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PARENTAL INVOLVEMENT IN PALESTINE

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ABSTRACT

This research study aims to find the relationships between parental involvement and achievements in math of Palestinian students in the fifth and ninth grades. The analysis is applied to data from 5,214 students in the fifth grade from 172 schools and 4,381 students in the ninth grade from 142 schools participating in national assessment testing in Palestine in 2018. The data were analyzed using descriptive analysis, Pearson correlations, and intra-class correlations. The results show strong home-based parental involvement, with a higher degree of parental involvement for students in the fifth grade than those in the ninth grade. The analysis shows weak positive relationships between how parents control their children and children's academic achievement for both grades. There were no correlations between parental support and their children's achievement. There were correlations between school-based parental involvement and student achievement in math in the fifth and ninth grades. Children need parental support at home and at school; however, not all parents are able to provide that support. Many schools prefer to limit parental involvement since they prefer to manage without parental help.

KEYWORDS

achievement in math; national assessment testing in Palestine; school-based parental involvement; home-based parental involvement

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Introduction

The current research aims to fill the information gap concerning the relationship between parental involvement and the learning process in Palestine. Parental involvement is an essential scaffold for children's learning. It has been the focus of many types of research around the globe as a crucial issue in education. Most international education assessments, including TIMSS and PISA, have variables related to parental involvement in their children's education. However, there has been a lack of research on this subject in Palestine. Therefore, this research aims to explore parental involvement at school and at home in Palestine. The relationships between home-based and school-based parental involvement and student achievement in math are studied by analyzing data from national assessment testing in 2018 in Palestine for the fifth and ninth grades.

1 Theoretical basis

Educational centers, educators, and researchers are concerned about parental involvement. The National Parent Teacher Association (2009) in the United States confirmed that parental involvement had a positive effect on children's learning and academic achievement. Comer and Haynes (1997) observed that children learned from adults in society, at home, and at school, and that it was impossible to separate formal and informal learning; therefore, they asserted that there must be collaborations between schools and parents, and that children would learn better if there was harmony between the home and the school to encourage and support them as learners. Involving parents in school and sharing information between the school and home were positively reflected in the learning process (Comer & Haynes, 1997).

The Pew Research Center (2015) found that many parents were disappointed if their children had low achievement. Many studies have been conducted to study the relationship between parental involvement in their children's education and school achievement, whether the involvement is at home or at school (Boonk et al., 2018; Fisher & Friedman, 2009; Makewa et al., 2012; Vellymalay, 2012).

There is no single definition of parental involvement and no single explanation about how it takes place. Grolnick and Slowiaczek (1994, p. 238) defined parental involvement as "the dedication of resources by the parent to the child." LaRocque et al. (2011, p. 116) defined it as "the parents' or caregivers' investment in the education of their children." Makewa et al. (2012, p. 1933) stated that "parents and other family members are the most important teachers of their children."

Comer (1995) and Epstein (1987) distinguished between two types of parental involvement; the first is home-based involvement, such as supporting learning at home and providing structure; the other is school-based involvement, such as communicating with school staff, attending school events, and contacting teachers. These criteria were adopted by others, including Boonk et al. (2018).

Fisher and Friedman (2009) pointed out that there are different kinds of parental involvement in children's learning at home and school, extending from passive involvement, such as when parents act as monitors, to active involvement, when they participate in school decisions and goals. Whatever the kind of involvement, passive or active, it positively affects academic achievement (Fisher & Friedman, 2009).

Gardiner (2015) studied the relations between social class and educational achievement in England and emphasized that higher educational achievement came from higher educational expectations and aspirations, which depended on parental involvement in education and on student beliefs, attitudes, expectations, and abilities. Makewa et al. (2012) conducted research in Kenya on 400 children and their parents, using questionnaires for both about parental socioeconomic status (SES), level of education, family type and size, and parental involvement at school and at home. They then obtained information on the students' achievement from their teachers. The analysis showed that there was a significant relation between SES and children's achievement, that higher parental education led to higher achievement by children, and that parental involvement is the highest predictor of high achievement.

1.1 Studies about home-based parental involvement

Parental sharing in their children's homework has a positive effect on children's learning, especially if the homework is well designed by teachers (Walker et al., 2004). The Pew Research Center (2015) explored the educational involvement of 1,807 parents in the United States whose children were under 18 years old. The study found that 82% of parents in the United States reported that they put appropriate pressure on their children and 10% not enough, while 7% reported applying extra pressure in order to have high achievement.

Vellymalay (2012) showed a high level of home-based parental involvement in a study of 80 Indian students from the second to fifth grade. He selected 20 students from each grade, ten high-achieving and ten low-achieving students, with one parent for each student, the one who was more involved in the child's studies in the child's opinion. Vellymalay used a modified version of the questionnaire constructed by Walker et al. (2005), concentrating on parent background and parental involvement in their children's learning,

using choices ranging from “daily” to “a few times per week/ month/ year” to “never”. The main result of that study showed that parents from different SES levels were all concerned about their child’s learning and they were all involved in their children’s education (Vellymalay, 2012).

Boonk et al. (2018) looked for relations between home-based parental involvement and student achievement, choosing and reviewing 75 studies selected according to a defined set of criteria. Boonk et al. (2018) categorized the involvement into two basic groups, as in Comer (1995), Epstein (1987), and Kaplan Toren and van Schalkwyk (2013). The first, home-based involvement, involved communicating, helping, monitoring, and sharing activities that were devoted to supporting student learning. The second was school-based involvement, which involved engaging in activities or behaviors at school. The generally important results were that parental involvement continued as children grow up and it appeared in different ways. Most studies showed a positive or negative relationship between parental involvement and children’s achievement; some showed no relation.

Some studies in the review by Boonk et al. (2018) showed positive relationships between support in the form of home-based parental involvement in middle and upper grades and children’s academic achievements (Chen & Gregory, 2010, and Gordon & Cui, 2012, as cited in Boonk et al., 2018). Some studies showed a negative relation between home-based parental involvement and achievement (Lee & Bowen, 2006, and Rogers et al., 2009, as cited in Boonk et al., 2018). Other studies showed no relationship between home-based parental involvement and achievement (Driessen et al., 2005, as cited in Boonk et al., 2018).

The inconsistent results could have more than one reason. The first reason could be parental involvement indicators; some studies evaluated support items such as being involved in their children’s studies and/or discussing their children’s studies with them, etc. (Lee & Bowen, 2006, and Rogers et al., 2009, as cited in Boonk et al., 2018); other studies considered control, such as setting rules for children watching television (Driessen et al., 2005, as cited in Boonk et al., 2018), and/or parental beliefs about their children (Magi et al., 2011, and Phillipson & Phillipson, 2012, as cited in Boonk et al., 2018). The second reason could be the differences in the choice of subjects by which to measure achievement. Some studies measured achievement in math (Sheldon & Epstein, 2005, as cited in Boonk et al., 2018), others in language (Dearing et al., 2006, and Xu et al., 2010, as cited in Boonk et al., 2018), and still others in science (Johnson & Hull, 2014, as cited in Boonk et al., 2018). The potential for parents to help children with their school homework differs among these subjects. A third reason is potential differences between studies according to differences between countries and study samples, since each country differs in terms of beliefs, how parental involvement

takes place, school rules, etc. For example, Vellymalay (2012) conducted a study of 80 Indian students, while the Pew Research Center (2015) study was carried for 1,807 parents in the United States. A fourth potential reason is the composition of the student body, which may play a role in the sense that parents may tend to help weaker students more but achieve worse results (Gonida & Cortina, 2014). Thus, two phenomena occur, the first when parents help students with worse results more, and the second when parental support improves results. In some studies, the first phenomenon may predominate and in others the second (Gonida & Cortina, 2014).

Some research studies that considered parental control, such as establishing rules at home and monitoring children, showed that parental control had a negative relationship with achievement (Karbach et al., 2013, and Levpuscek & Zupanic, 2009, as cited in Boonk et al., 2018). These studies agree with others such as those of Gonida and Cortina (2014) and Sakamoto (2021) in showing negative relations between parental involvement and school achievement. Gonida and Cortina (2014) studied different aspects of home-based parental involvement in children's homework, such as control, support for autonomy, interference, and cognitive engagement. This study was conducted on 282 students in the fifth and eighth grades of eight public schools in Northern Greece, with one parent for each child. A survey was used to collect data that was analyzed by structural equation modelling; it showed that student achievement was positively affected by support for autonomy and that achievement showed a negative relation to parental interference in homework, since the academic-parental help depends on parents and children's characteristics and the way that parents provide help to their children (Gonida & Cortina, 2014).

1.2 Studies about school-based parental involvement

The Australian parenting website, raisingchildren.net.au (2021), stated that parental involvement was an efficient way to develop student learning and give parents a clear idea about the teaching-learning process and about children's behavior and achievement at school, and that parental involvement gives the school and the teachers a clear idea about the environmental conditions that students live in.

The Pew Research Center (2015) in the United States and Symeou's (2020) study in Greece both found that relationships between parents and schools are limited, although many parents would prefer to be more involved in their children's school. Symeou (2020) mentioned that parents believe that they have to be part of the educational process and that they are as responsible for their children's learning as their teachers are. Symeou (2020) depicted family-school relationships and family-school involvement in the Greek education system by studying previous research dealing with this issue.

The Pew Research Center (2015) found that around half of parents state that they wish that they were more involved in their children's education; around 90% of parents are involved in meetings and/or communicating with teachers and/or activities or trips; mothers are involved more than fathers in their children's education, and 90% of mothers talk to teachers.

There have been contradictory results in elementary and middle grades about the relationship between parental involvement and student achievement. Some studies have found positive relationships between school involvement and student achievement (Hung, 2007, and McBride et al., 2009, as cited in Boonk et al., 2018), others displayed a negative relation (Stright & Yeo, 2014), and some showed no relation (Johnson & Hull, 2014, and Phillipson & Phillipson, 2012, as cited in Boonk et al., 2018). When Boonk et al. (2018) conducted their review for different research purposes, they found that many studies showed that parental involvement in the form of attending meetings, contacting teachers, becoming involved in voluntary work, and communicating with the school is not related to achievement (Choi et al., 2015, and Hayes, 2012, and Wang & Sheik-Khalil, 2014, as cited in Boonk et al., 2018), or is negatively related (Ho, 2010, as cited in Boonk et al., 2018) or positively related (Martinez et al., 2007, and You et al., 2016, as cited in Boonk et al., 2018).

Sakamoto (2021) studied secondary data from PISA 2015, which covered 31,569 15-year-old state school students in Georgia, Croatia, Portugal, the Dominican Republic, Korea, Hong Kong, Macao, and Mexico. Sakamoto used OLS regression to study the relation between parental participation in school management and achievement in math, science, and reading. Sakamoto (2021) showed that school-based parental involvement did not necessarily have a positive relation to children's achievement; on the contrary, there could be negative relations between them. There are negative relations between school-based parental involvement and academic achievement when low-SES parents are involved in school management and when high-SES parents are involved in low-performing schools to improve learning (Sakamoto, 2021).

In the Arab world, El-Zeki and Khattab (2012), Kharphan and Kasmi (2020), and Yarrow et al. (2014), together with the Palestinian Ministry of Education and Higher Education (2013), conducted studies in three different countries. In Saudi Arabia, El-Zeki and Khattab (2012) conducted a quantitative study on a random sample of 201 administrators and 83 supervisors from middle schools in Al-Ahsa showing that contact between the school and the family is one of the most important factors in eliminating dropout, which could be achieved by schools telling parents about their children's achievement, participating in the parents' council, meeting with parents, helping parents of low-achieving children to become activated in learning, and supplying parents with facilities to improve the children's academic achievement. Kharphan and Kasmi (2020) studied a selective sample of

12th-grade students in the city of Skikda in Algeria. They studied the relation between the socio-cultural level of families and parental involvement and the achievement of 370 students from four high schools containing 1,388 students. They showed a positive relationship between parental visits to the school and their children's achievement, emphasizing that parental involvement is one of the most important factors affecting students' achievement.

In Palestine, Yarrow et al. (2014) studied the improvements in low-achieving schools according to strategies used in high-achieving schools using a quantitative-qualitative method that included questionnaires, observations, and interviews. The Palestinian Ministry of Education and Higher Education (2013) and Yarrow et al. (2014) classified schools into high-achieving schools and low-achieving schools, depending on student achievement in TIMSS 2011 and in Palestinian national assessment testing in 2012. The Palestinian Ministry of Education and Higher Education (2013) chose purposive sampling, including 122 schools (public, private, and UNRWA), 90 in the West Bank and 32 in Gaza, from the highest- and lowest-achieving schools according to TIMSS 2011 and national assessment testing in 2012. The classes for the high-achieving schools were those with means equal to or greater than the intermediate benchmark of 475 in TIMSS 2011, or those who have similar levels in the national assessment testing, and the low-achieving schools were those with an average of half the standard deviation or more below the lowest benchmark (350) in TIMSS 2011, or those that had the lowest 20% in math, science, or Arabic language in the national assessment testing in 2012. One of the most important issues they studied was the relationship between parental involvement in high-achieving and low-achieving schools; they found that in low-achieving schools, effective school-based parental involvement is estimated at 11%; it is 45% for high-achieving schools.

2 Research problem

There are not enough studies in Palestine that cover parental involvement and its effect on student achievement, even though parental involvement is addressed in the national assessment questionnaires. The topic is very relevant for education policy. The Ministry of Education is concerned about parental involvement in order to improve the educational process and to secure more academic support for students by strengthening and supporting the cooperation between the family and the school, particularly for those who have poor achievement. In addition, they aim to understand the circumstances in both high- and low-achieving schools. They try to support the low-achieving schools, taking the high-achieving schools as a model (Yarrow et al., 2014; Ministry of Education, 2013).

This study examines the relationship between home-based and school-based parental involvement and achievement in math for the fifth and ninth grades in national assessment testing in 2018. It seeks to determine whether there are any significant correlations between home- and school-based parental involvement, and how strong the relation is between both home-based and school-based parental involvement and student achievement. A further aim is to look for the differences between home-based and school-based parental involvement for both grades.

Two grades were studied because each represents a different stage in the obligatory level at school, which extends from the first to the tenth grade, with age intervals of 10 to 11 and 14 to 15 years old. These age intervals are critical in a student's life, maybe more so than others: the end of childhood and the beginning of adolescence.

A final area of interest concerns the difference between schools in terms of the level of parental involvement and school achievement. Teachers and principals have a more difficult job in schools where parents do not cooperate with the school. It will be interesting to see the extent to which the monitored variables, such as educational results and parental involvement in their children's education, differ among individual schools in Palestine.

This will be achieved by answering the following questions.

2.1 Research questions

1. Are there any significant differences in home-based parental involvement between the fifth and ninth grades?
2. Are there any significant differences in school-based parental involvement between the fifth and ninth grades?
3. How strong is the relationship between home-based parental involvement and student achievement in math for the fifth and ninth grades?
4. How strong is the relationship between school-based parental involvement and school achievement in math for the fifth and ninth grades?
5. Are there differences in home-based parental involvement between students and schools?

3 Research methodology

3.1 Data

3.1.1 General look at the national assessment survey

The national assessment is a general survey designed for improving the quality of the Palestinian curriculum; it has a design similar to that of international surveys such as TIMSS and PISA and covers parental involvement in the learning process at school and at home; national assessment testing was

conducted in math, science, and Arabic language for the fourth and tenth grades from 2008 until 2014, and for the fifth and ninth grades it has been conducted since 2016.¹

The national assessment survey had three questionnaires: one for schools, one for teachers, and one for students. Mohammad Awwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email. This research is based on the national assessment questionnaires and on student achievement in math as assessed by the national assessment test. Questions about home-based parental involvement are included in the questionnaire for students, questions about school-based parental involvement are included in the questionnaire for schools.

The Assessment, Evaluation, and Examination Department (2018) showed that the fifth grade population consists of 115,302 students distributed among 3,617 classes in 1,814 schools; the ninth-grade population consists of 95,251 students distributed among 3,062 classes in 1,464 schools.

The students and schools involved in different exams – Arabic, math, and science – are different in national assessment testing. In this study, the sample will be those who took part in the math exams in 2018 for the fifth and ninth grades.

The sample was chosen using a stratified cluster sampling method with two stages, similarly to TIMSS and PISA. First, a stratified sample of schools, according to the size of the target grade in the school, is used. The strata represent the student's gender, school's gender (if all students are males, females, or combined), the authority (public, private, or UNRWA), and the geographic region (northern and southern directorates). One class was selected randomly from each participating school. Assessment, Evaluation, and Examination Department, 2018.

The Assessment, Evaluation, and Examination Department (2018) and the Ministry of Education Office in Ramallah, (Matar, personal communication, November 20, 2020), and Ministry of Education Office in Ramallah, (Matar, personal communications, 2021).

Student Sample: The number of students from the fifth grade who were involved in national assessment testing in 2018 was 5,748, of whom 534 students gave incomplete information, so the final sample was 5,214 students. For the ninth grade, the number of students who were involved in national assessment testing in 2018 was 4,563; 182 student questionnaires had to be excluded, and thus the final sample was 4,381 students.

¹ Note: There is additional national assessment testing for English and technology for other grades, but these are not the focus of this research.

School Sample: For the fifth grade, 194 schools were involved in the math exam; 22 were excluded and thus 172 schools were included in the study. For the ninth grade, 157 schools were involved; 15 school questionnaires were excluded, and so the number of schools studied was 142. Questionnaires were excluded that lacked a school code number or information about the administrator.

3.1.2 Tools used in national assessment testing in 2018

For the fifth grade, exams were conducted in two sessions, 45 minutes each with a five-minute break in between; for the ninth grade, a 120-minute exam was distributed over two sessions with a five-minute break in between. Three questionnaires were constructed and distributed to students, teachers, and schools (Assessment, Evaluation, and Examination Department, 2018). Achievement in math, student questionnaires, and school questionnaires that were the same for both grades are evaluated in this study.

The student questionnaire asked about home-based parental involvement; the school questionnaire asked about school-based parental involvement. In the student questionnaire, students answered eight questions containing statements about their parents' behavior. Students were asked to express their level of agreement on a four-point Likert scale (*1. Happens a lot, 2. Happens sometimes, 3. Happens rarely, and 4. Does not happen*). The questions concerned helping with homework, following up on student performance at school, helping in preparing for exams, rewarding children for high academic achievement, punishing children for low achievement, determining the amount of time for spending with friends, determining the amount of time for watching television, and determining how long smartphones can be used.

In the school questionnaire, school administrators were asked to answer five questions about how many times they do activities per year. These questions are about doing voluntary activities to serve the local environment, holding meetings and awareness seminars for parents, inviting parents to participate in school activities, inviting parents to meetings related to school planning, and informing parents about their children's achievement level.

Both home-based and school-based parental involvement merge with the criteria of Comer (1995), Epstein (1987), and Kaplan Toren and van Schalkwyk (2013) used for the home-based involvement and school-based involvement, except that in this research the school-based parental involvement was basically determined by the school administrators.

4 Methodology

There are two parts of the analysis: the first part is applied to the student questionnaires (home-based parental involvement) and the second to the school questionnaires (school-based parental involvement).

For the student questionnaire, descriptive analysis was applied to eight items related to home-based parental involvement and to achievement in math for both fifth and ninth graders. Differences between the two grades were explored in individual items using a non-parametric test while the distribution of the variables is not normal. Scale analysis using Cronbach's alpha and factor analysis were applied to the data from the student questionnaires. Principal component analysis was carried out using Oblimin rotation since Oblimin allows for correlation between the latent factors, while a varimax rotation constrains this correlation to be 0.00, which creates orthogonal factors. As a result, two factors were obtained and two items were eliminated. Pearson correlations between each factor and student achievement were calculated for both grades. Intra-class correlations were then calculated to determine the differences between schools in home-based parental involvement and in achievement in math.

At the school level, descriptive analysis was applied to five items from the school questionnaire related to school-based parental involvement for both fifth and ninth grades. Non-parametric tests were applied to all the items in the school questionnaire to find whether there were statistically significant differences between the two grades. Scale analysis using Cronbach's alpha and factor analysis were applied to the data from the school questionnaires. Factor analysis shows one factor, with one item being eliminated. Then Pearson correlations were calculated between each factor and school achievement for both grades.

5 Analyses and results

5.1 Analysis of student questionnaires (home-based parental involvement)

Descriptive analysis was applied to eight items related to home-based parental involvement in the student questionnaire and to achievement in math by finding descriptive statistics, means, and standard deviations for both fifth and ninth grades.

Table 1

Descriptive Statistics of Home-based Parental Involvement and Non-parametric Tests

		Descriptive Statistics				Independent-Samples Median Test
Q. #	Tasks Parent Does	Grade	N	Mean	Std. Dev.	Sig
1	Helps me to complete my homework	5	5,514	1.90	.946	.000
		9	4,520	2.70	1.022	
2	Comes to school to follow up on my performance	5	5,511	2.14	.926	.000
		9	4,506	2.41	.989	
3	Helps me to prepare for exams	5	5,523	1.63	.966	.000
		9	4,507	2.51	1.139	
4	Rewards me for my outstanding marks	5	5,495	1.48	.818	.000
		9	4,496	1.74	.965	
5	Punishes me because of my low grades	5	5,492	2.54	1.145	.000
		9	4,494	2.41	1.152	
6	Determines how much time I can spend out with my friends	5	5,470	2.00	1.119	.000
		9	4,497	2.23	1.182	
7	Determines how much time I can spend watching television	5	5,515	2.19	1.151	.000
		9	4,499	2.73	1.164	
8	Determines how much time I can use my smartphone	5	5,538	2.10	1.154	.000
		9	94,507	2.46	1.209	
Mark	SCORE out of 100	5	Mean = 42.2801	Std. Dev. = 17.22720		N = 5,748
		9	Mean = 32.2159	Std. Dev. = 18.17285		N = 4,563

1. Answers are on a four-point Likert scale: 1. Happens a lot, 2. Happens sometimes, 3. Happens rarely, and 4. Does not happen.

2. Asymptotic significances are displayed. The significance level is 0.05.

3. Q. = question; N = number of students; Std. Dev. = standard deviation; Sig = significance

4. Source: author's own calculations, using data from Mobammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email

Table 1 shows that the means of home-based parental involvement items for the fifth grade are lower than those for the ninth grade, ranging between 1.48 and 2.54 for the fifth grade and between 1.74 and 2.73 for the ninth grade. The differences between the fifth and ninth grades are statistically significant for all items. This means that parents are more involved in their children's learning when they are younger.

The children surveyed reported that their parents often rewarded them for achievements. In addition to that, it seems that their parents did not often punish them for low achievement. They reported that their parents showed a medium level of concern about them watching television and using a smart-phone. For all home-based parental involvement items, the average for the fifth grade was $1.9975 = 2.0$, and for the ninth grade it was $2.39875 = 2.4$.

Scale analysis using Cronbach's alpha and factor analysis were applied to the data from the student questionnaires. Cronbach's alpha was calculated for items 1 to 8 in the student questionnaires. It was 0.58 for the fifth grade if all items were included; it was 0.56 if item 4 was excluded and 0.59 if item 5 was excluded. For the ninth grade, the Cronbach's alpha was 0.71 with all items; it was 0.69 if item 4 was excluded and 0.70 if item 5 was excluded. The reliability was not better if items 4 and 5 were removed, so factor analysis could determine the elimination.

Principal component analysis was carried out on the eight questions involved in the student questionnaire for both grades, using Oblimin rotation. Factor analysis and a scree plot show two factors. The initial eigenvalues greater than 1 show two factors for both grades. The total eigenvalues are 2.075 and 1.307 for the fifth grade and 2.634 and 1.264 for the ninth grade. Items 4 and 5 gave similar weak loading on both factors: item 4 had 0.347 and 0.356, and item 5 had 0.214 and 0.228 on the two factors consequently. Therefore, they were excluded from the analysis. Factor analysis after excluding items 4 and 5 included 54% of the variance for the fifth grade and 59% for the ninth grade. The resulting factors are given in Table 2.

Table 2
Factor Analysis of Home-based Parental Involvement for Fifth and Ninth Grades

Factor Analysis						
		Communalities		Rot. Comp. Matrix		Grade
Q. #	Task Parent Does	Initial	Extraction	F1	F2	
1	Helps me to complete my homework	1	0.642	-0.034	0.800	
2	Comes to school to follow up on my performance	1	0.254	0.181	0.471	
3	Helps me prepare for exams	1	0.618	0.066	0.783	5th
6	Determines how much time I can spend with my friends	1	0.51	0.705	0.113	
7	Determines how much time I can spend watching television	1	0.602	0.771	0.090	
8	Determines how much time I can use my smartphone	1	0.596	0.771	0.038	
1	Helps me to complete my homework	1	0.648	0.041	0.804	
2	Comes to school to follow up on my performance	1	0.373	0.159	0.589	
3	Helps me prepare for exams	1	0.644	0.139	0.790	9th
6	Determines how much time I can spend with my friends	1	0.507	0.703	0.111	
7	Determines how much time I can spend watching television	1	0.692	0.820	0.141	
8	Determines how much time I can use my smartphone.	1	0.685	0.820	0.117	

1. *Q.* = question; *Rot.Comp* = rotation computation

2. *Source:* author's own calculations, using data from Mobammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email

From Table 2, it is apparent that there are two factors. The first factor, F1, includes items 6, 7, and 8 and will be called **Control**. The second factor, F2, contains items 1, 2, and 3 and will be called **Support**.

The Pearson correlations between each factor and student achievement are calculated for both grades in Table 3.

Table 3
Correlations between Home-based Parental Involvement and Student Achievement in Math

Grade	Factor	Pearson Correlation	Sig. (2-tailed)	Number of students
5	Control	-.164**	.000	5,316
	Support	.009	.520	5,316
9	Control	-.134**	.000	4,416
	Support	.053**	.000	4,416

1. ** Correlation is significant at the 0.01 level (two-tailed). *Source: author's own calculations, using data from Mohammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email*

Table 3 shows that the correlations between the home-based parental control factor and student achievement in math are negative for both grades. This means that the relation between home-based parental involvement and student achievement is a positive weak relationship, since the Likert scale is descending: 1. *Happens a lot*, 2. *Happens sometimes*, 3. *Happens rarely*, and 4. *Does not happen*. The correlation is a little bit stronger for the fifth grade, but still weak. There is no correlation between the home-based parental support factor and student achievement for the fifth grade; there is a very weak significant relationship, less than 0.1, between home-based parental support and children's achievement for the ninth grade. Intra-class correlations were calculated to determine the differences in home-based parental involvement and in achievement in math between schools.

Table 4
Differences in Home-based Parental Involvement Between Students and Schools

	ICC	ICC (%)	Grade
Achievement in math	0.36	36	Fifth Grade
Control	0.09	9	
Support	0.15	15	
Achievement in math	0.40	40	Ninth Grade
Control	0.12	12	
Support	0.13	13	

ICC = intra-class correlations. *Source: author's own calculations, using data from Mohammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email*

Table 4 shows that roughly 40% of the difference in student results can be explained by differences between schools. In Palestine, there are relatively large differences between schools in terms of student achievement in both grades. According to Cicchetti (1994), the intraclass correlation coefficient (ICC) value for achievement was fair. The differences in the level of parental support were lower, and they were also lower for parental control, but not negligible. They indicate slightly different levels of parental involvement in individual schools.

5.2 School Questionnaire Analysis (School-based Parental Involvement)

Descriptive analysis was applied to five items related to school-based parental involvement in the school questionnaire and to the achievement in math by finding descriptive statistics, means, and standard deviations for both fifth and ninth grades in Table 5.

Table 5

Descriptive Statistics of School-based Parental Involvement and Non-parametric Tests

Q. #	Tasks Administrator Deals With	Descriptive Statistics				Independent-Samples Median Test
		Grade	N	Mean	Std. Dev.	Sig.
39	Doing voluntary activities to serve the local environment	5	185	4.77	3.920	.745
		9	153	5.22	5.778	
40	Holding meetings and awareness seminars for parents	5	191	7.22	7.280	.902
		9	156	6.89	5.197	
41	Inviting parents to participate in school activities	5	189	5.29	4.084	.826
		9	154	5.83	4.945	
42	Inviting parents to meetings related to school planning	5	188	3.49	2.749	.630
		9	152	3.37	2.510	
43	Putting parents in the picture with regard to student achievement level	5	182	7.52	10.354	.726
		9	148	6.92	7.414	
Mark	SCORE from 100	5	Mean = 39.982071	Std. Dev. = 14.77940	N = 194	
		9	Mean = 30.534982	Std. Dev. = 11.61364	N = 157	

1. Means represent the number of times that the administrator invites parents to the activity.
2. Asymptotic significances are displayed. The significance level is 0.05.
3. Q. = question; N = number of students; Std. Dev. = standard deviation; Sig = significance
4. Source: author's own calculations, using data from Mohammad Awwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email

The means in Table 5 show that the administrators communicate with parents for both grades around seven times per year to give them an idea about their children's achievement and to hold meetings with them. Less frequently, administrators invite parents to participate in activities and then to do voluntary work. Inviting parents to meetings related to school planning does not happen often.

The average for all the school-based parental involvement items is 5.7 for the fifth grade and for the ninth grade. Administrators ask parents to be involved in different school activities, meetings, etc. around six times per year, which is not a low value. Cronbach's alpha was calculated for items 39 to 43 in the school questionnaires. It was 0.58 for both grades and all items; it reached 0.60 for the fifth grade and 0.65 for the ninth grade if item 43 was excluded.

Factor analysis for items 39 to 43 in the school questionnaires shows one factor for the fifth grade and two factors for the ninth grade. The first factor for the ninth-grade school questionnaire includes items 39 to 42, and the second includes only item 43. Item 43 has thus been removed from the analysis. With item 43 excluded, the total variance is 50% for the fifth grade; it is 52% for the ninth grade.

Table 6 shows the factor analysis for the school questionnaire items after the exclusion of item 43.

Table 6

Factor Analysis of School-based Parental Involvement for the Fifth and Ninth Grades

Component Matrix fifth grade sh. Q.				Component Matrix ninth grade sh. Q.			
		Communalities		Component	Communalities		Component
Q #	Tasks Administrator Deals With	Initial	Extraction	1	Initial	Extraction	1
39	Doing voluntary activities aimed at serving the local environment	1	0.358	0.599	1	0.292	0.541
40	Holding meetings and awareness seminars for parents	1	0.514	0.717	1	0.667	0.817
41	Inviting parents to participate in school activities	1	0.648	0.805	1	0.721	0.849
42	Inviting parents to meetings related to school planning	1	0.465	0.682	1	0.387	0.622

Source: author's own calculations, using data from Mohammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email

Table 6 shows one factor for both grades. This factor will be used to describe school-based parental involvement and it will be called **cooperation**.

The Pearson correlations between school-based parental involvement, cooperation, and school achievement for both grades are shown in Table 7.

Table 7

Pearson Correlations Between School-based Parental Involvement (Cooperation) and School Achievement in Math

Grade	Factor	Pearson Correlation	Sig. (two-tailed)	Schools Number
5	Cooperation	0.208**	0.005	181
9	Cooperation	0.363**	0.000	142

1. ** Correlation is significant at the 0.01 level (two-tailed). *Source: author's own calculations, using data from Mohammad Anwad, the General Director of the Assessment, Evaluation and Examination Department, Ministry of Education, Ramallah, on the 24th of September 2020 via email*

Table 7 shows a positive correlation between parental-school involvement and school achievement. It was moderate for the ninth grade ($R = 0.363^{**}$); it was weak for the fifth grade ($R = 0.208^{**}$) according to Cohen's (1988) classification.

6 Discussion

6.1 Discussion of home-based parental involvement

Children need parental support, both at home and school; however, not all parents are able to provide it. The results show good parental involvement for both grades, although the means for the home-based parental items are higher for the fifth grade than for the ninth grade, since the average for the home-based parental items is 2.0 and 2.4 on a descending four-point Likert scale. The home-based parental items shown in Table 1 indicated that parents provide good support for their children and do not put high pressure on them, especially for the fifth-grade children, who are more dependent on their parents than the older children in the ninth grade are.

These results agree with those of Vellymalay (2012) and Walker et al. (2005), who show a high level of parental involvement, and with Boonk et al. (2018), who show that parental involvement continued in different ways with children's growth. The Pew Research Center (2015) also found that most parents considered themselves to put appropriate pressure on their children.

The support factor of home-based parental involvement was not related to student achievement in the fifth grade; it had a very weak significant relation in the ninth grade according to the Pearson correlations. It seems that parents usually support their children in studying and preparing for exams and doing homework, regardless of their achievement, especially when they are young. Additionally, achievement could be related to a child's personal characteristics and abilities. The results of this research are in agreement with other studies that show no relationships between parental support and children's achievement (Driessen et al., 2005, as cited in Boonk et al., 2018). On the other hand, the results of this research concerning the relation between home-based parental support and children's achievement contradict other studies that show a positive relationship between parental support and academic achievement (Chen & Gregory, 2010, and Gordon & Cui, 2012, as cited in Boonk et al., 2018). They also contradict the results of Gonida and Cortina (2014) that showed that student achievement was affected only by support of autonomy in terms of home-based parental involvement. There was a significant positive relationship between controlling parental involvement and children's achievement in both grades. Student achievement was positively influenced by parental control of their watching television, using smartphones, and spending time with friends. Those have a greater effect on achievement than helping and supporting children. This may be related to the fact that friends, television, and social media affect the way children think and their attitudes to their studies. Also, there is insufficient time to study if free time is spent on other activities. This result agrees with Fisher and Friedman (2009), Gardiner (2015), and Makewa et al. (2012), who all confirmed that higher parental involvement led to higher achievement by children. However, it is contradicted by Gonida and Cortina (2014), who showed that parental interference related negatively to student achievement. It also contradicts other studies that showed that parental control had a negative effect on achievement (Karbach et al., 2013, and Levpuscek & Zupanic, 2009, as cited in Boonk et al., 2018).

In general, the factors of home-based parental involvement, support, and control showed no relationship or a weak relationship with student achievement. It seems that there are interference variables related to or affecting student achievement, such as school environment and policy, teacher support and teaching methods, student personality and ability to learn and approach to learning, and parental attitudes and the SES of both the home and school. Boonk et al. (2018) showed that parents take care of their children in different grades.

The differences between student achievement in individual schools are relatively high; this needs to be followed up by a deeper study to investigate the reasons. Although the differences in parental support and parental control

are not high, they cannot be neglected either. This agrees with Yarrow et al. (2014), who found differences between schools in Palestine in terms of achievement and parental care.

6.2 Discussion of school-based parental involvement

School administrators basically communicate with parents to give them an idea about their children's achievement and to hold meetings with them. They invite parents for such purposes around seven times per year. However, parents are rarely invited to meetings related to school planning. It seems that this is not only the case in Palestine; other studies (Pew Research Center, 2015; Symeou, 2020) showed that parents wanted to be more involved in the education system, even in school planning, although the relationships between parents and schools are limited. Based on our research, it is not favorable for the administrators to have parents who would like to become engaged as they may contradict the administrators' strategy and the school's goals. Parental involvement in school planning may divide the school into multiple branches, since parents may not agree. From another point of view, in Palestine, school goals and plans are usually authorized by school authorities such as the Ministry of Education.

Although there was either no relation or a very weak relation between home-based parental involvement and student achievement, the level of school-based parental involvement has significant correlations with achievement for the fifth and ninth grades. This agrees with studies that showed positive correlations (Martinez et al., 2007, and You et al., 2016, as cited in Boonk et al., 2018). It also agrees with other Arab world studies that showed positive relationships (El-Zeki & Khattab, 2012; Kharphan & Kasmi, 2020; Palestinian Ministry of Education and Higher Education, 2013; Yarrow et al., 2014). At the same time, the result contradicts other researchers who showed no relation between school involvement and student achievement (Johnson & Hull, 2014, and Phillipson & Phillipson, 2012, as cited in Boonk et al., 2018), or found no relationship between school involvement and student achievement (e.g., Choi et al., 2015, and Hayes, 2012, and Wang & Sheik-Khalil, 2014, as cited in Boonk et al., 2018). It is also contradicted by other studies that show negative correlations (e.g., Sakamoto, 2021; Stright & Yeo, 2014).

It seems that school-based parental involvement is related to student achievement. This could partially explain the reason for the significant correlation that exists between school-based parental involvement and student achievement in math. Intermediate variables related to students, parental SES, teachers, and schools could affect the relation. "When comparing high-performing and low-performing classrooms, we find important differences in both how teachers use their time, and how schools are run" (Yarrow et al., 2014, p. 5).

Conclusion

In general, parental involvement in their children's learning is good in Palestinian families, although it is higher for the fifth grade than for the ninth grade. Home-based parental involvement is more obvious, since it is under parents' control; school-based parental involvement is passive and limited, according to school authorities.

The correlation between school-based parental involvement and student achievement in math for the fifth and ninth grades is more obvious than that between home-based parental involvement and children's achievement. As mentioned in the discussion section, multiple variables could affect the relation between parental involvement, either at school or at home, such as student characteristics, school administrators and environments, and teacher characteristics, including their teaching style and methods of collaborating with students, and schools' and parents' SES. Phillipson and Phillipson (2012) showed that parental involvement did not have a direct effect on student achievement and that achievement depends on children's competence and children's cognitive levels. Sakamoto (2021) also showed negative relations between parental involvement and academic achievement when low-SES parents are involved in school management and when high-SES parents are involved in low-performing schools to improve learning. A study of the SES of parents is not available in the national assessment testing data for Palestine. There is a need for other quantitative and qualitative studies to look for other aspects, especially the parents' and schools' SES, in order to go deeper and to learn what lies beneath them.

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