

The Relationship among Parental Involvement, Socioeconomic Status, and Mathematics Achievement in Jordan

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Abstract: *The purpose of this study is to examine relationships between combinations of socioeconomic status (SES) of students' families, the students' parents' involvement (PI) levels, and students' mathematical achievement (SMA) in Jordan. A three sections instrument was distributed to parents/guardians of students in order to collect demographic information, socioeconomic status, parental involvement levels, and mathematics achievement. The sample consisted of parents of male and female students in fourth, fifth, and sixth grades; 93 male students (61.2%), and 58 female students (38.2%). The study revealed no relationship between socioeconomic status and parental involvement in Jordan, positive relationship between parental involvement at home (PIH) and students' mathematics achievement (SMA), a positive relationship between parental involvement at school (PISC) and students' mathematics achievement (SMA), and a positive relationship between family income and SMA, and parents' education level and SMA, while no relationship was found between parents' employment status and SMA. The findings suggested a number of recommendations for further research and practice, specifically with regard to curriculum development and the design of parent-school communication programs.*

Keywords: Parental Involvement, Mathematics Achievement

1. Introduction

Research on the relationship between parental involvement and academic achievement has become increasingly popular during the past three decades (Hill & Tyson, 2009; Perry & Langley, 2013). Parental involvement was found to correlate positively with student academic achievement (Barnard, 2004; Bower, 2011; Desimone, 1999; Hill & Craft, 2003; Hill & Taylor, 2004; Zellman & Waterman, 1998). Educational reform projects around the world are designing curriculum and academic programs that encourage parental involvement and improve student achievement in school (Al Jabery & Zumberg, 2008; Fayez, Sabah, & Rudwan, 2011). Therefore, it is essential to understand what influences parents' involvement in their children's education.

Zedan (2012) defined parental involvement using four attributes, which include "(a) conversations at home; (b) attention and supervision at home; (c) contact between parents and school; and (d) participation in parent-teacher meetings" (p.162). Moreover, several researchers (i.e., Henderson & Mapp, 2002; Ho & Willms 1996; Seginer, 2006) provide a more descriptive definition of those four attributes and categorize them into two groups: the first two attributes are considered parental involvement at home, and the second two are considered parental involvement with school. Furthermore, Ho and Willms (1996) separated those attributes into two more specific dimensions: parental involvement at home, which includes "Discussing school activities" and "Monitoring out-of-school activities", and parental involvement at school, which includes "Contacts with school staff" and "Volunteering and attending parent-teacher conferences and other school events".

Researchers have found that higher socioeconomic status is associated with higher parental involvement levels and

higher academic achievement and success (Desimone, 1999; Eagle, 1989; Ho & Willms, 1996; Katsilis & Rubinson, 1990; McNeal Jr, 2001; Shaver & Walls, 1998), while some scholars note that socioeconomic status positively correlates with higher levels of parental involvement and, subsequently, higher levels of academic achievement (Vellymalay, 2012).

The current study investigates the relationships among parental involvement and students' families' socioeconomic status, as well as students' mathematical achievement.

2. Literature Review

According to Young, Austin, and Grove (2013), school administrators, teachers, and parents perceive parental involvement differently, although their research predominantly covered the perceptions of parental involvement by school administrators. These researchers analyzed the qualitative data collected through a written answer to the question, "How do you define parental involvement?" The findings revealed that the school administrators define parental involvement as parents who are actively engaging in the school, e.g., communication with school personnel, and as supporting the students at home, e.g., helping with homework (Young et al., 2013).

Several research studies have found a positive correlation between parental involvement and students' academic achievement (Altschul, 2011; Lau, Li, & Rao, 2011; Zedan, 2012). In a study that involved 400 parents and concerned the relationship of parental involvement and academic achievement in school, Zedan (2012) found a positive relationship between parents' involvement and their children's achievement in school among the Arab-Israeli minority groups living in Israel. Also, Bradley (2010) found

a correlation between parental involvement practices and the reading achievement of fourth grade African-American males. In another study, Gest, Freeman, Domitrovich, and Welsh (2004) showed that parents' involvement with their children's reading activities at home had a significant influence not only on their reading achievement, language comprehension and expressive language skills, but also on their interest in reading.

Moreover, a study by Flouri and Buchanan (2004) showed that the most influential factor that affects the students' literacy practices is parental involvement. Parental involvement was found to be more important than social class, family size, or parents' education level.

Research has also shown that the earlier the parents become involved in their children's literacy practices, the more profound the results and the longer lasting the effects (Mullis, Mullis, Cornille, Ritchson, & Sullender, 2004) and these effects continue into the teenage years and adulthood (Desforges & Abouchar, 2003). Notably, Altschul (2011) investigated specifically which attributes of parental involvement affect academic achievement the most; her findings suggested that parental involvement at home was the factor that correlated positively with their children's academic achievement; however, whether or not parents were involved at school did not appear to affect their children's achievement.

On the other hand, in a meta-analysis of research on parental involvement and its effect on academic achievement, Fan and Chen (2001) concluded that parental involvement at home had the weakest effect on students' academic achievement. A notable finding of this meta-analysis is that parental involvement at home and at school had a stronger correlation with academic achievement represented by a "global indicator (e.g., GPA)" (p.17) than with content specific achievements such as mathematics grades. Parents' expectations and aspirations for their children's success, however, had the strongest relationship to their children's academic achievement. Mathematics is a subject that is often considered of lesser importance when compared to other content areas, specifically reading.

Interestingly, DeRosa (2011), in a qualitative study of mothers' attitudes towards mathematics and their daughters' achievement in mathematics, found that mothers attributed their daughters' success in mathematics to their beliefs about the importance of mathematics as a topic area and as tool for success in life and securing future jobs. This further emphasizes that parents' beliefs and attitudes about mathematics can be influential on their children's success in mathematics. Furthermore, as part of study that included a sample of 239 students, Oyserman, Brickman and Rhodes (2007) investigated the relationship between parental involvement and students' success in school and found that low parental involvement is associated with lower academic achievement. Stright and Yeo (2014) studied how school-focused parenting practices affected school behavior and achievement and reported that "School-focused parenting practices were significant predictors of children's achievement even after controlling for child variables, maternal education, and parenting styles" (p. 8).

In recent years, the Jordanian Ministry of Education (MOE) has launched a parental involvement initiative as part of a reform project in collaboration with the United States' Agency for International Development (USAID); the initiative focuses mainly on the early childhood stage and on developing ways to foster more productive communication between parents and schools at this critical stage in children's lives (Ihmeideh, Khasawneh, Mahfouz, & Khawaldeh, 2008).

This literature review shows the relationships among socioeconomic status, parental involvement, and students' academic achievement. These pre-existing relationships, mentioned earlier, in the literature provided the conceptual framework for this study. Also, the current educational system in Jordan and the initiative taking place in order to increase parental involvement further guided this study towards the goal of understanding the influences on parents' decisions to be involved in their children's education.

3. Methodology

Sample

The sample included parents of male and female students in fourth, fifth, and sixth grades. The sample included 93 male students (61.2%), and 58 female students (38.2%). Table 1 shows the numbers and percentages of the students in the Jordanian sample distributed by gender.

Table 1: Numbers and percentages of students by gender in Jordan sample

Gender	Number	Percent
Male	93	61.2%
Female	58	38.2%

Note. One parent did not report the gender of their child.

Questionnaire:

Data were collected using a questionnaire that focused on demographic information, socioeconomic status, parental involvement levels, and mathematics achievement. The questionnaire consisted of three main sections that collected specific data on different variables:

Demographic data and GPA.

The first section of the questionnaire was designed to collect demographic information about the participants including gender, age, number of adults in the home, and grade level, as well as the students' mathematics grades.

Socioeconomic Status

The second part of the questionnaire was adapted from Vellymalay's (2012) study on the relationship between parental involvement and socioeconomic status to measure the variables that form the families' socioeconomic status, such as parents' education level, household income, and parents' employment status.

Parental Involvement

The last part of the questionnaire was a short Likert-type scale survey consisting of 20 items that were "developed as a collaborative effort between the School-Family Partnership project at the University of Illinois at Chicago, a

collaborative site of the Mid- Atlantic Laboratory of Student Success at Temple University, and personnel at the participating schools” (Patrikakou & Weissberg, 2000, p. 109). The first 13 items measured parental involvement at home and the final seven items measured parental involvement at school. Patrikakou and Weissberg (2000) reported that the parental involvement at home (PIH) measure had a Cronbach’s alpha of .77, while the parental involvement at school (PISC) measure had a Cronbach’s alpha of .71.

Fayez, Sabah, and Rudwan (2011) developed an Arabic version of this instrument using the back-translation method. Then a focus-group interview “was conducted with six parents who volunteered to read and discuss their views on the questions of the questionnaire. Some were reworded and clarified, while a few were deleted or substituted” (p.244). A panel of experts in the field also reviewed both versions of the instrument and found that both versions measured the same constructs. Finally, the instrument was pilot-tested on a sample of 80 parents and Cronbach’s alpha was calculated; the reliability index for the instrument was found to be .842. This reliability index translates into a reliability coefficient of .708 and that the instrument has an acceptable level of reliability (Cortina, 1993).

4. Results

Spearman correlation coefficients were calculated to determine if a relationship existed among the three variables that form socioeconomic status (i.e., parents’ education, family income, and parents’ employment status) and the parental involvement levels of parents, both at home and at school. Table 2 shows the results of the Spearman correlation test.

Table 2: Spearman rho Correlations between SES and PI

	Socioeconomic Status (SES)		
	Parents’ Education	Family Income	Parents’ Employment Status
Parental Involvement at home (PIH)	-.012	-.035	.082
Parental Involvement at school (PISC)	.029	-.118	.147

Note. * $p < .05$, two-tailed; ** $p < .01$, two-tailed. $n = 146$.

Table 2 shows that the correlation coefficients between parental involvement at home (PIH) and the three SES variables: parents’ education level, family income, and parents’ employment status were not statistically significant ($p > .05$). Also, the table shows that the correlation coefficients between parental involvement at school (PISC) and the three SES variables: parents’ education, family income, and parents’ employment status were not statistically significant ($p > .05$). These results suggest that there is no relationship between parental involvement, both at home and at school, and SES (i.e., parents’ education, family income, and parents’ employment status).

Table 3: Spearman rho Correlations between PI and SMA

	Parental Involvement (PI)	
	Parental Involvement at home (PIH)	Parental Involvement at school (PISC)
Students’ Math Achievement (SMA)	.247(*)	.228(*)

Note. * $p < .05$, two-tailed. $n = 117$.

Table 3 shows that a statistically significant correlation ($p < .05$) exists between parental involvement at home (PIH) and students’ mathematics achievement (SMA). Also, a statistically significant correlation ($p < .05$) exists between parental involvement at school (PISC) and students’ mathematics achievement (SMA). These results show a positive relationship between parental involvement, both at home and at school, and students’ mathematics achievement.

Table 4: Spearman rho Correlations between SES and SMA

	Socioeconomic Status (SES)		
	Parents’ Education	Family Income	Parents’ Employment Status
Students’ grade in math (SMA)	.444(**)	.303(**)	.147

Note. * $p < .05$, two-tailed. ** $p < .01$, two-tailed. $n = 117$.

Table 4 shows that a statistically significant correlation exists between students’ mathematics achievement (SMA) and two of the socioeconomic (SES) variables: parents’ education level ($p < .01$) and family income ($p < .01$). The results show that no relationship exists between SMA and parents’ employment status ($p > .05$).

5. Findings

This study aimed to investigate the relationships among parental involvement (PI), socioeconomic status (SES), and students’ mathematical achievement (SMA) in grades four through six. The first purpose of the study was to examine whether or not a relationship exists between socioeconomic status of students’ families and their parents’ involvement levels. A second purpose was to examine whether or not a relationship exists between parental involvement and students’ mathematical achievement. Third, the study examined whether or not a relationship exists between socioeconomic status and students’ mathematical achievement.

With regards to the relationship between socioeconomic status of parents and their parental involvement levels, the correlation test conducted showed no significant relationships between PI (PIH and PISC) and any of the SES variables (parents’ education, family income, parents’ employment status). These results contradict many of the studies that showed low socioeconomic status families are the least likely to be involved in their students’ education (Turney & Kao, 2009; Ratcliff & Hunt, 2009; Velsor & Orozco, 2007; Machen, Wilson, & Notar, 2005; Abdul-Adil & Farmer, 2006). This can be explained by the social structure of Jordan, where parents are pressured by societal norms or “customs and traditions” and feel obligated to be involved in their children’s education regardless of their socioeconomic status.

The investigation into the relationship between parental involvement and children's mathematical achievement revealed a positive relationship between PIH and SMA. Also, a positive relationship was found between PISC and SMA. The findings regarding the relationship between PIH and SMA agree with the findings of previous research (Altschul, 2011; Lau, Li, & Rao, 2011, Zedan, 2012), which indicated that higher parental involvement at home leads to higher mathematics achievement. Furthermore, other research on Parental Involvement found it to be positively predictive of a child's mathematics achievement (Gonzalez & Wolters, 2006; Reynolds, 1992; Pan, Gauvain, Liu, & Cheng, 2006). Moreover, Friedel, Cortino, Turner, and Midgley (2010) noted that parental involvement, in its many and varied ways is a vital parameter for increasing children's mathematics achievement.

Concerning the relationship between socioeconomic status and students' mathematical achievement, a correlation test showed that a positive relationship among such variables as family income, parents' education level and SMA. However, no relationship was present between parents' employment status and SMA. A possible explanation for this is that, in Jordan, women mostly occupy jobs that require regular work hours that end by the time children return home from school. This might negate the effect of any relationship between the mothers' employment status and their ability to help their children or provide the necessary home environment needed for academic success.

6. Recommendations for Future Research

This research focused on parents of students in grades four, five, and six from Jordan. For future research, there is need to engage in a cross-cultural study that aims to investigate the relationships among parental involvement (PI), socioeconomic status (SES), and students' mathematical achievement (SMA) throughout different grade levels to measure any differences or similarities in the relationships by grade level.

Replication of this study is also recommended, specifically, with a larger sample and at several institutions in Jordan and in different countries. Comparing different institutions and countries may influence an educational reform to change strategies and adopt new policies to design more comprehensive curriculum and academic programs to help increase parental involvement both at home and school, which, in turn, will likely increase students' overall academic achievement. Results from this study might be used to inform policy-makers and curriculum developers about various strategies that are already being implemented and proven successful in increasing parental involvement levels. Moreover, studies aimed particularly at investigating institutional policies and the possible reasons for any decreased parental involvement are recommended. Possible ways to assess this would be to survey different institutions' administrators and educators (e.g., curriculum developers) to assess problems with past and current strategies designed to encourage parental involvement. Different strategies used to motivate parents and how these strategies are incorporated in the schools' curricula and policies could also be made apparent with this approach.

Last, a longitudinal study is also recommended to capture other possible factors that may influence parental involvement at home and school. Such a study may provide more detailed descriptions of how parental involvement influences academic achievement levels. Additionally, such a study may serve as a checkpoint for improvements before and after development of curricula that incorporate and emphasize the element of parental involvement as an important mechanism for obtaining higher academic achievement levels with deeper understanding.

The findings of this current study, as well as the findings of the studies recommended above, can influence school policies and school-parent communication by serving as the starting point of parent-outreach programs that would help increase parents' knowledge about the importance of being involved in their children's education, as well as their ability to teach their children. Results of such studies might lead to the development of school curricula and/or policies that require parental involvement throughout the school year, which could lead to an increase in students' mathematical achievement, in particular.

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