	.030*	<b>.111</b>	.131	.029*	<b>.103</b>	.140	.072	.113	.076	.270	.064
SCHOOL COMM.	-.087	.415	-.063	.014	.847	.010	-.094	.162	-.066	.038	.650	.029	-.118	.149	-.083
HOMEWORK	-.010	.931	-.007	-.009	.898	-.007	.131	.054	.091	-.025	.749	-.020	-.167	.029*	<b>-.126</b>
PERSONAL DEVEL.	-.108	.300	-.080	.115	.138	.076	-.072	.295	-.050	-.069	.454	-.047	.107	.198	.074
VOLUNTEERING	.338	.000***	<b>.283</b>	-.158	.011*	<b>-.130</b>	-.089	.108	-.076	-.091	.248	-.073	.009	.890	.008
CHILD COMM.	.015	.879	.012	.215	.002**	<b>.161</b>	.153	.012*	<b>.118</b>	-.115	.121	-.098	.211	.002**	<b>.174</b>
HOME-SETTING	-.004	.968	-.003	-.046	.494	-.035	-.118	.063	-.088	.103	.177	.085	-.021	.750	-.018
Turkish	R = .432, R <sup>2</sup> = .186, F (8, 169) = 4.840, p = .000***			R = .282, R <sup>2</sup> = .080, F (8, 381) = 4.113, p = .000***			R = .289, R <sup>2</sup> = .084, F (8, 444) = 5.057, p = .000***			R = .249, R <sup>2</sup> = .062, F (8, 251) = 2.069, p = .039*			R = .292, R <sup>2</sup> = .085, F (8, 300) = 3.496, p = .001**		

\*p < .05; \*\*p < .01; \*\*\*p < .001

Multiple linear regression analysis revealed limited impact of parental involvement in terms of *parental support for child's personality development*, *parental support for child's socio-cultural development*, *volunteering*, and *communication with child on students' math achievement scores* with significant low-to-moderate positive and negative partial correlation coefficients ranging between .338 and .118 (see Table 3). *Communication with school, homework, and parental development, and enabling home-setting* type of parental involvement tasks were found to be insignificant predictors of math achievement. The strongest effect was observed at first grade again by the same two tasks as in Turkish, *parental support for child's socio-cultural development* ( $r=.170$ ) and *volunteering* ( $r=.338$ ), which explained 24.2% of the variance in students' math achievement. At second grade, both *parental support for child's socio-cultural development* ( $r=.130$ ) and *communication with child* ( $r=.130$ ) type of parental involvement tasks had significant positive and low partial correlations with math academic achievement, with the latter having a larger effect size ( $\beta=.174$ ). At third grade *parental support for child's personality development* ( $r=.145$ ) begins to have a positive impact on math achievement with a low partial correlation ( $r=.145$ ), whereas the positive impact of *volunteering* at first grade is reversed ( $r=-.140$ ). *Parental support for child's personality development* ( $r=.171$ ) was the only significant predictor of fourth graders' academic achievement in math. Finally, at fifth grade only *communication with child* ( $r=.118$ ) had significant positive low correlation with math achievement. There is well-documented literature about the positive effect of parental involvement on students' math achievement (e.g., Hiatt-Michael, 2008; Muller, 1998). More specifically, Ferry, Fouad, and Smith (2000) found, though for college students, that parental encouragement as represented by the *communication with child* task here had a positive impact on students' math achievement. Similarly, as Jacobs and Bleeker (2004) argued parents' belief that their children can excel at math also creates math-promoting behaviors in their children. Also, Jeynes (2005) found, with regard to parent-child communication, an association between 12<sup>th</sup> graders' math test scores and whether or not parents discussed school events with their child ( $r=.18$ ,  $p < .0001$ , when SES variables are controlled and  $r=.08$ ,  $p < .01$  otherwise).

Unlike the findings about *enabling home-setting* and *communication with school/teacher* tasks, which were found as insignificant factors in the present study, Lahaie (2008) found a significant and positive association between math scores and the number of children's books at home and parent's meeting the teacher at least once before; McWayne et al. (2004) found a positive association between a supportive home learning environment and kindergarten students' maths achievement, and Sohn (2007) found generally positive associations between math achievement and school and community based involvement.

The finding about the changing nature of the effect of *volunteering* through 1-5 grades is also evident in the literature. For example, Jeynes (2005) found an association between 12<sup>th</sup> graders' math test scores and parents attending school events ( $r=.16$ ,  $p < .0001$  when SES is controlled); Parcel and Dufur (2001) pointed to

the effect of **parental involvement in school activities on improving students' (1<sup>st</sup> to 8<sup>th</sup>) math achievement**, whereas Sui-Chu and Willms (1996) found **parents' participation at school had a negligible effect on math achievement of middle school students ( $r=.03$ )**. Additionally, **Begüm (2007) found involvement in school activities did not have any impact on math performance among Asian children, but it did for European American, Hispanic, and African American children**. Moreover, contrary to the non-significant effect of *helping with homework* in the present study, Jeynes found **that parents checking on their child's homework did not have a positive impact on math test scores**, and Driessen et al. (2005) found a negative effect of help from parents with homework on math achievement for the eighth grade pupils.

Table 3.

Results of multiple linear regression analysis for math

Factors	1 <sup>st</sup> grade (N=178)			2 <sup>nd</sup> grade (N=390)			3 <sup>rd</sup> grade (N=452)			4 <sup>th</sup> grade (N=260)			5 <sup>th</sup> grade (N=310)		
	$\beta$	p	r	$\beta$	p	R	B	p	r	$\beta$	p	r	$\beta$	p	r
PERSONALITY	.114	.145	.112	-.119	.055	-.098	.174	.002**	<b>.145</b>	.203	.006**	<b>.171</b>	.048	.459	.041
SOCIOCULTURAL	.187	.026*	<b>.170</b>	.167	.011*	<b>.130</b>	.105	.079	.083	.100	.196	.082	.09	.197	.072
SCHOOL COMM.	-.066	.523	-.049	.028	.708	.019	-.055	.411	-.039	.007	.931	.005	-.078	.342	-.053
HOMEWORK	-.084	.432	-.061	-.026	.725	-.018	.095	.157	.067	.029	.713	.023	-.106	.168	-.077
PERSONAL DEVEL.	-.074	.463	-.057	.082	.292	.054	.003	.965	.002	-.013	.886	-.009	.121	.146	.081
VOLUNTEERING	.397	.000***	<b>.338</b>	-.117	.060	-.096	-.163	.003**	<b>-.140</b>	-.122	.122	-.097	-.064	.346	.041
CHILD COMM.	.142	.130	.116	.174	.011*	<b>.130</b>	.088	.147	.069	-.128	.085	-.109	.142	.041*	<b>.118</b>
HOME-SETTING	-.065	.503	-.052	-.008	.909	-.006	-.052	.411	-.039	.085	.264	.071	.124	.064	.103
Math	R = .492, R <sup>2</sup> = .242, F (8, 169) = 6.734, p = .000***			R = .259, R <sup>2</sup> = .067, F (8, 382) = 3.426, p = .001**			R = .310, R <sup>2</sup> = .096, F (8, 443) = 5.872, p = .000***			R = .263, R <sup>2</sup> = .069, F (8, 251) = 2.329, p = .020*			R = .275, R <sup>2</sup> = .076, F (8, 300) = 3.063, p = .002**		

\*p &lt; .05; \*\*p &lt; .01; \*\*\*p &lt; .001

As it is seen in table 4, *parental support for child's personality development*, *volunteering*, and *communication with child* tasks were the only factors affecting fourth and fifth grade students' achievement in science & technology with significant low positive and negative partial correlation coefficients ranging between .168 and .121. Other tasks were found to be insignificant predictors of science & technology achievement at fourth and fifth grade. At fourth grade *parental support for child's personality development* and *volunteering* together explained only 8.4% of the variance in pupils' science achievement scores. The former had a positive correlation ( $r = .168$ ), whereas the latter had a negative correlation ( $r = -.127$ ). At fifth grade while the positive association between *parental support for child's personality development* and science achievement ( $r = .121$ ) persisted, *volunteering* as a negative predictor was replaced by *communication with child* ( $r = .126$ ) as a positive predictor, and they together explained only 7.5% of the variance in science & technology scores. Like in math achievement, parental encouragement as represented by *communication with child* task here was reported to have a positive impact on students' science achievement (Ferry, Fouad, and Smith, 2000). Similarly, Jeynes (2005) reported an association between 12<sup>th</sup> graders' science test scores and parents' discussing school events with their child, a kind of child-parent communication ( $r = .17$ ,  $p < .0001$ , when SES variables are controlled and  $r = .08$ ,  $p < .01$  otherwise). The finding about the negative correlation between science achievement and *volunteering*, however, is inconsistent with Jeynes (2005) who found a positive association between 12<sup>th</sup> graders' science test scores and parents attending school events ( $r = .10$ ,  $p < .01$  only when SES variables are controlled). Though some researchers report positive (as cited in Jacobs and Bleeker, 2004) or negative effect (Jeynes, 2005) of home-based parental support on children's science outcomes, here no impacts of either *helping with homework* or *enabling home-setting* were detected.

Table 4

Results of Multiple Linear Regression Analysis for Science & Technology Subject

Factor	4 <sup>th</sup> grade (N=260)			5 <sup>th</sup> grade (N=310)		
	$\beta$	p	R	$\beta$	p	r
PERSONALITY	.197	.008**	.168	.135	.035*	.121
SOCIOCULTURAL	.061	.427	.050	.078	.263	.065
SCHOOL COMM.	-.013	.873	-.010	-.077	.348	-.054
HOMEWORK	.031	.693	.025	-.115	.135	-.086
PERSONAL DEVEL.	.094	.302	.065	.118	.159	.081
VOLUNTEERING	-.159	.043*	-.127	-.043	.525	-.037
CHILD COMM.	-.139	.058	-.119	.153	.028*	.126
HOME-SETTING	.094	.210	.079	.041	.537	.036
Science & Technology	R = .291, R <sup>2</sup> = .084, F (8, 251) = 2.896, p = .004**			R = .273, R <sup>2</sup> = .075, F (8, 301) = 3.034, p = .003**		

\*p < .05; \*\*p < .01; \*\*\*p < .001

## Discussion

Unlike the common belief that parental involvement is positively associated with students' educational outcomes (Çelenk, 2003; Lahaie, 2008; Muller, 1998; Stewart, 2008), this study revealed more complex associations changing from task-to-task and grade-to-grade. Firstly, this research found low-to-moderate associations (ranging between  $r=.103$  and  $r=.338$ ), either in a positive or negative direction, between parental involvement tasks and academic achievement. Although this may seem to degrade the role of parental involvement, the literature also reports small to moderate relationships ( $r=.25$  on average) between parental involvement and academic achievement (Fan and Chen, 2001).

Moreover, it was surprising that some tasks such *communication with teacher/school*, *personal development*, *helping with homework* (except for fifth grade Turkish scores) and *enabling home-setting* were not found as significant predictors of achievement. This is inconsistent with the previous findings especially about the association between achievement and *communication with teachers/schools* either in a positive (Çelenk, 2003; Lahaie, 2008; Muller, 1998) or negative direction (Domina, 2005; Muller, 1998; Sui-Chu and Willms, 1996). Another inconsistency with the literature is about the positive effect of providing convenient home resources or settings (Begüm, 2007; Lahaie 2008; Slaughter and Epps, 1987). The exceptional association between math achievement and *helping with homework* at fifth grade can also be interpreted as parents' intervention as a result of the child's poor academic performance or parents' lack of intervention as a result of the child's high performance (Fan and Chen, 2001; Driessen et al., 2005; Sui-Chu and Willms, 1996; Mau, 1997). An analysis of these tasks as non-significant predictors imply that their common point (except for *helping with homework*) is indirect involvement of the child in the task, i.e., the children are not addressed directly during involvement.

On the contrary, the tasks such as *parental support for child's personality* and *socio-cultural development*, *volunteering*, and *communication with child* were found to be significant predictors of pupils' Turkish, math, and science & technology achievement. A grade-specific analysis indicates that while *parental support for child's socio-cultural development* of a child is more effective at early grades (i.e., 1<sup>st</sup>-3<sup>rd</sup> for Turkish and 1<sup>st</sup> and 2<sup>nd</sup> for math), *parental support for child's personal development* of child becomes more effective at later grades (i.e., 3<sup>rd</sup>-5<sup>th</sup> for Turkish, 3<sup>rd</sup>-4<sup>th</sup> for math, and 4<sup>th</sup>-5<sup>th</sup> for science & technology). *Communication with child* seems to be the dominating predictor of academic success of fifth graders in all three subjects, besides its effect at second grade for math and at second and third grades for Turkish. Moreover, unlike the non-significant predictors, these significant ones seem to have direct involvement of the child, i.e., the children are addressed directly in the task. As it can be tracked from the literature, the tasks that directly involve the child in an unthreatening way in the forms of talking about or discussing school-related issues (Jeynes, 2005; Lee and Bowen, 2006; Muller, 1998; Stewart, 2008; Sui-Chu and Willms, 1996), having achievement aspirations and expectations (Fan and Chen, 2001; Lee and Bowen, 2006; Slaughter and Epps, 1987; Sohn, 2007), or having positive



communication with children (Çelenk, 2003; Jeynes, 2005) are better positive predictors for school achievement.

Finally, the inconsistent function of *volunteering* as reported by literature persisted here. The function of *volunteering* as a positive or negative predictor of achievement seems to be affected by a child's grade. While parents' school-based participation acts as a positive predictor for the first year (for Turkish and math), it becomes a negative one as the child grows older (at 2<sup>nd</sup> grade for Turkish; 3<sup>rd</sup> grade for math; and 4<sup>th</sup> grade for science & technology). This again can be explained with the possibility that parents meet teachers when their children have difficulties (Domina, 2005).

### Conclusion and Recommendations

This study aimed to investigate the parental involvement tasks as predictors of first to fifth grade students' Turkish, math, and science & technology achievement in the form of end-of-the-year scores. It was concluded that parents' communication with teacher/school, personal development, helping with homework (except for 5<sup>th</sup> grade Turkish scores) and providing an enabling home-setting are not significant predictors of students' academic achievement. On the other hand, parental tasks as parental support for children's personality and socio-cultural development, volunteering, and communication with child were found to be significant predictors of pupils' academic achievement. The main difference between these two sets of parental involvement tasks seems to be whether the children are addressed directly or not. Also it was recognized that the order of predictors of better academic achievement through grades is first parental support for children's socio-cultural development (first 1-3 years) and volunteering (especially 1<sup>st</sup> year), then parental support for children's personality (year 3 to 5) and next supportive communication with child (especially at 5<sup>th</sup> year) with child.

Based on the findings of the research parents can be recommended to support their children's socio-cultural development especially during the first three years of primary education by taking them to concerts, exhibitions, theaters, cinema, museums, visiting other cultural and natural entities, encouraging them to participate scouting, folk dances, music chorus, and dances or drama activities, and displaying at home their works such as compositions, poems, and artworks. Also parents are recommended to volunteer during the first year by accompanying the school/class trips, participating into lessons to observe or help teacher/students, taking an active role in parent-teacher associations. Parents are recommended to support their children's personality especially during third to fifth grades by allowing them achieve things independently, giving suitable responsibilities for their age and gender such as tidying the room, setting the table, etc., or encouraging them to investigate and inquire the reasons of events instead of memorizing information. Lastly, parents are recommended especially during the fifth grade to have effective communication with their children, which involves encouraging for diligence after a failure, showing trust in them, rewarding the efforts not only the successes, and using reasoning and logical inferences in communication.

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## İlköğretim Öğrencilerinin Türkçe, Matematik ve Fen ve Teknoloji Derslerindeki Başarılarının Yordayıcıları olarak Aile Katılımı Görevlerinin İncelenmesi

Atf:

Şad, S.N. (2012). Investigation of Parental Involvement Tasks as Predictors of Primary Students' Turkish, Math, and Science & Technology Achievement. *Eğitim Araştırmaları - Eurasian Journal of Educational Research*, 49, 173-196.

### (Özet)

**Süleyman Nihat ŞAD\***

*Problem durumu:* Ailelerin çocuklarının eğitimlerine katılımı, eğitimin toplam kalitesinin iyileştirilmesi adına önemli görülmektedir. En geniş anlamıyla *aile katılımı*, ebeveynlerin çocuklarının eğitimlerinde aktif bir şekilde rol almaları olarak tanımlanabilir. Bu açıdan anne-babaların evde çocuklarıyla okulla ilgili sohbet etmeleri, onların ödevlerine yardımcı olmaları ve çalışmalarını denetlemelerinden, okuldaki etkinliklere gönüllü olarak bizzat katılmalarına, öğretmenlerle görüşmelerine ya da veli toplantılarına katılmalarına kadar birçok uygulama aile katılımı olarak nitelendirilmektedir. Her ne kadar aile katılımı çocuğun okul başarısının önemli koşullarından birisi olarak görülse de, böyle genel geçer bir yargı yanılıcı olabilir. Zira aile katılımı görevlerinin oldukça farklı ve çeşitli şekillerde tanımlandığı ve öğrenci başarısı üzerindeki etkisinin de sınıf (yaş) bazında değiştiği görülmektedir. Bu açıdan genel bir aile katılımı yaklaşımından ziyade özelde aile katılımı görevlerinin tanımlanması ve öğrenci başarısı ile aralarındaki ilişkinin her bir sınıf düzeyi için ayrı ayrı incelenmesi gerektiği düşünülmektedir.

*Araştırmanın amacı:* Bu çalışmada, ailelerin çocuklarının eğitimine katılımı kapsamında üstlendikleri bazı görevlerin, ilköğretim öğrencilerinin (1. ile 5. sınıflar arası) Türkçe, Matematik ve Fen ve Teknoloji dersi akademik başarılarını ne düzeyde yordadığının incelenmesi amaçlanmıştır.

*Yöntem:* Araştırma, korelasyon yönteminin kullanıldığı ilişkisel tarama modeline uygun olarak tasarlanmıştır. Araştırmaya 1590 ebeveyn katılmıştır. Katılımcılar, Malatya ili merkez ilçe sınırları içerisinde yer alan altı ilköğretim okulunun (100. Yıl İlköğretim Okulu, Atatürk İlköğretim Okulu, Cumhuriyet İlköğretim Okulu, Hayrettin Sönmezay İlköğretim Okulu, Kazım Karabekir İlköğretim Okulu ve Özel TED İlköğretim Okulu) 1. - 5. sınıflarında öğrenim gören (178 birinci sınıf, 390 ikinci sınıf, 452 üçüncü sınıf, 260 dördüncü ve 310 beşinci sınıf) öğrencilerin velilerinden oluşmuştur. Bu velilerin 806'ı anne 784'ü babadır. Katılımcıların yaş ortalamaları 37.7 olup, yaşları 21 ile 52 arasında değişmektedir.

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Araştırmada veri toplamak amacıyla *Veli Katılımı Ölçeği (VKÖ)* kullanılmıştır. Beşli derecelendirmeli (Her zaman - Hiçbir zaman) Likert tipi bir ölçek olan VKÖ, 8 alt ölçek ve toplam 39 madde ile velilerin çocuklarının eğitimlerine katılımına ilişkin sekiz farklı katılım görevini ne düzeyde yerine getirdiğini ölçmeyi amaçlamaktadır. Bu ölçekten elde edilen veriler araştırmanın bağımsız (yordayıcı) değişkenlerini oluşturmuştur. Araştırmanın bağımlı (yordanan) değişkeni olarak ise bu velilerin çocukların 2009-2010 eğitim öğretim yılı ikinci yarıyılına ait Türkçe, Matematik, Fen ve Teknoloji dersleri yılsonu karne notları kullanılmıştır. Veriler çoklu doğrusal regresyon analizine tabi tutulmuştur.

*Bulgular:* Araştırmada aile katılımı görevleri ile öğrencilerin Türkçe, Matematik ve Fen ve Teknoloji derslerindeki akademik başarıları arasında negatif ve pozitif yönlerde, anlamlı düzeylerde, düşük ile orta ( $r_{(min)}=.103$  ve  $r_{(mak)}=.338$ ) arasında değişen katsayılarla ilişkiler olduğu belirlenmiştir. Her ne kadar bu katsayılar düşük gibi görüle de, aile katılımı ve akademik başarı arasındaki ilişkiyi inceleyen araştırmalarda da benzer sonuçlara ulaşılmıştır (ortalama  $r=.25$ ). Yapılan regresyon analizinde öğrencilerin farklı sınıflar için Türkçe dersi akademik başarılarının görece en güçlü yordayıcılarının, *çocuğun kişilik gelişimini destekleme* ( $r_{(2. sınıf)}= -.180$ ,  $r_{(3. sınıf)}=.111$ ,  $r_{(4. sınıf)}= .150$ ,  $r_{(5. sınıf)}= .152$ ), *Çocuğun sosyo-kültürel gelişimini destekleme* ( $r_{(1. sınıf)}= .183$ ,  $r_{(2. sınıf)}=.111$ ,  $r_{(3. sınıf)}= .103$ ), *Gönüllü aktif katılım* ( $r_{(1. sınıf)}=.283$ ,  $r_{(2. sınıf)}= -.130$ ), *çocukla iletişim* ( $r_{(2. sınıf)}= .161$ ,  $r_{(3. sınıf)}=.118$ ,  $r_{(5. sınıf)}= .174$ ), ve *çocuğun ödev ve çalışmalarını destekleme* ( $r_{(5. sınıf)}= -.126$ ) türü katılım görevleri olduğu görülmüştür. Farklı sınıflar için Matematik dersi akademik başarılarının görece en güçlü yordayıcıları, *çocuğun kişilik gelişimini destekleme* ( $r_{(3. sınıf)}= .145$ ,  $r_{(4. sınıf)}= .171$ ), *Çocuğun sosyo-kültürel gelişimini destekleme* ( $r_{(1. sınıf)}= .170$ ,  $r_{(2. sınıf)}= .130$ ), *Gönüllü aktif katılım* ( $r_{(1. sınıf)}=.338$ ,  $r_{(3. sınıf)}= -.140$ ), ve *çocukla iletişim* ( $r_{(2. sınıf)}= .130$ ,  $r_{(5. sınıf)}= .118$ ) olarak bulunmuştur. Dördüncü ve beşinci sınıflar için Fen ve Teknoloji dersi akademik başarılarının görece en güçlü yordayıcıları ise benzer şekilde, *çocuğun kişilik gelişimini destekleme* ( $r_{(4. sınıf)}=.168$ ,  $r_{(4. sınıf)}= .121$ ), *gönüllü aktif katılım* ( $r_{(4. sınıf)}= -.127$ ) ve *çocukla iletişim* ( $r_{(5. sınıf)}= .126$ ) olarak bulunmuştur. Diğer taraftan *Okul ve öğretmenle iletişim*, *Katılım konusunda velinin kendini geliştirmesi*, *Çocuğun ödev ve çalışmalarını destekleme* (5. sınıf Türkçe akademik başarısı hariç) ve *Öğrenmeyi destekleyici ev ortamının yaratılması* boyutlarının (katılım görevlerinin) çocukların söz konusu üç dersin akademik başarılarının anlamlı yordayıcıları olmadıkları saptanmıştır. Yapılan analizlerin sonucunda hesaplanan yordama düzeylerinin etki büyüklüklerinin ise genellikle düşük olduğu görülmüştür ( $R^2 < .096$ ). Buna göre bir çok durumda aile katılımı görevleri çocukların üç dersteki akademik başarılarının % 9.6'sından daha azını açıklamaktadır. Ancak, özellikle birinci sınıflar için *çocuğun sosyo-kültürel gelişimini destekleme* ve *gönüllü aktif katılım* görevlerinin birlikte çocuğun Türkçe başarısının % 18.6'sını Matematik başarısının ise % 24.2'ünü açıkladığı görülmüştür.

*Sonuçlar ve Öneriler:* Araştırmada okul ve öğretmenle iletişim, katılım konusunda velinin kendini geliştirmesi, çocuğun ödev ve çalışmalarını destekleme (5. sınıf Türkçe akademik başarısı hariç) ve öğrenmeyi destekleyici ev ortamının yaratılması boyutlarının (katılım görevlerinin) çocukların Türkçe, Matematik ve Fen ve Teknoloji derslerindeki akademik başarılarının anlamlı yordayıcıları olmadıkları sonucuna ulaşılmıştır.

Diğer taraftan ailelerin çocuklarının kişiliklerinin ve sosyo-kültürel gelişimlerini desteklemelerinin, okuldaki etkinliklere gönüllü olarak katılmalarının, çocuklarıyla olumlu bir iletişim içerisinde olmalarının Türkçe, Matematik ve Fen ve Teknoloji derslerindeki akademik başarılarının anlamlı yordayıcıları olduğu görülmüştür. Ayrıca, akademik başarının anlamlı yordayıcısı oldukları belirlenen bu veli katılımı görevlerinde, diğer görevlerin aksine, çocuğun anne babası tarafından doğrudan muhatap alındığı, bir başka ifadeyle velinin çocuğuyla birebir ilgilenmesi söz konusudur. Bunun da akademik başarıyı olumlu yönde etkileyen farklı veli katılımı görevlerinin önemli bir ortak özelliği olabileceği düşünülmektedir. Sınıf bazında incelendiğinde ilk yıllarda öğrencilerin Türkçe ve Matematik başarılarını olumlu yönde etkileyen veli katılımı görevlerinin çocuğun sosyo-kültürel gelişimini destekleme (1.-3. sınıflar) ve gönüllü aktif katılım (1. sınıf) olduğu görülmüştür. Devam eden yıllarda öğrencinin kişilik gelişimini desteklemeye ilişkin veli katılımı görevleri, Türkçe (3.-5. sınıflar), Matematik (3. ve 4. sınıf) ve Fen ve Teknoloji (4. ve 5. sınıf) dersi başarısını olumlu yönde etkilemektedir. Son olarak çocukla veli arasında kurulan etkili iletişim başta beşinci sınıfta olmak üzere öğrencilerin her üç dersteki başarılarını olumlu yönde etkilemektedir.

**Anahtar sözcükler:** Aile katılımı, ilköğretim öğrencileri, akademik başarı, Türkçe, Matematik, Fen ve Teknoloji

