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Male Saudi Arabian Freshman Science Majors at Jazan University: Their Perceptions of Parental Educational Practices on Their Science Achievements

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MALE SAUDI ARABIAN FRESHMAN SCIENCE MAJORS AT JAZAN UNIVERSITY: THEIR PERCEPTIONS OF PARENTAL EDUCATIONAL PRACTICES ON THEIR SCIENCE ACHIEVEMENTS

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A dissertation proposal submitted in partial fulfilment
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ABSTRACT

Examination of Saudi Arabian educational practices is scarce, but increasingly important, especially in light of the country's pace in worldwide mathematics and science rankings. The purpose of the study is to understand and evaluate parental influence on male children's science education achievements in Saudi Arabia. Parental level of education and participant's choice of science major were used to identify groups for the purpose of data analysis. Data were gathered using five independent variables concerning parental educational practices (attitude, involvement, autonomy support, structure and control) and the dependent variable of science scores in high school. The sample consisted of 338 participants and was arbitrarily drawn from the science-based colleges (medical, engineering, and natural science) at Jazan University in Saudi Arabia. The data were tested using Pearson's analysis, backward multiple regression, one way ANOVA and independent t-test. The findings of the study reveal significant correlations for all five of the variables. Multiple regressions revealed that all five of the parents' educational practices indicators combined together could explain 19% of the variance in science scores and parental attitude toward science and educational involvement combined accounted for more than 18% of the variance. Analysis indicates that no significant difference is attributable to parental involvement and educational level. This finding is important because it indicates that, in Saudi Arabia, results are not consistent with research in Western or other Asian contexts.

This dissertation is approved for Recommendation
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DEDICATION

I dedicated this work to my late father Dakheel Hazzal Alrehaly, may Allah shower his Mercy upon him, also to my Mother Swaleha Nahi Alawfi, and may Allah reward her full credit of every good deed that I have ever done or will ever do, for all her sacrifices to light my way up. Last but not least, I dedicate this work to my wife Ris, who never fails to give up support to me and sacrifices for me , and my children; Syfia , Mohammed and Yazen, I wish this small work will inspire them to do their best on their life voyage.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I: INTRODUCTION

The Importance of Parental Practices

Across cultures, from birth through high school, children and parents dynamically interact under one roof. During these formative years parents transmit their experiences, traditions and behaviours to their children to insure their success in the future. These experiences are passed directly through the interactions between parents and children or indirectly in the general atmosphere in the home. Thus, parental practices are considered to be important components that affect children's psychological development and educational success. In secondary school the mission becomes very complicated for both parents and their adolescent children. The transition from childhood to adolescence is loaded with many rapid changes (e.g. cognitive, physical, emotional and social).

For decades researchers have investigated the effect of parental practices on their adolescents psychological development and school achievement, whether they are members of minority or majority groups, and across cultures worldwide (Ang & Goh, 2006; Kim & Rohner, 2002; Neuenschwander & Garrett, 2007; Rogers et al, 2009). Summarizing the results of this research, parents have been found to positively influence their adolescents educational development and success (Bogenschneider, 1997; Epstein, 1995, Grolnick & Slowiaczek, 1994; Hill & Taylor, 2004; Cummings, 1986; Chavkin & Williams, 1993).

In the Western world a number of studies have positively connected parental style and parental involvement to student achievement (Baumarind, 1977, 1991; Steinberg, 1994; NRC, 2001; USDE, 2000; Epstein, 2001; Henderson & Mapp, 2002; Jeynes, 2003). Several studies

have reported parental attitudes, involvement and behaviors as critical factors that influence children's psychological development and academic achievement (Epstein, 1995; Hoover-Dempsy, 2005; Boethel, 2003). Parental influence has also been positively correlated to student academic achievement in Asian nations (Stevenson, 1993). The academic success of South and East Asian students, especially in mathematics and science has been linked to parental efforts and was the major focus of several studies (Stevenson, 1993; Sue & Okazaki, 1990; Baker, 1993; Stevenson, Chen, & Lee, 1993). For more than a decade East Asian students have scored at the top in international comparative standardized tests of math and science. Longitudinal studies such as Trends in International Mathematics and Science Study (TIMSS) have monitored student performance in mathematics and science worldwide since 1995. So far, TIMSS has been administered four times, in 1995, 1999, 2003, and 2007. The national ranking of the scores indicates that the same countries consistently achieve the top scores. East Asians students from particular areas (e.g., South Korea, Singapore, Honk Kong, Taiwan and Japan) score higher than students from any other nations. Studies have been published to uncover the reasons behind East Asian students' enormous attainment. Some of the studies connect that achievement to East Asian culture (Chen & Stevenson, 1995; Chen, 1996) and other studies link it to parental factors such as parental authoritative style (Baumrind, 1976; Stenberg, 1993), parental involvement (Epstein, 1995; Hoover-Dempsey, & Sendelr, 2005), parental attitudes (Smith & Cheryl, 1997), and parental expectations (Patrikakou, 2004). Parental educational level and parental support (Hakkinen, KirJavainen, & Usitalo, 2003) were other factors addressed by researchers.

Parents are reported to be one of the major factors that impact adolescents' psychological adjustment (Baumrind, 1967; Mcooby, & Matrin; 1983; Darling & Stenberg, 1993) and academic achievement (Epstein, 1995, 1991; Hoover-Dempsey & Sandler, 2005; Fantuzzo,

Tighe, Childs., 2000). However, what specific kinds of parental intervention have the greatest impact on children's psychological and academic development is still being argued. There is no consensus among educators about the best terminological fit to describe the nature of parental interventions or to describe parental-child interactions (Fantuzzo, et al., 2000). In the literature, parental involvement, parental practices, parental attribution and parental style have been mixed, isolated, and flipped to investigate the same issues; children's psychological development and/or academic success. For the purposes of this study, parental style and school involvement are integrated and used to explain the nature of parent-child interactions that influence students' science achievement in the Saudi Arabian secondary school context.

East and Southeast Asian Achievements in Mathematics and Science

East and Southeast Asian student achievements in math and science are higher than their counterparts worldwide, but we have limited information about why those differences exist and persist. Unfortunately, in the West and Southwest parts of Asia few studies have been conducted to investigate how parental practices influence children's academic achievement in science. What academic atmospheres do these children live in at home, what kind of academic support is provided to them, and how does this affect their science education? This study investigates Saudi Arabian parents' style and educational involvement as reported by their children, and how that influences their adolescents' science achievement in secondary school. Is it parental influence that leads these adolescents to major in science in universities in Saudi Arabia?

When comparing Saudi students' achievement in science and math to their counterparts in other parts of Asia, the East Asian students are at the top of the list and Saudi Arabian students

are at the bottom, or have not even made the list (Wiseman, Sadaawi & Alromi, 2008). At the level of social construction, Saudi Arabian society shares certain traditions, values and educational vision with one of the most successful examples of East Asian states (Singapore), and shares some culture attributes with others, even exceeding some of them in terms of wealth per capita (e.g. China, Malaysia) (International Monetary Fund, 2010, World Bank, 2009).

In East Asia, Confucian, Islamic, Buddhist and Hindu cultural ideologies dominate more than 90% of the population. These ideologies have similarities in their views of the child–parent interaction and the responsibilities of parents to their children. For instance, they share the viewpoint that children are essentially good and emphasize the role of parents and the home environment in the psychological development of children (Stewart et al, 1999; Chao, 1994 & Obeid, 1988). They also share the view that younger people must obey and rarely question older authorities because of respect for the wisdom of the elders (Chen, Chang, & He, 2004).

Islam is dominant in Saudi Arabia and a variety of Asian religions, including Islam (18.8%), dominate Singapore. What these countries share is the level of interaction within the family (Stewart et al, 1999; Chao, 1994 & Obeid, 1988). Additionally, both Singapore and Saudi Arabia are wealthy societies, and the vision of education in both is influenced by Western perspectives. It seems, considering the transition that has occurred in the system of education in Saudi Arabia in the last decade, and the money that has been injected to the education system to make it similar in quality to western education systems (MOHE, May, 2011), that international test results would have improved more noticeably. In South and East Asian nations, parental influence on children's science achievements has been studied, evaluated, and found to be a positive influence (Stevenson, 1993; Sue & Okazaki, 1990; Baker, 1993; Stevenson, Chen, & Lee, 1993). However, the influence of Saudi Arabian parents on their children's science

education has not yet been tested. That is the goal of this dissertation; to understand and evaluate parental influence on male children's science education achievements in Saudi Arabia.

The Purpose of the Study

The purpose of this study was to determine the dimensions of integrated- parental practices and their relationship to student achievements in science in Saudi Arabia. The major goal was to investigate the role that different types of parental educational actions (attitude, involvement, control, structure, and autonomy-support) play in predicting adolescents' science achievements in male freshmen Saudi Arabian students at Jazan University. The targeted group consists of students from 18 to 20 years old. They are male undergraduate science majors enrolled in the preparatory year Jazan University. These students graduated from high school the previous semester, they are representative of middle class socioeconomic status, and have similar academic abilities. The study investigated the differences in the dimension effects of integrated parental practice on these male students.

Although the relations between parental practices and children's educational achievement have been studied on the Asian continent, the term "Asian students" in the literature consistently means students who are of Chinese descent and who are often representative of the more developed countries in Asia such as Singapore, Japan, South Korea, Hong Kong, and Taiwan. The Asian continent is huge and there are countries such as Vietnam, Cambodia, Thailand and Indonesia who share similar descent and geographic areas with the more developed nations but their academic achievements are similar. On the same continent, the west and southwest part of Asia, there are countries not on the list of high academically achieving students. They are

excluded either because of a shortage of data reported on student academic achievements in general, and in math and science specifically, or because they are achieving at much lower levels than their competitors in the eastern part of the continent. Thus, in the literature there is a dilemma of generalization. Indeed, generalizing what has been found in some East and Southeast Asian nations as "Asian student achievements" to students of the whole Asian continent is inaccurate and biased. Thus, this study has endorsed the terms reported in some literature as "East and Southeast Asian students" instead of the term of "Asian students" for reasons of accuracy. Having specified the geographic zone, the study reports what has been found regarding parental influence on children's science achievements in East and Southeast Asia, and applies it to Southwest Asia, specifically Saudi Arabia. The results the study will either confirm or question the relevance of previous research applying educational outcomes for the whole of Asia to the Saudi Arabian educational context.

A review of research examining East and Southeast Asian parents' influence on their children's school achievements finds that these studies focus either on parental involvement in general, without consideration of the multi-dimensions that are associated with parental involvement, or are focused on primary and secondary level students. Thus, this study uses research on East and Southeast Asian primary school and secondary students and extrapolates those concepts to examine choice of major in the first year of college. The study was also designed to expand examination of parental practices to a multi-dimensional level by including not only parental education levels and level of involvement in their children's education, but also other parent–adolescent relationships such as parental autonomy, support, control, structure and attitude.

The outstanding performance of East and Southeast Asian students has been consistent since 1995, and the role that parents play in their children's achievements is widely documented in the literature. Unfortunately, much less research has been accomplished in the Western and South-western parts of the Asian continent. In Saudi Arabia, few studies are found that investigate the effect of parents on their children's academic achievement or that examine their influence on their children's psychological development. Thus, this study does three things that have not been done before. (1) It examines parental effects on children's psychological and (2) academic success in a (3) post secondary setting; the first year of college. The research is focused Saudi Arabia, a nation for which there is little extant educational research.

Significance of the Study

When reading the literature addressing student science and math achievements across cultures, it is clear that parent-child interactions are connected to successful student outcomes. However, a longitudinal and well-funded study like TIMSS has neglected the importance of generating a comprehensive parental multidimensional questionnaire to explain the continued outstanding scores of East and Southeast Asian students in math and science compared to their global counterparts.

This study is not designed to explain science and mathematics score disparities on a global level, but it investigated the influence of parents on their children's science achievements in a Southwest Asian context. The research was conducted, in part, through the mechanism of studying student perceptions as part of the data collected in schools, and in part through information self-reported by students. This approach will expand the solidity of TIMSS data analysis and help to explain the relationship between East and Southeast Asian student

achievements. It could also be useful to grasp important dimensions of Saudi Arabian students' cognitive development.

As a part of a student questionnaire, TIMSS includes items regarding certain aspects of parental involvement (e.g. home environment, parental education levels, and parental expectations), yet that is inadequate when we consider that student psychological development is a necessary aspect of judging student academic success. Hence, this study tended to explore factors missing from the TIMSS questionnaires regarding parental influence on children's academic success. Results of the study stressed the importance of including such additional information about parent-child interactions in comparative studies such as TIMMS. That students' score high on this standardized test does not necessarily reflect their psychological development, but rather that they may recall what they were prepared for. Reporting parent-students relations is crucial to understand these students' psychological development skills (e.g. self- esteem, self- efficiency) and promote the quality of future scientists.

In this study, a parents' integrated model is assessed using two independent sources. These are student responses, and their high school science examination scores. Thus, the correlation found between parental practices and student academic outcomes will not be due to bias accrued through parental reporting. Using student's academic reports to evaluate the relationship between parents' integrated style and level of involvement has been reported in the literature (Dornbusch, at al., 1987) and found to have greater potential to predict achievement than parent and/or teacher reports (Reynolds, 1991).It has also been found that children's perception and interpretation of parental practices are significant mediators of parental influence (Chen et al., 2000; Gallagher, 2002; Hoover-Dempsey & Sendle, 2005).

The rationale for this study is the need to determine the influence of parental educational involvement and style on male secondary school student's science achievements in Saudi Arabia. The instrument used in the study is based on Grolnick's (2003) multidimensional model of parenting effectiveness. The instrument was validated in a pilot study done in the United States, but it has not previously been used to study the Saudi Arabian education system. As far as the researcher has been able to determine, this is the first study to attempt to apply Grolnick's (2003) model in the Saudi Arabian context. There is a lack of data about Saudi Arabia in the academic worldwide literature and this study intends to begin to fill that gap and highlight the importance of parental practice on their children's academic achievements and outcomes.

Theoretical Framework of the Study

Parents' educational involvement and style have been found to be powerful factors that influence students' development and educational outcomes (Baumarind, 1966; Pattrikakou, Weissberg, Redding & Wallberg, 2005; Chen, 1999; Craft, 2003; Handerson & Mapp, 2002; Epstein & Van Voorhis, 2001). The literature has many examples of theories that explain parental actions, and the influence that those actions have on their children's development and academic outcomes. The seminal works of Baumarind (1966) and Maccoby and Martien (1983) have been used as model frameworks for studies in parenting style. Baumrind (1966) identified three patterns of parenting styles: authoritarian, authoritative, and permissive. Later, Baumrind's typology was modified by splitting the permissive dimension into two types; indulgent and neglectful (as discussed in Maccoby & Martin, 1985). Many studies regarding the influence of

parental style and involvement on children's development and academic achievement are conceptualized using one or both frameworks.

In the recent literature, Epstein's typology (1995), and Grolnick's model (1995) have been transformed into different models. However, these models roughly correspond with each other in evaluating many aspects of parental influence on children's development and school achievement. As this study intends to directly connect parental practices to their children's science achievements, it is theoretically framed on both Epstein's (1995) typology and Grolnick's (1995) multidimensional work. Despite some overlap between these two frameworks, both works are definitely linked to student outcomes, and each model is unique. Epstein focused heavily on parental involvement in their children's education. In comparison, Grolnick's (1995) multidimensional model has integrated parental educational involvement along with parental style to underscore the importance of psychological development in overall academic success.

Epstein's Typology:

Epstein's (1995) model categorizes parental educational involvement into six types: from basic needs to highly sophisticated parent-child interaction (Epstein, 1995). Epstein's model is designed to facilitate school communication with parents and give them the opportunity to share responsibility about their children's learning. It consists of several components: (a) assist parents to meet children's basic needs, (b) communicate with parents on child focused concerns, (c) motivate parents to volunteer in school activities, (d) help parents to learn at home activities, (e) help parents in decision making regarding their children, and (f) invite parents to participate in school-community collaborations. In order to be effectively measured, these six categorizes were comprised of three separate dimensions: Home–based involvement, school-based involvement,

and home–school conferences (Fantuzzo, et al., 2000). Epstein's (1995) six-level model is correlated to parental educational involvement rather than the parental style of Grolnick's (1995) model, because it is focused on child-home-school communication. Epstein's model has strengths related to its emphasis on the link between home and school. Its weakness is that it does not directly address the psychological needs that children may have. Some of its elements do have a psychological component that is not actively addressed. For instance, assisting parents to meet children's basic needs (e.g. maternal affection, food & shelter), volunteering in school activities, and collaborating on community projects have psychological elements and can be linked to parental style.

Grolnick's Model:

Inspired by self-determination theory (SDT) (Deci & Ryan, 1985), Grolnick (1995) constructed three dimensions for effective parenting: involvement, autonomy support versus control, and structure (Grolnick, 2003). Grolnick (1995) claimed that children cannot regulate their schoolwork without these three important dimensions. The great potential of Grolnick's multidimensional model is the differentiation between parental psychological control "control" and behavioral control "structure". However, Grolnick admitted that there is a fine line between both sorts of control, which may lead to ambiguity (Grolnick, 2003). Another potential seen in Grolnick's work is that parental involvement is categorized by three types of involvement: school, cognitive/ intellectual, and personal (Grolnick & Slowiaczek, 1994). These three types of parental involvement loosely correspond with Epstein's (1995) work on parenting.

When comparing Grolnick's (1995) model to Epstein's (1995) typology, parental involvement, labelled as school (e.g. going to school conferences) in Grolnick's (1995) work

corresponds with Epstein's idea (1995) about communicating with school (e. g. parent- teacher conferences). Additionally, the cognitive/ intellectual and personal in Grolnick's (1995) model matched with decision making (e.g. district or state level committees) , volunteering(e.g. participating in school activities, field trips) and collaborating with the community (e.g. partnerships with businesses, service to community) in Epstein's (1995) typology.

Grolnick's (1995, 2003) research integrates parental involvement and parental style by joining them in three dimensions to construct an effective parenting model based on involvement, autonomy (support versus control), and structure. The potential of this model comes from the association between parental style and parental involvement, the difference is between parental psychological control (control) and behavioral control (structure) and the three types of parental involvement. Following is a discussion of the separate elements of Grolnick's model (1995).

Parental Involvement:

Parental involvement, as defined by Grolnick (2003), includes all the three types of involvement–personal, behavioral, and cognitive, which are linked to student academic achievement through students' motivation to achieve. The personal dimension includes parental level of involvement with their children's education. This includes, for example, awareness of and an interest in what a child is interested in learning, what they enjoy, and their preferred hobbies (Grolnick& Slowiaczek, 1994; Scappaticcio, 2009). The behavioral dimension addresses parental actions such as participating in school and home activities. This may include parental attention to homework and activities designed to further learning. The cognitive-intellectual

dimension focuses on parentally driven discussion of daily events, sharing books, and choice of television programs (Grolnick & Slowiaczek, 1994; Scappaticcio, 2009).

Autonomy (support versus control):

The dimension of autonomy is described as how parents and children interact; whether parents reason with children and allow options or whether they control all or most aspects of behavior (e.g. giving their children time for problem solving, and allowing them to make independent decisions about their homework or having parental restrictions in place). This type of relationship between parents and children may work either as "supportive" of student outcomes or "not supportive", causing declined performance through psychological control. According to Grolnick (2003) autonomy support interaction is an element that leads the child to feel compelled to behave in a certain way. Autonomy support may be matched with Baumarind's notion of the "authoritative" style of parenting (Baumarind, 1967). Another wing of the autonomy dimension is "control" which is also referred to as psychological control. As identified by Grolnick (2003) they are on opposite ends of a continuum. Control includes limitations on children's practice (e.g. imposing parental values on children). Control may also be understood as "authoritarian" through Baumarind's (1967) work.

Structure:

Structure, as used by Grolnick (1995), has been identified as "behaviour control" by Barbe (1995). Structure refers to the consistency and specification of parental rules, expectations, and the results of failure which lead children to adjust their practices in order to achieve the desired academic achievement. Examples of parental structure include clear (or unclear)

communication from parent to child giving instructions about behavior expected at school and at home (Grolnick, 1995). Due to the wide range of parental practices described in both Epstein (1995) and Grolnick's models, the current study adapts both models in the school setting, with the understanding that Epstein's (1995) typology notions are comprised under Grolnick's (1995) model.

Selection of these two models was made for two reasons. First, for the potential of reaching beyond parental involvement by integrating it with parenting style, and second, because of the age of the targeted student population, as this study is to be conducted at the post-secondary level. Students' needs at adolescence are different from their needs during childhood. Third, psychological aspects such as self- regulation, self-worth, perceived competence, relatedness, among others, are critical in formulating an adolescent identity.

Definition of Terms:

Parent(s): students' fathers, mothers or both, or caregiver

Parental practices: the whole parent-adolescent interaction in the educational context which includes parental educational involvement and style intended to motivate academic achievement for their adolescents.

Parental style: a broad composite of beliefs and attitudes that provide context for parental behavior (Darling & Steinberg, 1993).

Parental involvement: includes education support, discipline and practices that parents use to take a role in their children's academic success.

East and Southeast Asian students: East Asian students as used in this study means students who are of Chinese descent and belong to more developed countries in general and

what's being called the four-economic tigers; specifically Singapore, Hong Kong, South Korea and Taiwan.

East and Southeast Asian student achievement: student achievements in math and science on standardized tests (e.g. TIMSS).

Preparatory Year: The year immediately after high school, which Saudi Arabian students spend in a special educational setting. The goal of the preparatory year is to ensure the students are prepared for university level work.

Saudi Arabian students: male students in Jazan University in Saudi Arabia who have just finished high school and are enrolled in the first semester of a preparation year.

Saudi Arabian Student's achievement: student scores at the high school level as reported on their school certificates.

Western Countries: The United State of America and the European Union

Statement of the Problem

As the literature has confirmed the importance of including parents in educational procedures, the results of this study, of course cautioned educators and school administrators to reach out to parents. Parents are critically important because they hold a key to their children's ability to achieve well in school. This study is important when considering the huge amount of money that has been injected to reform the system of education in Saudi Arabia. For decades the Saudi Arabian government has outspent per capita more developed East Asian nations in an effort to place its own students on the map of internationally recognized nations in education. However, it is obvious that Saudi Arabian students are not on the lists generated by authentic studies like TIMSS (Martin, Mullis, & Foy, 2008), which attempt to compare worldwide student

achievements in science and math. Moreover, lately Saudi Arabian universities are listed almost at the bottom of the list of globally ranked universities. The decline of education, and the poor performance of Saudi Arabian students in science and mathematics lead to several important questions. Could this money have been utilized more effectively? What can be done to improve educational outcomes for Saudi Arabian students, specifically in mathematics and science? Are there parental practices that improve student achievement and outcomes in math and science? These and other questions may find answers in local social contexts when we compare our social philosophy and vision of education to examples of successful nations either in East Asia or in Western counterparts.

Like East Asian cultures, Saudi Arabian culture is rooted in a strong tradition of "tight" family relationships in which students live after becoming adolescents or even in adulthood. Thus the legitimate questions that this study aims to explore are: What are Saudi Arabian parents doing to support their children's academic achievement in general, and in science specifically? Do parent-child interactions at home inspire creativity and spread a healthy educational atmosphere? What kind of parental attitudes and involvement do Saudi Arabian male students' at Jazan University report that motivated them to achieve academic success? These important questions have not been investigated in a Saudi Arabian context. The investigation is proposed based on what has been found in East Asian and western literatures; that parents' practice is positively connected to students psychological development and academic success.

Research Questions

This study investigates how integrated- parental factors such as involvement, control, support, and structure influence children's achievement in science among the students of the

College of Science in Jazan University in Saudi Arabia. These are students who have just finished high school level and are enrolled in the College of Science at the primary level (aged 18-20). The *differences in integrated parental support model* developed by Grolnick (1995) (involvement, control, support, and structure) and its influences on student achievement in science is an appropriate choice. This study will be guided by the following questions:

1. How do parents' educational practices relate to students' science achievements in high school?
2. As reported by students, what aspects of the parents' educational practices model can predict students' science achievement regardless of all other demographic information?
3. What is the relationship between parents' educational level and parents' attitude toward science education and educational involvement?
4. What is the relationship between the most effective aspects of parents' educational practices and students' choice of science major?

The Limitations of the Study

First, the results of this study are based on a student sample from the College of Science, Jazan University, Saudi Arabia. These students have just finished high school and are enrolled in their preparatory year during the academic year 2011/2012 (aged 18-20), the participants are predominantly Saudi Arabians, and all are male, Middle Eastern, and Arabic speaking. Caution should be used in interpreting and generalizing the findings beyond student age, sex, and Saudi Arabia's Jazan University context. Second, this study examines parents' involvement and practices based on their children' reports. Children's perceptions and interpretation of their

experiences with their parents may vary or produce biases (Ong, & Tan, 2001). Reports from the perspective of the parents might produce different patterns and results. Third, students report parents as a couple or as one parent. Fathers and mothers play different roles in their children's lives, and fathers and mothers may have different parenting practices, they may be involved in their children as a team, or each one may contribute in a different way. In the Western literature, fathers of adolescents have been found to be academically involved equivalent to the mother at home, but less involved at school (Shumow, & Miller, 2001). In East Asian culture mothers were reported to be involved in children's academic experiences more than fathers (Ong, & Tan, 2001). Now, as cultural contexts vary, and this study is based in the Arabic culture, the attribution of the involvement of fathers and mothers may be different. Finally, although the relationship between parental practices and student's educational outcomes is well-documented in the United States and European literatures, there are few studies addressing the same issues in Southwest Asia. So there is a lack of data in the Saudi Arabian context, which has made this study heavily loaded with western literature, especially Western literature examining education in a Southeast Asian context.

CHAPTER II: LITERATURE REVIEW

This chapter reviews the literature on parental attitudes toward science, parental styles, parental involvement, and related studies that explore the relationship between these factors and high student achievement in science. It also discusses related studies done in Asia in general and in Saudi Arabia in particular. The chapter concludes with an explanation of the Saudi Arabian educational system.

Students' Perceptions about their Parents

In general, adolescents in high school still live with and interact with their parents daily. Their parents' daily practices are the framework of their lives. Within this setting of the parent – child relationship, students expect their parents' intervention and contribution to their future success. In this stage students have a sensitive mature ability to understand their parents' behaviors and to judge the impact of those behaviors. Thus, students' perceptions about their own abilities and their parents behaviors are connected, and are important factors influencing student progress (Bosco, Renk, Dinger, Epstein & Phares, 2003)

According to the theoretical framework of Social Cognitive Theory (SCT) significant understanding of the process of learning may be determined through the interrelationship between personal self - perception, behavior, and environmental factors (Bandura, 1985) thus, students' academic achievement could be the result of parents' educational contributions. Some studies have investigated students' perceptions of the people around the students for correlation.

For example, students' perceptions about their teachers respect, interest, and educational support was positively perceived by students to influence their academic motivation and outcomes. In contrast, teacher disinterest was found to be correlated to lack of student commitment to school and to high dropout rates in non-white students of low socio-economic status (SES) (Zimmerman, Khoury, Vega, Gill, & Warheit, 1995). Another study investigating African-American students about their perceptions of school success revealed that the students felt that among the six issues impacting their school achievement, family was the most important (Forsbach, Yanowitz & Fiala, 2002). This is important because students' beliefs about their school achievements are often highly correlated with the educational perceptions held by their parents (Wigfield, 1983; Johnson, Brookover, & Farrel, 1989).

Students' perception about their parents' educational practices is correlated to the students' achievements (Chong et al, 2006, Grolinck & Ryan, 1989; Carlson, 1990; Paulson, 1994). Hence, we can conclude that students' perception about people connected to them is reliable and can highlight the efforts made by parents and/ or other connected people to support students' academic success or failure. In the current study, participants are requested to report their own perceptions about their parents' educational practices and about the influence those practices had on educational achievements, specifically in science.

Parental Attitudes toward Science Education

There is no consensus for a specific definition of attitude, however in the literature attitude has been generally determined to be a stimulus often associated with a cognitive potential to respond in a certain way (Oppenheim, 1992; Aikendhead & Ryan, 1992; McRobbie

& Stein, 1997). From a science perspective it also was defined as "a positive or negative feeling about science" (Koballa & Crawley, 1985, p. 222). In the absence of a consensus based definition it is up to each individual researcher to decide what the definition of "attitude" might be. Applied to this study, parental attitude toward science education is a vehicle by which parents' beliefs about the utility of science education may lead to parental involvement and practices supporting their children's schooling. Hence, parental attitude toward science can be easily reported by children. There is no guarantee that parental belief or attitude alone is beneficial. This study is built on the assumption that parental attitudes along with active educational involvement in a student's education will influence children's achievement in general and in science in particular. Parental attitudes supporting the importance of science education may influence children's attitudes toward science learning.

Knowing that attitudes are learned (Ajzen & Febshine, 1975) and also that they are positively associated with science achievement (Martin et al., 2000; Weinburgh, 1995) explains why it is important to include it as a predictor or mediator, when attempting to connect student's attitudes and achievement to parental influence. Despite the positive correlation between parents' influence and their children's achievement (Epstein, 1995; Dempsey-Hoover, 1988; Grolnick, 2003), it is hard to find an explicit study explaining how parental attitudes toward science education are transmitted to children.

That idea that parental attitude toward science influences their children's achievement in science is not clear due to the shortage of direct links between parental attitude toward science education and adolescents' attitudes toward science learning. Reviewing the literature, we do not find consensus about the influence of parents' involvement on their children's' educational outcomes. Thus, the indirect connection assumes that parents' positive attitude toward school in

general helps their children to develop similar attitudes toward school. Adopting a broad vision of parental influence on children, effective parents help their children develop abilities and skills. Through active involvement parents can help their children develop higher self-esteem, self-worth, and self-concept (Fantuzzo, Davis & Ginsburg, 1995; Epstein, 1995; Carrasquillo & London, 1993). Also, from the psychological perspective, student's belief in their ability to succeed in science was positively correlated to academic achievement (Wilson, 1983; Jacobson & Doran, 1985a, 1985b; Oliver & Simpson, 1988 as cited by Freedman, 1997). In spite of the lack of a direct link between parental attitude and children's attitude toward science, there are a few studies on parental influence on science attitudes. Ormerod & Duckworth (1975) found that parents positive attitude toward science has a positive influence on student's interest in science education.

Previous research also indicates that parental beliefs and behaviours have a powerful impact on their children's interests and achievements (Eccles-Parsons et al. 1983; Jacobs & Eccles, 2000; Bleeker & Jacobs, 2004). Parents' influence on the development of students' attitudes is found to be an important factor by both Andre et al. (1999) and Steinberg (1996). However, limited research exists concerning the influences of parental involvement on science attitudes. In Australia, research on the 8th grade reported the mother's influence to be more significant for science achievement than for science attitude (Schilbeci, 1989). George and Kaplin (1995) found that parental involvement has both direct and indirect effects on the science attitudes of 8^{th} graders. The attitude of students toward school, and specifically toward learning science, was related to parental attitude toward science education. Other studies reported positive associations between attitude toward science and science attainment (Weinburg, 1995; Martin et al., 2000). Also, student's attitude toward science is influenced by their parents'

attitudes when it is associated with parents' involvement and expectations (Chen, 1998; Bregman & Killen, 1999; Jacobs & Eccles, 2000), and as a result children's behaviors are changed positively and their learning outcomes have been raised (Koballa, 1988; Laforgia, 1988). Maple and Stage (1991) reported that parental education and interest in child's school work influenced the choice of mathematics or science related majors. Another study found that parental support behaviors related to science significantly contributed to science achievement (Wang & Wildman, 1995).

Parental Involvement and Parental Style

In psychological educational research parent involvement and parental style have corresponded with and sometimes been encompassed under a single parenting model (Darling & Stenberg, 1993). As a unit they are connected to student's school outcomes (Epstein, 1995 & 1991). Nevertheless, some studies indicate that parenting style has no direct effect on student's educational outcomes, but rather that parenting practices were connected to student achievement. Whether, parental style or parental practices have the largest effect on student outcomes is not fully understood yet. In the literature, there is an echo that understanding how parents influence their student's outcomes should be approached by distinguishing all kinds of parenting actions (Darling & Stenberg, 1993).

Parenting Style or Parenting Practices:

Researchers stress the importance of distinguishing between parenting style and parenting practices (Bean et al., 2003; Stevenson-Hinde, 1998 as cited by Lee, Daniels & Kissinger, 2006)

especially in cases measuring the impact of parent influence on children's school outcomes. Hence, parental style means a consistent composite of beliefs and attitude that explain parental behaviors (Darling & Steinberg, 1993 as cited by Lee, Daniels & Kissinger, 2006). On the other hand, parenting is defined as parents' consistent behavior that is guided by specific goals to be achieved. When it is compared to parental style, parenting practices were found to be more relevant and to have more direct impact on children and adolescent outcomes. Because of this, this study is designed to explore parental influence on their children's outcomes and its proposed educational context. Parental practices were used along with parental style based on the appropriate context.

Historically, family is reported to be a major factor influencing children's personality development and academic success (Schaefer & Bell, 1958). Baumarind (1967) argued that preschool children reared by parents with differing parenting styles varied in their degree of social competence and academic progress. Later, she suggested three dimensions of parenting styles: authoritarian, authoritative and permissive (Baumarind, 1971, 1991). This model was modified to include four dimensions of parenting styles by splitting the "permissive" dimension to "indulgent" and "neglectful" (McCooby & Martine, 1983). In spite of the fact that parenting style categories were developed for research into socialization childhood, they have been used to connect parent-child interaction patterns and adolescent personality development as well as academic achievement. Researchers have investigated the influence of parenting styles on and adolescents have revealed that the influence of parental practices goes beyond the childhood stage to affect adolescence (Steinberg et al., 1994, Slicker, 1998).

Studies have shown that adolescents who are reared by parents characterized by high levels of warmth, behavioral control, and autonomy support are consistently associated with positive psychological development (Garg, Levin, Urajnik, & Kauppi, 2005; Sheldon & Epstein, 2005; Lamborn et al., 1991; Mink & Anderson, 2005; Steinberg at al., 1992; Herron, & Herting, 1997; Bush, & Supple, 1999) and improved academic achievement and social competence (Amato & Fowler, 2002; Jeynes, 2005). Similar influences have been found across ethnic and cultural variations (Dornbusch, 1987; Darling & Stenberg, 1993; Walker 2008). In contrast, although the parental style of autonomy and behavioural control has been found to eliminate problems related to drugs and delinquency (Ary et al., 1999; Hermanet, et al., 1997), it is associated with negative psychological development and poor educational outcomes among children and adolescents (Barber, Olsen, & Shagle, 1994; Kufmann, Gesten, & Santa-Lucia, 2000). However, parental behaviour control has been found to positively influence students' academic achievement by protecting children from distraction (Hoover-Dempsey et al., 2001). Similar influence was found when parents provide children appropriate egalitarian practices (Walker, 2008). In comparison, adolescents with “neglectful” parents are negatively affected with respect to social competence, academic achievement, and psychological adjustment (Lamborn et al., 1991).

Generally, research indicates that parental styles have direct positive effects on student’s academic achievements (Deslandes, Royer, Turoctt & Bertrand (1997). Authoritative dimensions are the best predictor of academic achievement. This positive relationship between “authoritative” style and academic attainment was found across ethnic groups in the United States and Australia, and in some European nations (Baumarind, 1991; Steinberge & Morris, 2001; Chao, 2001; Leung, Lau, & Lam, 1998). For instance, the results of a study completed by

8000 parents of adolescents supported Baumarind's model by showing that adolescents of "authoritative" parents have higher academic achievement while authoritarian and permissive parental styles are connected with low academic success (Dornbusch et al., 1987), Nevertheless, due to the fact that adolescents in different cultures may hold distinctly different values, researchers cannot easily generalize these findings from western cultures to non-western cultures, specifically those of the Asian continent (Chao & Sue, 1996; Lam,1997; Parke, 2000). Some studies have concluded that the authoritarian style of parenting has no negative effect in some cultures (e.g. China) and when comparing western children to Chinese children indicated that Chinese students are less aggrieved by the "authoritarian" parental style (Leung et al, 1998; Chen et al., 1997; Grusec, 2006; Shek, 2000, 2002, 2003).

Parental Involvement

There is not a clear definition of parental involvement (Jeynes, 2010). In most studies, parental involvement refers to a variety of elements (Hoge, Smit & Crist, 1997; Mau, 1997), where parents participate in activities in the home and in the schools of their children. These elements have been studied as isolates or together, as a whole, in order to determine which element can best predict student achievement. For decades, studies have reported the positive connection between family practices and children's behaviour, cognitive development, and educational attainment (Baumarind, 1971; Epstein, 1987, 2001; Renihan & Renihan, 1995; Henderson & Mapp, 2002; Jeynes, 2003; Dierking & Falk, 1994, Anderson & Minke, 2007). Yet, the impact of parents on their children is related to a wide range of actions. Therefore, efforts have been made to understand, more specifically, the nature of the parental involvements

which influence the cognitive development and academic achievement of children (Steinberg, Lamborn , Dornbusch; Darling, 1992). Parental involvement has been an important factor that affects student's academic outcomes (Englund et al, 2004). This is complicated because parental involvement includes a huge list of parental actions (e.g. parents' attitude, expectations, active help with homework, tutoring, communications with teachers, adjustments to home environment, volunteering) (Epstein, 1995).

Researchers have identified parental expectations as significant to student's educational academic outcomes and this held true across all social, economic, and ethnic groups (Henderson, 1988 as quoted from Chen, 2001). Across subcultures, studies have found that Asian American parents hold higher educational expectations for their children than do white American parents and that may contribute to Asian American children's achievement (Goyette & Xie, 1999). Other studies suggest that Asian American student's higher academic achievements are related to their parents' strong support and value of education (Sue & Okazaki, 1990).

Parental Education Level and Family Financial Status

An historical approach to parents' involvement noted two typical factors that affect parental involvement in children's schooling: parental educational level and family financial status (SES). Thus, even though parental education levels and their socioeconomic status do influence student attainments, the nature of that impact is unclear. For instance, Phillips (1998) argued that parental education, along with socioeconomic status, are not predictors of student's academic achievement. In contrast, other studies indicate that higher socioeconomic level families are, in general, more involved in their children's education than lower socioeconomic

level parents (Keith & Lichtman, 1994; Entwhistle, Alexander, & Olson, 1997; Legutko, 1998; Portes & Macleod, 1996; Hoover-Dempsey, 2005). Still other studies indicate no significant difference between the family socio-economic status and involvement in children's education (Sui-Chu & Williams, 1996). While various researchers label factors that may influence parents' involvement differently, research, from a variety of perspectives, supports the notion that positive or negative effects are controlled by demographic characteristics (McNeal, 1999, Desimone, 1999).

The Importance of Culture

The influence of parental involvement on academic achievement was reported positively within a particular ethnic group, but also found beneficial among all ethnic groups (Epstein, 2001; Henderson & Mapp, 2002; & Jeynes, 2003& 2007). Desimone (1999) reported a significant relationship between many types of parental involvement and students from different ethnic and economic status groups. For example, student's having educational discussions with parents were significantly predictive of gains in achievement among white American students. Jeynes (2003). Hoover-Dempsy (2005) presented evidence that parent involvement (e.g., communicating with the school, checking homework, encouraging outside reading) among Latinos had more influence upon their children than it did for Asian Americans. In contrast, Asian families were much less involved in school communication in the United States, but they spent a lot of time with their children in outside school educational activities (Hoover-Dempsey, 2005). This may explain two things. First, each culture may have its own strategy to academic success and second, the conflict in findings while reporting similar cases in different cultures.

Related Studies in Asia

Many studies have been generated to explain the higher academic achievements of Asian students. Some of these studied Asians as minority immigrants in another culture (e.g. the United States), while other studies monitor Asian student's performance as a minority in the United States and compare it to the students in their native culture in Asia (e.g. China, Hong Kong, and Korea). One intensive study, discussed previously, that reports Asian student's achievement in science is the Trend in International Mathematics and Science Study (TIMSS). It has monitored student performance in math and science worldwide since 1995. So far, TIMSS has been repeated four times in 1995, 1999, 2003, and 2007 but the order of the scores is still the same. Asians students from particular nations (e.g., Singapore, Hong Kong, Taipei and Japan) scored higher than any other nation. What can be concluded from the TIMSS is that Asian student's higher achievement is real and exists in every culture that they live in. How it can be explained?

A lot of studies have been published to uncover the secret behind Asian student's outstanding achievement in math and science (Chen & Stevenson, 1995; Chen, 1996; Smith & Cheryl, 1997; Patrikakou, 2004; Hakkinen, KirJavainen, & Usitalo, 2003). Asian student's achievement has been tracked outside their own countries, where they are minority immigrants in order to compare them to other ethnicities within the culture. In the United States, Asian Americans as minority immigrants have been tested and compared to other subculture groups (e.g. Latino, black, and white American). Results from these studies have confirmed the superiority of Asian students' academic achievement compared to other groups. Researchers also have found that Asian Americans are more likely to attend and complete four–year colleges

(Chaplan, Choy, & Whitemore, 1991). This consistent high achievement within and between cultures and across nations has generated many explanations.

One explanation indicates that after comparing Asian parents' practices to white American parents' practices (in groups with similar average incomes) Asian parents are more likely to invest more time and money in their children's education (Ji & Koblinsky, 2009). Asian parents tend to make their children spend more time in educational activities (e.g. private tutoring) and less time in household odd jobs (Kao, 1995). Also Asian American students have more educational resources at home (e.g. books, computers, etc.) (Teachman, 1987). Asian parents set higher educational expectations for their children (Chao & Tseng, 2002; Shek, 2006; & Keo, 1995). Hao & Bonstead-Brun (1998) argue that values learned in Asian nations are promoted by integrated ethnic communities and that these values inspire parents' expectations for children, as well as the expectations of the children themselves. Thus, high parental aspirations enhance children's educational outcomes and the likelihood of going to college (White & Click, 2000; Chen & Stevenson, 1995).

Another explanation, regarding Asian American higher educational outcomes, is also focused on the culture (Markkus, & Kitayama, 1991; Lin & Fu, 1990; Garcia Collet al., 2002, Walker, Deng & Dieser, 2005). Researchers have found that in spite of parents' socio-economic status (SES), the educational achievement gap still exists between Asian Americans and other ethnic groups. Stevenson & Stiger, (1992) suggest that cultural beliefs about the connection between effort and educational success are manifested in Asian American parents' educational expectations for their children. Asians believe that educational goals are achievable through effort rather than being only determined by abilities. Those who achieve positions of status through education and employment are typically honored in Asian American families.

Low academic attainment is regarded as a failure and shame on the whole family which may be one reason for Asian American children's high expectations for both education and a career (Ho, 1987).

In Southeast Asia, Singapore is an example of a country where social mobility is largely shaped by educational attainment. Several studies have been done that examine the role of parents in student success there. In Singapore, a study of 750 adolescents in pre-university education setting (Ong, 1999) found that students who described their parents style as "authoritative" scored better in the Cambridge General Certificate Exam (Ordinary level) [GCE O-level] while student's who described their parents as "authoritarian' scored worse and had less positive attitudes about themselves and their schools (Lan, 2004). In 2007, a dissertation studying the role that mother's involvement plays in their children's achievement and conduct found that parental involvement positively influences children's achievements and behavior at the primary school levels (Yeo, 2007). Another study, done with 10-16 year old boys found that a combination of "permissive" mothering and uninvolved fathering often led to misbehaviour and even delinquency (Ministry of Community Development and Sport, 2000).

In addition, a survey was conducted in Singapore to investigate the perspectives of principals and teachers on parental involvement and discovered the general importance of home and school community partnerships. The 2001 survey focused on school practice across Epstein's typology (Yeo, 2004). As a result of that survey, schools were encouraged to collaborate more with parents of students. In 2003, another survey was conducted which revealed that increased school-parent relationships had made statistical progress compare to 2001. For instance, schools that reported increased parent involvement in workshops and talks

(94% compared to 71% in 2001), parent volunteer efforts increased and parent–school communication increased (97% compared to 69% in 2001) (Yeo, 2005).

Singaporean parents invest much time and effort in preparing children for schooling due the huge financial impact of education there and the inspiration by Confucius, which heavily reinforces the importance of education. Perhaps, because of culture students are more accepting of being reared under the Asian orientation where tight parental control might be perceived as "good parenting" rather than perceived as a negative action, particularly when it comes to educational progress (Sharpe, 1997; Quah, 1999; Harris et al., 1997; Pomerantz, Ng, & Wang, 2008).

Related Studies in Saudi Arabia

Research on Saudi Arabian parents' influence on their children's science achievement is virtually non-existent. There are however, a few studies conducted to investigate the influence of parental practices on their children. It is important to note that these studies and their instruments were established to gauge the relationship between parental practices and children's psychological development, not their educational achievements. Thus, as far as the researcher knows, the current study is the first study to tackle the relationship between parents' influence and their children's science achievements focused on the education setting present in Saudi Arabia. Following is a brief review of the studies that have been found in Saudi Arabian academic literature.

The first study to be discussed was done by Almuqibil (1994). It is titled "Employment and unemployment: Parental influences on their teenage girls and its relationship with adolescent

psychological problems as reported by the teen girls in Taif City in Saudi Arabia". The sample for this study was 296 girls selected randomly from different intermediate high schools. The findings of this study are (a) as reported by adolescents' girls who had psychological problems, there were no significant differences between the mothers and the fathers in term of parenting styles; (b) there was a statistically significant difference in parental styles between employed and unemployed mothers at $\alpha = 0.05$, the difference which also was loaded positively in the girls account; and (c) there was a statistically significant difference between employed and unemployed fathers at level $\alpha = 0.05$, which was also positive and favored employed fathers.

Another study, titled "Parental style and its relationship with academic achievement for adolescent girls in intermediate school" (Alsharif, 1984), was based on Baumarind's (1995) typology and Maccoby & Martin's (1983) framework. Its purpose was to investigate the relationship between parental styles (authoritarian, authoritative, neglecting and indulgent styles) and teenage girl's behavior that may positively or negatively influence academic achievement. The finding of this study was similar to what has been revealed in the international literature. There is a significant relationship between parental style and academic achievement, in general in favour of an authoritative style. Another finding was that there is a slightly significant relationship between parental style and their children's academic achievement; however this relationship was inconsistent through positive and negative parental styles.

Mohammed (1993) conducted a study to investigate the relationship between parents' attitude and involvement and adolescent social problems. A sample of 50 pairs of parents and their teenage children were interviewed. The study found that there is a positive relationship between parents' positive behaviors (e.g. democratic practices and high levels of parental involvement) and their children's good social manners. The study found a significant

relationship between parents' negative behaviors (neglect, selfishness, and conflict) and their children's psychological problems. In a second study, using a cluster sample of 706 boys and girls in elementary levels throughout three different regions of Saudi Arabia, Alsubayee (1999) investigated the relationship between parental factors and their children's socialization problems. The study results indicate that there is a significant relationship between parents' positive practices and their children's well being. The significance in this study was found to involve parents' educational level, with children of parents with post-secondary degrees experiencing greater well being.

Finally, Alromi (1995) conducted a study to examine the relationship between the influence of parental practices and their children's social adjustment. The sample for this study was 355 male elementary students in Riyadh, Saudi Arabia. This study attempted to find which parental practice is the most salient among Saudi Arabian families and how that may affect their children's social adjustment. The study found that Saudi Arabian families in general tend to maintain a positive relationship with their children in many ways such as verbal support, advising, encouraging, and autonomy support.

Differentiation of the Current Study

Review of the previous studies indicates that the vast majority of Saudi Arabian studies are focused on the relationship between parents and their children through psychological and social contexts where parents' factors are measured through purely psychological frameworks. In comparison, the current study's scope is the influence of parental practices on academic achievement, specifically in science. Factors such as attitude toward science education,

involvement and structure, and supportive autonomy may directly influence academic science achievements.

In previous studies parents were asked to report their behavioural actions toward their children, which may carry some inaccuracies and biases that occur as the result of parental reporting. In this study parental reports are not used. The data are derived from student reports of their parents' practices. In the literature student reports about their parents have been found to be more precise than parental reports (Reynolds, 1991) and support the importance of including students own perceptions of their educational environment at home (Paulson et al., 1998, Schunk & Meece, 1992; Marchant, Paulson & Rothlishbeg, 2001). The questions then become how the academic literature applies to the educational system in Saudi Arabia. To address this, the next section of the literature review addresses the general Saudi Arabian system of education.

The Saudi Arabian Educational System

In general the Saudi Arabian educational system is a centralized and gender- based system where girls and boys are isolated in separate schools. The entire educational system is governed by two different Ministries: the Ministry of Higher Education and the Ministry of Education. The Ministry of Higher Education, from its name, is responsible for post-secondary education including universities and colleges and all other institutes beyond the high school level except for some institutes like technical colleges and military colleges and academies that are controlled by the Technical and Vocational Training Corporation and the Ministry of Interior, respectively.

The Ministry of Education governs all public and private schools, from pre-school through secondary levels. Also, the Ministry of Education is responsible for education policies and curricula, as well as teacher training, evaluation and educational development. Although girls are taught in separate schools from boys, they have very similar subject matters and pathways to finish their education. The elementary level comprises six years from 1st grade through 6th grade, the intermediate education level consists of three grades from 7th through 9th grade, the secondary level or senior high school includes 10th through 12th grades. Students who fail to pass an academic sublevel during the educational journey must repeat the academic year that they failed.

Secondary school is the most important stage in the Saudi Arabian educational system, especially the last year of senior high school, which is grade 12. High school is comprised of three years of study. After completion boys and girls sit for the national exam for the general high school diploma. Students who pass the examination are enrolled in the university according to their grade point average (GPA) or the percentage score received on an aptitude examination. Students who have a high GPA and score between 80% and 100% on the aptitude examination are able to apply to high honors colleges such as medical school, the school of engineering, and the school of science. Those whose percentage scores were lower than 80% may register for further education at vocational and technical schools. Below, Table 1 explains the subjects taught in both tracks in Saudi Arabia.

Students who do not excel, but are satisfactory students are counselled to enrol in lower demand majors such as humanities. Islamic and social studies tracked students, who have no background in science disciplines, are eligible only to register in the humanities or vocational

undergraduate schools; their high school GPA, the aptitude exam scores and availability determines the program that they are involved in.

Table 2.1.

Subjects taught in high school in Saudi Arabia

subject	grade	Hours per week			
		Track 1		Track 2	
		Islamic &Social studies		Natural science	
	10th	11th	12th	11th	12th
Islamic Studies	5	6	6	5	5
Arabic Studies	6	4	4	3	3
Social Studies	3	6	5	1	1
Management*	0	6	7	0	0
Science	6	0	0	13	13
Mathematics	5	4	4	6	6
English Language	4	4	4	4	4
Computer Science	2	2	2	2	2
Library	1	1	1	0	0
Physical Education	1	1	1	1	1
Activities**	1	1	1	1	1
Total hours	34	34	34	36	36
Total subjects	21	22	21	17	17

* Courses in business and administration
** Electives such as art and sport

Cited by Al-Abdulkareem, 2004 and Al-Shalan, 2006

CHAPTER III: RESEARCH DESIGN AND METHODS

The goal of this study is to determine the influence of parental educational practices on adolescents' achievements in science education in Saudi Arabian secondary schools as reported by adolescent' males. The current study was conducted in Saudi Arabia, at Jazan University. Participants were asked to report their perceptions of their parents' educational involvement and style concerning science education during the secondary school years. Participants were students who had recently graduated from high school and were enrolled in a preparatory year. In Saudi Arabia, the secondary school courses are accomplished in three years. Based on aptitude scores, students are assigned to an academic track in high school; either the social studies or scientific track.

To ensure confidentiality and reduce response bias the participants were informed that participation in the study was voluntary and that participant responses were kept confidential. The participants were racially and socio-economically homogenous, and representative of three different science-based schools (medical, engineering and natural science) at Jazan University. Further discussion of the methods for selecting the sample population may be found in the discussion that follows.

Why quantitative instead of qualitative?

The current study was quantitative and used a survey to collect data from first semester undergraduate students (see appendix 3). Participants were asked to report their parents'

practices by responding to a 53-item questionnaire. Parental educational practices and their relationship to students' psychological adjustment and school achievement is well-documented in the literature; both western and Asian. Unfortunately no previous study has investigated the relationship between Saudi Arabian parents' educational practices and their children's academic achievements. The major purpose of this study is to explore what is happening in Saudi Arabian society, so this study is not going to establish a theory or answer new questions. Instead it attempts to report how Saudi Arabian students perceive the impact of their parents' attitudes and educational behaviors on their science achievements. It will then examine how Saudi Arabian parents compare to what is found worldwide in the scholarly literature.

This study attempts to report how students rate their patents' educational practice instead of asking the parents themselves about what they are doing to support their adolescents' educational outcomes. For cultural reasons the study does not involve direct communication with the participants' parents. In Saudi Arabia interviewing students' parents would be very difficult. It would not be possible for a male researcher to interview mothers about their parenting practices, nor would a man discuss his wife in this context. The cultural separation of the genders makes it necessary to derive the needed information in a culturally appropriate manner. Thus, the choice was made to ask the students to report their perceptions of the impact of their parents' practices on their academic achievements.

Research on parental practices and their relationship to students' psychological adjustment and school outcomes is common in western societies and in many other countries. Research has been conducted on this topic since the 1920s in Western countries and since the 1980s in Asian countries. When research on parental practices started to filter out of western societies to the Asian content, the studies used a quantitative approach. Such a study has not yet

been done in Saudi Arabia, but following the precedent utilized by those previous researchers, a quantitative approach was taken here. In fact, the questionnaire used in this study has been used in previous studies for the same purpose. These studies were conducted in both Western and Asian countries (Yeo, 2007).

This study targets as participants a cluster of male science students, who recently graduated from high school and are enrolled in science colleges. The goal is to identify links between various parental educational practices and students' science achievements and to determine if the patterns found in other countries are similar to patterns found in Saudi Arabia. The quantitative approach taken here assumes that a best-fit approach is to predict students' science outcomes from particular parents' behavior and to utilize multiple regression analysis and other quantitative techniques.

The Sample Population

The sample population was drawn from undergraduate students at Jazan University. The chosen participants are all recent high school graduates enrolled in a preparation year in three different science based colleges at Jazan University. Only participants ranging in age from 18 to 20 were included in the sample. The primary reason for choosing this group is that the students have made science based career choices and have only recently moved away from an environment where parents had the opportunity to be intensely involved in and influence the students' education. The memory of that parental involvement and its influence on science achievement is still fresh. The age range was chosen because students usually graduate in this age range. The earliest a student leaves high school in Saudi Arabia is 18, and in some cases,

such as grade retention, it may be as late as 20 years old. All of the students that meet the criteria in each college are participants. The sample was drawn from three different science tracks in the 2011/12 school year. The tracks are natural science, medicine and engineering as shown in Table 3.1. The total number of students enrolled is 390. The number of completed and accurate surveys returned was 338 after excluding the pilot study subjects and those responding with incomplete demographic information. The proportions of students in each track were predetermined and not random because they are the result of independent student choice of educational direction.

Table 3.1.

Number of students and their discipline: 2011/12 year

college	Number of students	student percentage
Total	338	100 %
Science	187	55 %
Medical	44	13 %
Engineering	107	32 %

The Variables of the Study

The predictor variable was students' scores in science subjects in their last year of high school. Participants were asked to provide information on their general grade point average in their most recent academic year, which is the last year of high school. They were also asked

about the average grades received for their science subjects. This approach is supported in the literature. Students-self reported grades are likely to correlate with actual grades taken from school records (Bogendschneider, 1997, Donbusch, et al., 1997; Dononvan & Jessor, 1985). Fan and Chen (2001) found that the relationship between parental involvement and student's academic attainment is stronger when academic performance corresponds to student GPA. Grades are considered legitimate measures of learning for two reasons (a) they are more content specific and (b) they provide a continuous measure of a student's progress (Fraser, Welch, & Walberge, 1986; Keith, et al., 1998; Walberg & Tasi, 1981). Researchers suggest that the more specific the definition and measurement of the learning outcome, the higher the likelihood of discovering the effect of a causal factor (Cohen, 1987).

In this study, student achievements in science was reported by students themselves as measured by schools at the end of the last year of high school (reported as percentage). Student's academic achievements in high school were reported as a part of the study questionnaire. These scores were requested as a part of the questionnaire's demographic information and it was reported by students based on end of semester exams, which graded students in each subject on a scale from 0 to 100 where 50% is considered the score of minimally passing and 100% is the highest score to be awarded. Student scores are used when assessing the relationship of context to school achievement (Marchant, Paulson & Rothlisberg, 2001)

The independent variables are parents' attitudes toward science education with a mean score average of 3.00 or above found in the survey instrument. This indicates a "positive" attitude, and a mean score average at or below 2.94 indicates a "negative" attitude. For convenience scores above 2.95 were rounded to 3.00. In the questionnaire 10 items are designed to assess parents' attitudes toward science. Students were requested to rank their response to the

extent to which they agree or disagree with each statement. The rating scale was as follows: (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree and 1 = strongly disagree). Ratings were averaged with possible scores from a low of '9' up to a high of '50'. Similarly, the multi-dimensions of parental practice were included in the survey: involvement (10 items), control (10 items), autonomy support (10 items), and structure (9 items). These factors (49 items total) were part of the questionnaire (see questionnaire in Appendix 3). High scores on the scales represent positive attitude and involvement, as well as high autonomy-support, and strong structure and control.

Demographic data were requested from participants. They were asked to provide information about their parents' background such as parents educational levels (i.e., elementary, middle, high school, university, and masters and above). Parents' educational level was rated as (5= masters/Ph.D, 4=University, 3=Pre-University, 2= secondary, 1= primary or less). Participants' also were asked Who most of time helped you with schooling issues, science college enrolment, their total grade percentage as they graduated from high school, and their average scores in their science courses.

As a part of the questionnaire participants' were requested to report which parent provided the most educational support; whether father, mother or someone else. It is important to note that the parents (mother and/or father) level of education might be different from each other. For this reason participants were asked to indicate which parent contributed the most to the student's educational effort and asked to report the education level of that parent.

The Research Instrument

Little is known about parental practices and involvement in their children's science education in Saudi Arabia. Some instruments have been designed to investigate parental style and parental involvement in western countries, but there is a need to design a local instrument that fits Saudi Arabian culture. Every culture has its own attributes that differentiate it from other cultures, thus applying Western instruments, without a consideration for the similarities and differences across cultures may result in a biased questionnaire and inaccurate interpretation. A valid questionnaire must consider the cultural context in which it will be used.

The researcher adapted a 53 item questionnaire (see Appendix 3) to assess 18-20 year old participant's perceptions of their parents' practices and involvement in their science education process. The questionnaire assesses parental practices (home- based-behaviors, communication with schools, and school- based-participation), autonomy (support and control), and structure as the ways parents most often interact with their children. The development of the questionnaire was guided by Epstein's six typologies (1995) and Grolnick's model (2003), and it was taken from two different sources. First, some of the survey items were written by Aunola & Nurmi (2004), Fan (2001) and Fantuzzo et al. (2000) and some of the original items were revised by Yeo (2007). Second, other survey items were taken from a study which attempted to validate an instrument on parental style, and parental educational involvement. The instrument was written by Scappaticcio, (2009), in order to establish and validate a comprehensive instrument to measure parental style and parental involvement on the basis of Grolnick's model (2003). Although these two surveys have been found to be valid in the United States, they are modified for this study to be used out of the United States. Thus, both surveys were not taken as they are,

but were revised by this researcher, his supervisor, and two other educators in order to modify the items to Saudi Arabian participants where the school language is Arabic and the cultural context is different.

For all items on this instrument a 5 point Likert-type scale was used. In the first section of the questionnaire, students were asked to rate how much they agree with statements about their parents' practices (attitude, educational style and involvement). Students were asked to respond to scaled questions (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree and 1 = strongly disagree). The second section of the questionnaire has personal questions about grades in science in high school. For the purposes of this research 85% and greater = high achievement and 84% and below = low achievement). Scores in between 85% and 84% were rounded up or down. The third, fourth, and fifth sections are frequency behavioral questions, (a) fourth (5 = twice a week, 4 = once a week, 3 = once a month, 2 = twice a semester, 1 = never), (b) fifth (5 = always, 4 = often, 3 = sometimes, 2 = rarely, 1 = never), and (c)sixth (5 = every day, 4 = twice a week, 3 = once a week, 4 = twice a month, 1 = never).

The Sources of the Parental Influence Questionnaire

The instrument items of this study were taken from two different sources. First, the vast majority of the items were taken from previous research and were utilized for the same reasons as the current research, and to measure similar frameworks. Also these items have been tested for validity and reliability and found to be valid and reliable in the United States (Aunola & Nurmi, 2004; Fan, 2001, Fantuzzo, et al., 2000; Scappaticcio, 2009). Parts of the instrument were also found valid and reliable in Singapore (Yeo, 2007). The researcher of the current study did not

use the items as they are, but revised and changed the rating scale, which necessitated redetermination of validity.

Items Found Reliable in the United States and Singapore

As mentioned most of the items of this study instrument have been used and found to be reliable and valid in the United States and Singapore. To ensure accuracy, 41 items out of 53 were used and found valid in previous studies in the United States. These valid items were taken from two different sources. First, Scappaticcio (2009) defended her dissertation which was conducted in order to establish and validate an instrument to measure the integrated parental style and involvement of Grolnick's model (2003). The results of that study revealed that the internal consistency of the Parental Autonym Support Instrument (PASI) has acceptable reliability where autonomy support (α =.60), control (α =.65), involvement (α =.69), structure (α =.81). (See table 3.4)

Second, items were developed by Aunola & Nurmi (2004), Fan (2001) and Fantuzzo, et al. (2000) and were revised and used by (Yeo, 2007) in order to be a best-fit with Singaporean society. These items were guided by Epstein's typology (1995) to measure factors of parental styles: psychological control (α =.74) and behavioral control (α =.67), as well as three factors of parental involvement: learning at home (α =.70), parent-school communication (α =.56), and parent-school participation (α =.70). Finally, items measuring parental attitudes towards science education were constructed by the researcher and were influenced by the Attitude to Science Instrument (ASI) that was developed by Foong & Lam (1988). Foong and Lam reported reliability ranging from .63 to .86 for the subscale and .90 for the questionnaire as whole (Subramaniam & Caleon, 2007).

The Dimensions of Parental Practice

The first dimension of parental practices is parents' involvement which consists of involvement in the home–based environment, parents' school participation and communication. The items are 1, 13, 15, 19, 32, 45, 48, 49, and 50 (e.g. my parents make sure that I have a quiet place to study, my parents participate in school activities, and my parents call or email my teachers to check my academic progress). The first dimension in parental style is utilized for autonomy "support" items, which include 24, 25, 26, 27, 29, 38 and 40 (e.g. my parents treat me as a friend, my parents encourage me to act independently, and my parents allow me to make decisions about when I can complete my homework). Items used to measure control are 3, 4, 5, 9, 18, 22, 37 and 41 (e.g. my parents limit my going out with friends, and my parents limit my time for sports). Finally, items representing structure are 6, 7, 8, 10, 12, 16, 31, 36, and 39 (e.g. my parents tell me that I have to do well in school, my parents make it clear that there is no misbehaving at school, and my parents make sure that I understand the rules of the school). These are presented in Table 3.2, which follows.

Table 3.2

The sources of the instrument by subscale

Source	# of Items	Item number
Parents'attitude toward science education	10	20, 21,23, 30,33,34,35,42,43,47
Scappaticcio (2009)	21	2,6,7,12,13,16,17,19,22,24,25,27,28,29,30, 31,36,37, 38,39, 40
Yeo (2007)	18	1,3,4,5,8,9,10,11,12,13,14,15,18,26,41,42, 43, 44

The items examining parental attitudes toward science (11 items out 50) were constructed by the researcher and are influenced by the Attitude to Science Instrument (ASI) that was developed by Foong & Lam (1988) and followed the same procedures to maintain internal consistency, reliability and validity. The results were reported after analyzing the pilot study. Finally, 3 items of the questionnaire were demographic questions. To conclude, although 40 items of this study questionnaire have been found valid and reliable, and were used in previous studies in the United States, they were tested again in terms of the validity, internal consistency, and reliability along with the 12 items that were constructed in order to measure parental attitudes toward science in a different cultural context (Singapore). As I have mentioned earlier, the ASI items were reconstructed by the researcher to best-fit the purpose of this study. Some items have been changed slightly to fit the cultural context and others remained unchanged. For instance, "I enjoy watching science programs on TV" was changed to my parents like to watch science programs on TV. Another item, was "I like to discuss science with my friends after school" which was changed to "my parents enjoy discussing science with their friends". Also, some items were developed or adapted by the researcher to measure parents' attitude. For example, "my parents like to take me to science exhibits, my parents ask me to report my science test scores more than other subjects, and my parents like to read science' articles" is used to demonstrate support for science education. The results of validity and reliability for these items will be reported in validity and reliability paragraphs and Table 3.2.

Validity and Reliability

Construction of a valid and reliable instrument is always a concern for researchers when they are designing research. There is a concern about the validity of the instrument's items. If the instrument is to have relevance to children of other cultures, its items must be constructed with an understanding of the cultural context in which it was utilized, thus the researcher believes the best–fit instrument should be indigenously constructed. By using a foreign culture constructed research instrument, the researcher may jeopardize the validity of the study. Thus, modifying the instrument items is crucial to ensure lack of bias and that the items measure what is supposed to be measured in the culture of the sample being investigated. To ensure the appropriateness of the instrument it was revised and was emailed to a professor who is a native of Saudi Arabia, the country of the participants. He was asked to read the instrument carefully and write down his comments in the language that had been used to write the final instrument, which is Arabic.

Content Validity

To ensure content validity, the instrument items were reviewed and developed to represent the five scales for this instrument: parental attitudes toward science, involvement, autonomy support, control, and structure. Five independent educators were contacted and asked for advice on the instrument. Three were faculty members at the University of Arkansas, and the other two were Saudi Arabian educators. One of the University of Arkansas faculty members was program coordinator and advisor for the researcher. The others were an expert in educational measurement methodology and a member of the research committee who fluently speaks Arabic.

The two educators at Jazan University were awarded their degrees in education in the United States, and are currently active educators in Saudi Arabia.

After the first update, the researcher showed the revised instrument to a faculty member who is an expert in educational measurement, and teaches at the same institute, to ask him for suggestions and comments. After receiving the suggestions and comments, the researcher updated the items based on the comments received. Also, he showed the updated questionnaire items to another professor at the College of Education to ask him for his input. The instrument items were revised for a second time based on those comments. For the final look, the researcher sent the instrument to his dissertation chair for approval. When the approval was obtained, the researcher sent the approved questionnaire via e-mail to an educator in Saudi Arabia. The researcher asked the Saudi professor for his comments on the survey items, whether the survey items as they were written, were understandable by secondary school students in Saudi Arabia. This was to ensure the accuracy of the language for Saudi Arabia.

Internal Consistency and Reliability

A pilot study was conducted to determine the reliability of the instrument. The researcher contacted a colleague at the school of science in Jazan University, who recently became the head of biology department, to ask for help. First, the researcher asked him for the procedure for distributing a questionnaire to a sample of the school's students. The researcher was told that the only approval needed to hand out the questionnaires is approval from the Head of Department and no other institutional approval was needed. The researcher sent the proposed questionnaire to

him and asked that it be handed out to a sample of 60 male students in the school of science at the University.

After accomplishing all the conditions discussed above, 53 surveys were received without missing data and the seven with missing data were not used. The data were collected and sent to the researcher in the United States. The data were statistically analyzed. SPSS version 18 was used to determine the reliability of the survey subscales, parents' attitude toward science, parents' involvement, parents' autonomy support, parents' control, and parents' structure. The results are reported in the Table 3.3 below.

Table 3.3.

The internal consistency, reliability, Cronbach Coefficient Alpha for the Survey Subscale

Subscale	N	Number of items	Coronbach Coefficient Alpha
Parents Attitude toward science	53	12	.85
Parent Involvement	53	10	.85
Parental style			
Autonomy support	53	9	.80
Structure	53	8	.78
Control	53	11	.71

As reported above, in table 3.3, Cronbach's Coefficient Alpha of reliability for parents' attitude and the integrated multidimensional model, involvement, autonomy support, control and

structure ranged from .85, .85, 80, 78, and .71 respectively for both attitude and involvement. According to the literature a score above .60 is common in exploratory research, a score of .70 is adequate to keep an item in a scale, and a score of .80 and more indicates high reliability. Nunnaly (1978) indicated that a score of .70 is acceptable, although use of lower scores has been reported in the literature (Steinbege, 1999; Aunola & Nurmi, 2004).

Data Analyses Statistical Procedures

The purpose of this study is to investigate parental influence on their children's achievement in science. Thus this study was conducted to answer four questions. First, do parents' attitudes toward science learning influence their children's achievements in science? Second, as reported by students, what aspects of parental practices can be used to predict student achievements in science, regardless of all other demographic data? Third, is there a demonstrable relationship between parental education level and parents' educational involvement and finally, what is the relationship between the affective parents' educational practices and students' choice of science major? The IBM Statistical Package of Social Science (SPSS) version 18 was used to analyze the data based on the questions that were proposed for the current study. Statistical procedures were employed to analyze the collected data including the following analyses, shown in table 3.4 below.

Table 3.4.

The Questions and Statistical Analysis Used

Question	Analysis used
Q1. How do parental practices correlate to students' science achievements in high school	Pearson Correction
Q2. Contribution of aspects of parents educational practices	Multiple Regression
Q3. Parents' educational level and parents' attitude toward science education and educational involvement	Independent t test
Q4. Parents' educational practices and students 'science major	One way ANOVA

Q1. Pearson correlation was used to determine if there is a significant relationship between parents' educational practices toward science education and student achievement in science disciplines as whole, as reported through scores on high school diplomas. In the literature, parental attitudes somewhat influence their children's attitudes toward science learning and may lead children to a major in science at the university level. So the research assumed that positive parental attitudes toward science learning will influence student's academic attainment.

Q2. Question number two investigated the contribution of each variable of parents' educational practices model and participants' science scoring in high school diploma. A Multiple regression analysis was conducted to report the contribution of each variable of the model and best variable can be predicted from participants' scores in science.

Q3. In the literature parents' level of education has repeatedly been reported as a major factor influencing adolescent students' educational success (Grag, Melanson, & Leven, 2007;

Teachman, & Paasch, 1998; & Sanchez, Reyes, & Singh, 2006), thus in the current study participants were requested to report their parents' educational level. After analyzing the data participants 'parents were grouped based on their level of education into two different groups (relatively high educational level and relatively low educational level) and an independent t-test was utilized to test which group of parents most influenced the participants' science achievements.

Q4. This question concerns the relationship between student choice of University major and the most effective aspect of parents' educational practices. Each parent could contribute differently in their offspring's educational success. Hence, this question was established to track the relationship between Saudi Arabian parents' educational practices and student achievement in science as a consequence students' choice of majors regardless of all other parental educational practices that were found to be ineffective. Based on their school, participants were divided into three different groups (medical, engineering and natural science). One way ANOVAs were utilized to test the relationship between effective parents 'educational practice and students' achievement in science and related to students' choice of major. In the literature, although father and mother play different roles in their adolescents' academic success, mothers were found to effectively influence their children's achievement especially in elementary school level and fathers' roles appeared more at the secondary level.

Research Procedures

After receiving University of Arkansas Institutional Review Board (IRB) approval, the researcher contacted the head of the science department in Jazan University to ask him about the

procedure that should be followed to obtain permission to hand out the Arabic version of the questionnaire to a small sample of students serving as a pilot study. He generously offered to help and asked the researcher to send over the questionnaire via email. The head of the science department allowed permission for distribution of the questionnaire to the final sample. To avoid homogeneity on the effects of the pilot study, the researcher contacted other departments in the Humanities specialization to seek the same permission for the sample of the pilot study as well as the final sample. This permission was granted (Appendices 2 and 5).

After updating the questionnaire due to the pilot study analysis, and defending the research proposal, the researcher travelled to Saudi Arabia to hand out the questionnaire to the participants and collect the data for analyzing. The reason behind the trip was to make sure that the final sample matched the rigid criteria in place to avoid errors and ensure accuracy in analysis. The criteria for research participants are: Saudi Arabian males, between 18-20 years old, recently graduated from high school, and officially enrolled at the university in the first preparation semester. Having the researcher himself distributing the questionnaire ensured that participants received a brief introduction about the study and were personally informed about their rights based on informed consent. The researcher answered promptly the participants' questions regarding the study, and helped respondents avoid any missing data that could lead to exclusion of a participant's responses. The personal involvement of the researcher ensured that the research was done the way it has been described.

CHAPTER FOUR: RESULTS

The purpose of this study is to investigate the perceptions of male Saudi Arabian students at Jazan University regarding their parents' educational practices and the effect of those practices on the students' academic achievements in science. The participants were freshmen male science students , between 18 and 20 years old, who were recent high school graduates and enrolled in a one year preparation program as the first year in science - based colleges.

This study rests on the assumption that adolescents' academic achievements are directly related to their experiences of parental practices and support, particularly in a collectivist society such as Saudi Arabia where children spend most of their adolescent years very closely in their parents' or guardians' care. In this society obedience to elders is enforced through both the religious context and through cultural traditions. The academic literature reveals contradictory findings regarding the extent to which parental educational practices influence their offspring's school achievements in different societies, and this lack of consensus is especially noted in examinations of local subcultures (Chao, 1994; Lin & Fu, 1990; Stenberg, Mounts, Lamborn, & Dornbusch, 1991; Chao & Tseng, 2002). Examination of the effect of parental educational practices on students has not heretofore been conducted in Saudi Arabia so the current study explores Saudi Arabian families' contribution to adolescent male science achievements. Here I present again the research questions driving this dissertation.

Research Questions

1. How do parents' educational practices relate to students' science achievements in high school?
2. As reported by students, what aspects of the parents' educational practices model can predict students' science achievement regardless of all other demographic information?
3. What is the relationship between parents' educational level and parents' attitude toward science education and educational involvement?
4. What is the relationship between the most effective aspects of parents' educational practices and students' choice of science major?

The Sample Population

The sample for the study was drawn from three different science-based schools at Jazan University. Medical school students accounted for 13% (44 participants), science school students accounted for 55% (187 participants) and engineering school students accounted for 32% (107 participants). The study was conducted during the 2011/12 school year. Students who applied for science-based colleges (i.e. medical, engineering, and science) are automatically enrolled in a preparatory year. Their performance at the University was evaluated, and if they meet set criteria and standards they were allowed to continue. Those who do not meet the criteria and standards

are switched to different majors. Generally speaking these students have had high achievements in high school, scoring 80% or above in all of their science courses. The understanding is that students whose science scores are lower than 80% were eligible for humanities majors but not for the science-based colleges.

This study also measures the impact of specific demographic data regarding participants. As a part of the survey, participants were requested to report their science majors at the university: natural science (55%), medical (13%), and engineering (32%). Study participation was limited to science majors, but the percent of each major was not known in advance. The following table (Table 4.1) illustrates the characteristics of the sample of participants based on their majors and science scores in high school.

Table 4.1

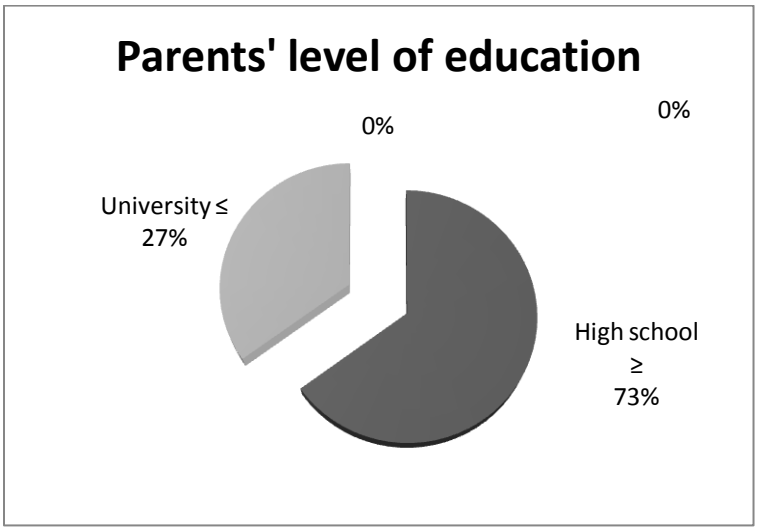
Sample of the participants' majors and their science achievements in high school

Characteristics	N	Percentage
Participants' Major		
Science	168	50%
Medical	43	13 %
Engineering	127	37 %
Participants 'science achievement in high school		
85% ≥ high	154	45.6%
80% < Low < 85%	184	54.4%

The questionnaire asks participants to include information about their parents' educational level and to identify which parent is most often the provider of educational support. Parents were reported separately (father and mother) and their educational level rated as follows: 5= Master or higher, 4=University, 3=Pre- University, 2= secondary, 1= primary or less.
For the purpose of the current study were sorted into two groups. Figure 4.2, below, shows the distribution of parents' level of education.

1- The first group includes parents, guardians, or primary caregivers who had a high school diploma or less.
2- The second group includes parents, guardians, or primary caregivers who earned a University degree, or Masters Degree, or higher.

Figure 4.1. Participants' Parents' Level of Education



The reason behind this choice of variable was the researcher's belief that parents' level of education would influence their attitudes toward education and thus their children's' educational outcomes. This, of course, includes science discipline outcomes and the ways in which parents interact with their teenagers.

Parental Influence

As mentioned previously, participants were asked to indicate which of their parents, father or mother, provided the most educational support. In the literature, adolescents' perceptions about each parent and the interpersonal relationships in place have been found to play different and major roles in their sons and daughters educational outcomes (Fehrmann, Keith, & Reimers, 1987; Forehand, Long, Brody, & Fauber, 1986). Mothers' influence on educational outcomes has been found to be most significant at the elementary levels but fathers have been found (more than mothers) to be important to their children's educational outcomes at older ages and higher educational levels (e.g. high school level) (Ong, 2001). In sum, both fathers' and mothers' contributions are important in providing adolescents with family experiences that have been found to be closely related to school achievement (Reynolds, 1989; Stenberg et al , 1991; Dubow& Tisak, 1989; Grolinck, Ryan & Deci, 1991). Although fathers and mothers may contribute differently to adolescents' psychological development and academic outcomes (Parke, 1995; Feldman & Wentzel, 1990; & Lamb, 1997) and, of course, may have different levels of education, in this study, fathers' and mothers' educational effort and level of education were counted as a whole. This condition was determined through participant perception reporting. Participants were asked to indicate which parent was involved the most in the student's education and what the education level of that parent was. Thus, the education level

was reported only for the parent reported to be the primary educational provider by the participant. Table 4.2, below, shows the characteristics of participants' parents after sorting based on their educational level and the parents given the most credit for educational support as reported by the students. See table 4.2 below.

Table 4.2.

Participants' parents' educational level and the parent reported as educational provider

Characteristics	N	Percentage
Parents' level of education		
High EDU (University<)	91	27%
Low EDU (high school>)	247	73%
Educational care provider		
Father	106	31 %
Mother	224	67%
Others	8	2%

After analyzing the data, and in order to answer the research questions, I begin with a brief summary about the characteristics of the questionnaire and then discuss testing the internal consistency and reliability of the questionnaire items. The parents' educational practices questionnaire allows a maximum of 45 points for parents for each of the five independent

variables, a minimum of 9 points for each, except for the control variable where the maximum is 50 points and the minimum is 10 points.

In Saudi Arabia the grading system is very similar to grading systems in the United States. For the high school science course exams the maximum test score is 100 points and the minimum is 0% (no points). The minimum passing score is 50 points. Below 50 is a failing grade. As shown in Table 1 the average score for all science courses earned by the participants was 85%. This is a requirement to apply for the science – based colleges. This requirement does not apply to the average score for all classes taken in high school. The requirement applies only to all science classes. Thus, the total average science scores for each student may be higher but not less than 85%. These are the formal scores submitted to the University as part of the admission requirement.

Reliability

The results of the larger study validate the internal consistency and reliability of the survey because the findings of the pilot study are supported. It‘s the researcher’s belief that having internal consistency in a large group of participants and finding it quite close to the results that were found in the pilot study, gives credibility to the reliability of the survey instrument. Additionally, two senior education scholars at Jazan University examined the pilot study and the eventual questionnaire, and its translation to Arabic, for internal reliability and consistency.

After receiving the participants’ responses, the internal consistency reliability was computed again for the five scales (autonomy- support, control, involvement and attitude) to

confirm the questionnaire reliability that was reported after conducting the pilot study. Using SPSS, the results of Cronbach's coefficient alphas are reported in Table 4.3, following.

Table 4.3

The internal consistency Reliability Cronbach Coefficient Alpha for the Survey Subscale

Subscale		N	Number of Items	Cronbach Coefficient Alpha
1	Parents' attitude toward science education	338	10	.75
2	Parents' Involvement	338	10	.83
3	Parental Autonomy support	338	10	.71
4	parental Structure	338	9	.75
5	Parental Control	338	10	.65

After testing the whole participant sample, the reliability coefficients for all instruments items are still considered high for parental educational involvement (.83), parents' attitudes toward science education (.75), and structure (.75). Acceptable values for autonomy-support (.71) and control (.65) were found (Nunnally, 1978, Crocker & Algen, 1986, Steinbege, 1999; Aunola & Nurmi, 2004).

Research Question One:

This question asks how parental practices relate to students' science achievements. The Pearson correlations between the variables studied and students' science academic achievement

scores were calculated. The means of the five subscales, including parental attitude toward science education, parental educational involvement, and parental educational style (autonomy-support, structure and control), were compared to the means of the total science scores. The results of Pearson analysis between all variable of parents' educational practices model and participant's science achievement can be found in table 4.4

Table 4.4

Pearson correlations: attitudes, involvement, autonomy, structure, control, and science scores

	Science score	attitude	Involvement	autonomy	structure	control
Science score	1.000	.427*	.394*	.287*	.202*	.265*
Attitude	.427*	1.000	.779*	.593*	.410*	
Involvement	.394*	.779*	1.000	.617*		
Autonomy	.287*	.953*	.617*			
Structure	.202*	.410*				
Control	.265*					

*P<.05

These results suggest that autonomy –support, structure and control (parents' educational style) has a low positive correlation to student' outcomes and achievements in science where the results of Pearson's correlation were *r (236)* = .29, *r (236)* = 20 and *r (236)* =.27, respectively. Parents attitude toward science education and parents' educational involvement showed positive

moderate relationships *r (236)* = .43 and *r (236)* =.40, respectively. Autonomy –support, structure and control scores all indicate positive relationships, but they are at most moderate (e.g. attitude, involvement) to low levels of correlation (e.g. autonomy, structure and control), though results also indicate that parents' attitudes toward science education and parents' educational involvement are positively correlated at a moderate level.

Research Question Two:

To answer question number 2, the analysis involved the use of multiple regressions to investigate whether a combination of parents' educational practices would have predictive power related to student achievement outcomes. The factors investigated are parental attitudes toward science, parental educational involvement, autonomy support, parental structure, and parental control, as perceived by participants. Table 4.5, below, shows the R^2 value was .192. This indicates that all five parents' educational practice factors combined explained only 19.2% of the variance in the science outcomes achievement scores.

Table 4.5

Parental Education Model: Multiple Regression Analysis

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
1	.438	.192	.187	4.99

SPSS separated the integrated parental education model by default. It divided the integrated model into two sections. The first included two factors: parents' attitude toward science and parental involvement. The second section emerging from SPSS included the factors associated with parental educational styles: autonomy-support, structure and control. Multiple regression analysis was performed on each section separately. The results indicate that the parental educational style factors (autonomy-support, structure and control) can explain less than 1% (R^2= .095) of the variance in student science achievement scores, and the rest, 19.2%, can be attributed to parental educational involvement (parental attitude toward science and parental involvement). A backward solution was utilized to determine the purest form of the regression model. The goal was to isolate any factors that did not contribute to student science achievements. In this step, all predictor variables are initially entered into the regression model, and each variable that does not make a significant contribution to the model is automatically deleted. See Tables 4.6 and 4.7 below.

Table 4.6.

Parents' educational styles model: Multiple Regression Analysis

Model	R	$\boldsymbol{R^2}$	Adjusted $\boldsymbol{R^2}$	Standard Error of the Estimate
2	.308	.095	.087	5.29

Table.4.7.

Backward Solution Model: Multiple Regression Analysis

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
3	.443	.192	.180	5.01

Backwards solutions results reveal that the variables of autonomy–support, structure, control were removed, leaving the predictor variables of parents' attitude toward science education and parents' educational involvement. This resulted in a R^2 value of .192, indicating that only 19.2% of variance in science outcomes achievement scores could be accounted for the remaining parents' educational practices scales combined, these are parents' attitude toward science education and parental involvement.

Research Question Three:

After finding that parent's attitude towards science education and their educational involvement are the most powerful factors that can explain participants' science achievement outcomes, question number three investigates whether parents' attitude toward science education and their educational involvement are influenced by parents' educational level.

The potential impact of parents' attitude toward science education and educational involvement and how that may influence their adolescent's achievements in science were evaluated as well as the impact of demographic data, such as level of education. The influence of parental attitudes, educational involvement and educational background on their children's

attitude development and academic achievements has been reported as effective in some literature (Andre at al., 1999 & Stenberg, 1996; Eccles-Parsons et al. 1983, Jacobs & Eccles, 2000 & Bleeker & Jacobs 2004). In this study the impact of parents' level of education on their attitude toward science was analyzed. The analysis was based on parents' level of education where parents' educational level was divided into two different groups as following:

1- Both or one parent who is the most educationally supportive and has a relatively high level of education (university level or higher).
2- Both or one parents who is the most educationally supportive and has a relatively lower level of education (high school diploma or lower).

Notice that, for this research, one or both parents must effectively be involved in the process of education, this condition is met through participant reporting. Participants were asked to indicate which parent was involved the most in the student's education.

The researcher believes that high levels of education will positively influence both parents' attitudes toward their children's education and the level of support directed toward that education. An independent t-test analysis was performed to assess the impact of parents' education level on their attitude toward science education and their educational involvement as reported by their teenagers. SPSS was used to perform the independent t –test. The independent t–test was utilized to determine whether parents' member's mean scores as reported by participants was significantly different across the two groups. Table 4.8, following, summarizes these results.

Table 4.8

T-test result for parents' level of education and their attitude toward science education as reported by participants

parents	N	M	SD	*t*	P	R^2
Low education	247	3.44	.94	5.37	.021*	.17
High education	90	3.73	.77			

N=238
*P< .05

The t-test result reveals a significant statistical difference between the less educated parents and the more highly educated parents in their attitude toward science education. As reported by participants, parents with higher levels of education have more positive attitudes toward science education than those who were reported as less educated parents $t(236) = 5.37$, $P < .05$, also with an effect size $R^2 = .17$ the means differences between the two groups is considered small (see table 4.7). The independent t- test again was used to analyze which group of parents was most involved in their adolescents' education processes, as reported by participants. These results are reported in Table 4.9.

Table 4.9

t-test results for parents' level of education and educational involvement

parents	N	M	SD	*t*	P
Low educated	247	3.34	.86	3.35	.068
High educated	90	3.56	.78		

N=238
P > .05

The independent t-test analysis shows that there are no significant differences between the two groups, which means that there is no statistical difference between parents who were reported as less educated and those who were reported as highly educated in terms of the importance of their level of educational involvement $t(236) = 3.35$, $P > .05$.(table 4.8)

Research Question Four:

What is the relationship between parental attitudes toward science education, parents' educational involvement, and students' choice of majors? The results of question two revealed that parents attitude toward science education and parents' level of involvement contributed to students' achievement in science where 18% accounts for parents' attitude and involvement compared to less than 1% attributed to other parents' practices (parents educational style). The results of question three indicate that even though attitude toward science education is influenced by parents' level of education, educational involvement practice is not influenced by parents' educational level. Hence question number four investigates whether there is a relationship between participants' choice of major and their parents' attitude toward science and their educational involvement. In other words, is it possible to demonstrate a link between students who had high scores in the sciences in high school and then subsequently chose one of the sciences as a major (medical , engineering or natural science) and the attitudes toward science education they reported to be held by their parents?

In Saudi Arabia students who earn their high school diploma with 95% and higher out of 100% are eligible to compete to major in medicine. Less than that score will not qualify a student to apply for medical school. Similarly, students who want to major in engineering must have no

less than 90%. Applying to a natural science department requires a minimum score of 85% or more, with some exceptions in rare cases.

One way ANOVAs were utilized to answer this question. To assess this variable, participants were divided into three groups based on their majors. As a part of the demographic data (see appendix 3) subjects were requested to include their majors and their accumulated scores achieved in high school. Also, in the questionnaire they were asked to rate their parents' attitude toward science education and the way they involved themselves in the participants' education. The results of this analysis are presented in table 4.9 below.

Table 4.10, below, shows the results of conducting one way ANOVAs to test the relationship between parent attitude toward science and their adolescent's choice of science major. The results of the one way ANOVAs revealed that there are significant relationships between parents' attitudes toward science and students choice of science major at level $P < .05$ $F(2, 335) = 33.8$, $P = .00$, however, post hoc comparison analysis was run to indicate where the differences among the three groups are. See these results in Below in Table 4.11.

Table 4.10.

ANOVA- summary for parental attitudes toward science and participants' majors

Subscale	df	SS	MS	F	Sig
Attitude	2	46.16	23.1	33.8	.00*
Within groups	335	228.93	.683		
Total	337	275.1			

N=338
P*< .05

A post hoc comparison between the three groups of majors on parents' attitudes toward science education was used to demine which means differ. The result was significant at level P <.05 F (2, 335) = 33.8, P = .00. Analysis revealed that there is a difference between students majoring in medicine and those majoring in engineering. Students majoring in medicine reported their parents' attitudes toward science education higher than those majoring in engineering. Similarly, they rated their parents' attitude toward science education higher than those majoring in natural science. Also those majoring in engineering rated their parents' attitude toward science education higher than their counterparts from natural science majors (see table 4.11).

Table 4.11.

Post- hoc comparison for parents' attitudes toward science among student majors

Subscale	(I) Maj	(J) Maj	Mean difference (I-J)	Significance
Attitude	Med	Eng	.36*	.035
		Sci	.43*	.006
	Eng	Med	.36*	.035
		Sci	.80*	.00
	Sci	Med	.80*	.00
		Eng	.43*	.006

N=338,
P*< .05

Similarly, Table 4.12 below shows the results of conducting one way ANOVAs in order to test the relationship between parent educational involvement and their adolescence's' choice

of science major (medical, engineering or natural science). The results of the one way ANOVAs indicate that there are significant relationships between parents' educational involvement and students choice of science major at level $P < .05$ F (2, 335) = 15.2, P = .00 however post hoc comparison analysis were run to indicate where the differences among the three groups are.

Table 4.12

One-way ANOVA- Summary results for parents' educational involvement

Subscale	df	SS	MS	F	Sig
Model Involvement	2	19.8	9.9	15. 2	.00*
Within groups	335	217.76	.65		
Total	337	235.55			

N=338,
*P< .05

Post hoc analysis was utilized to determine which means differ. The result was significant between medicine (M= 3.59, SD= 1.19) and natural sciences (M=3.16, SD= .69) and also indicated no difference between medicine (M= 3.59, SD= 1.19) and engineering (M= 3.9, SD= .85) in terms of rating their parent' educational involvement. However both medical and engineering students rated their parents' educational involvement higher than those who majored in natural science which means that at level p< .05 there is a difference between medicine (M=3.59, SD=1.19) and engineering (M=3.9 , SD= .85) respectively and natural science (M= 3. 16, SD= .69 F (2, 335) = 15.2, P = .00.) This information is presented in Table 4.13, below.

Table 4.13.

Post-hoc comparison: parents' educational involvement among student majors

Subscale	(I) Maj	(J) Maj	Mean diffrence (I-J)	Sig
Involvement				
	Med	Eng	.12	.66
		Sci	.39*	.014
	Eng	Med	.12	.66
		Sci	.51*	.00
	Sci	Med	.39*	.014
		Eng	.51*	.00

N=338
P*< .05.

Summary

The findings show a low to moderate connection between student achievements in science in high school and the parents' integrated model. Parent's attitude towards science education and their educational involvement also has moderate correlation ranks *r (336)* =.42, and *r (336)* = .40 respectively, whereas the rest of the parents' practices model which are more related to parental styles (autonomy support, structure and control) are correlated to student science achievement but at a relatively lower level than parental attitude and involvement *r (336)* =.29, *r* (336) = .20, and *r(336)*= .27 respectively.

Findings from the multiple regression analysis used to investigate whether or not a combination of parents' educational practices factors would be predictive of participants' science

achievement in high school reveal that parents' attitude towards science education and their educational involvement are the best factors that can be used to predict students science achievement R^2= .192 (19%). The rest of the scale, which is more related to parents' educational style, is correlated to student achievement in science and yet predicted less than 1% of students science achievements: R^2 = .095.

The relationship between parents level of education (relatively less educated and relatively highly educated) and their attitude toward science education and the ways that they are involved in their adolescents' education process was found to be "mixed". Nevertheless, significant differences were found between less educated parents and highly educated parents regarding their attitudes toward science learning t (336) = 5.37, P < .05). It is interesting to note that there was no significant difference found between less educated parents and highly educated parents in those parents' involvement in their adolescents' education t (336)= 3.37, P < .05).

One way ANOVA was utilized to test the mean differences between parents' attitude toward science education and the participants' majors. The results showed that there is statistical difference between the means of participants' majors (medicine, engineering, natural science) and parents' attitude toward science education that may influence participants' science achievement scores. As the differences among the means exist, post hoc comparisons were used to determine which means differ. Results of post hoc comparison for parental attitude toward science, as distributed among the students' majors, showed a significant difference in means between medical school students and engineering school students. Also in the same direction, there is a significant difference between medical school students' parental attitude toward science and that identified by natural science students. In other words, medical school students reported that their parents have higher positive attitude toward science than engineering school

student natural science students reported about their parents at F(2, 335) = 33.8, P = .04, p=. 01), respectively. Also, there are significant means differences between parental attitudes toward science reported by engineering students and natural science students. F(2, 335), P = .00 Parents of engineering student were reported as having more positive attitude toward science education when compared to parents of natural science students.

The results of the post hoc comparisons for parents' educational involvement reveal that no significant difference between parents of medical and engineering students' parents in the level of involvement in their adolescents education. F(2, 335), P= .66. However, significant differences for parents' educational involvement were found between medical students and natural science students. F(2, 335), P=. 02. Medical students' parents scored higher than natural science student parents in their level of educational involvement. Similarly, parents of engineering students were reported to have higher levels of involvement in their adolescents' education when compared to parents of natural science school students F (2, 335), P= .00.

Similarly, the relationship between parents' educational involvement and participants' majors were tested. The results revealed that at level P< .05 there are significant differences F (2,335) = 33.8, *P* =.00 and *F* (2,335) = 15.2, *P* = .00 respectively. In order to test which group means was different a post hoc analysis was established. The results indicate that there are differences between participants majoring in medicine and their counterpart majoring in natural science, but there is no significant difference between participants majoring in medicine and those majoring in engineering, Also there is a difference between those majoring in engineering and participants in natural science. In general students who majored in medicine and engineering reported their parents' attitude toward science education, their parents' educational involvement higher than did their peers in the natural science major.

CHAPTER FIVE: CONCLUSION

Introduction

The purpose of this study was to investigate male Saudi Arabian Jazan University incoming science majors' perceptions about their parents' contribution to, and influence upon, their science education. The study asks how parental contributions affect interest in science, science achievement scores in high school, and choice of science as a major. The research specifically seeks to investigate the student-parent interaction relationship and its effect on educational interests, high school scores, and eventual choice of college major in the Saudi Arabian educational and cultural context. Understanding the student-parent interaction/ relationship is important for scholars and researchers investigating educational practices, for educators, and for parents. Thus the study has both theoretical and practical implications.

Practically, the study provides information that educators may use to inform parents of the most effective practices for positively influencing student science achievements. The theoretical contribution is achieved by applying educational theory in a previously unexamined educational context; Saudi Arabia. This study contributes to the literature in two ways. First, it supports the importance of parental involvement and attitude on student achievements in science. Second, it raises questions about previous studies finding that parental educational style influences student achievement. In this study correlation exists, but educational style, as reported by students, did not affect students' educational outcomes.

The major purpose of this study was to explore the effect of parents' educational practices (attitude, involvement, and educational style) on their children's academic

achievements in science at Jazan University. Study participants were enrolled in a one year preparatory program prior to pursuing their science majors. Three science colleges within the University were chosen for this research. These are the College of Medicine, the College of Engineering, and the Natural Sciences College. The participants were adolescent males with an average age of 19 years old, who had recently been granted with their high school diploma in the science track, and whose scores were in the top 15% of graduating students nationwide.

In Saudi Arabia, the last year in high school is considered to be a tough year for both students and their families. The students' future, and their admission to university, is dependent on scoring high on the final exam. Because of this, many parents are focused on their children's academic success. It is the impact of parental contributions to student achievements in science that drives this research. The more that we understand which parental factors influence students' attitudes towards science and science education the better prepared parents and educators are to support and encourage students to successfully pursue careers in the sciences.

Discussion

The findings of this study indicate that parental attitudes toward science positively influence students' educational achievements in science, with an alpha level of $< .05$. In other words, when parental attitudes toward science are reported favorably by students there is an increased likelihood that those students' science scores are higher. Additionally, the higher the parents ranked on the educational involvement scale, the more likely that their students had high level achievements in science.

The researcher found that parental educational style (autonomy support, structure, and control) were positively correlated to student achievement in science, but the correlation is not as

strong as initially anticipated, being less than 1% of the variance (.095%). The educational style factors used in this research did not have a predictive capability. In other words, participants' perceptions of their parents' educational styles were mixed, and no matter where the students' perception of their parents autonomy support, structure and control fell on the scales, the participants still performed at consistently high levels. No differences between students were found attributable to the parental autonomy support, structure, and control scales.

Demographic data such as parental educational level (low versus high educational levels), which parent was most involved in providing educational support and encouragement (father or mother or other), and student choice of major were found to have a statistically insignificant relationship to student achievements in science in the Saudi Arabian context. This finding contradicts the worldwide literature, in which parents educational level has been reported to be a major influence on student academic success (Pamela & Kean, Pamela, 2005). Also, in the literature specifically investigating Southeast Asia, parental members' educational contributions were found to significantly influence students' academic success. The impact of mothers' support has been reported positively at the elementary level, while the impact of fathers' support on educational outcomes was found to be more pronounced at the high school level (Thompson, 1986; Ong & Tan, 2001).

In the following section each research question will be discussed separately. Then there will be a discussion of parental attitudes across the demographic data. The last part of the chapter contains suggestions for future research. These suggestions primarily are derived from issues noticed during the analysis phase of the project.

Research Question One:

Research question number one investigates the correlation between parental educational practices (attitude toward science education, involvement and some other educational styles) and their teenagers' academic achievements in science, as reported by the adolescents themselves. The responses of the participants indicate that parental attitudes toward science and parental involvement have a moderately positive correlation to student achievements in science. Pearson Correlation was used to examine the correlation between parental attitudes and involvement and students science achievement. The correlations are significant (r = .42 and r = .40) at the.05 level, respectively. Correlation does not mean causation. It does not establish that parental attitudes toward science and involvement in their student's education have a direct relationship to achievement in science. This is relevant, especially in this study, where other parental practice dimensions were found to be correlated to students' science achievement (for example parents' educational styles).

What has been established is that parental attitudes toward science education and their level of educational involvement are positively correlated to their adolescents' science achievements. This is supported across other demographic data such as parental level of education where relatively highly educated parents (university level and higher) had a notably positive attitude toward science education when compared to relatively less educated parents (high school and lower).

Research Question Two:

Question number two investigates which factor of the integrated parent model had the largest degree of influence on student achievement and whether we can use this information to

predict student achievement in science. Multiple regression analysis was utilized to examine information reported by the participants, and it was found that parental attitudes towards science learning as well as their educational involvement were the best predictor variables across the model. The results indicate that these two variables can predicate 19.2% of student achievements in science. The factors in the rest of the model, which address parental educational style (autonomy support, structure and control) are invisible and do not work as predictors. In other words, even though these factors are positively correlated to student achievements in science, they are not useful in predicting student achievements in science. There are other factors that might have an impact, such as the presence or absence of an intact parental unit and parental expectations, but they are outside of the scope of this research.

Research Questions Three and Four:

Research questions three and four test the relationship between demographic data such as parental educational level and parents' educational practices to student achievements in science and choice of science as a major. Among the five independent variables used in the model for this research, the most weighted variables are parental attitudes toward science and parents' educational involvement. The results of the previous questions revealed that parental attitudes toward science education and their educational involvement are more highly correlated to student achievements in science than the other variables. Hence, questions three and four ask whether parental attitudes toward science education are different across parents' educational levels and whether family member educational support (whether father, mother, or another person) makes a difference, or influences, student achievements in science. One way ANOVA revealed no significant differences in students' science achievement related to which family member served

the student as prominent educational support provider. Similarly, no significant differences related to student academic achievements were found across parents' educational level using this method of analysis.

Parental Attitudes across Demographic Data

According to studies done in the American and European contexts, as well as studies in the more developed Asian countries, parental psychological control is negatively associated with achievement for all participants no matter what their majors or what their parents' level of education (Decourcey & Jacob, 2002). Other studies also show that psychological control, which emphasizes dominating a child's psychological world with the intent of manipulating child's behaviour, is related to negative outcomes such as anxiety (Barber & Buehler, 1996) and slow progress in math (Nurmi, 2004).

In this study, after controlling for parental attitude toward science, parental involvements, such as helping with homework or participating in at home activities, positively predicted student achievements in science. This study is consistent with studies done in the western world and in Asia; though the majority of those studies indicate that parents are more involved at the elementary level than they are at the middle and high school levels (Henderson & Map, 2003). A different study indicates that the parents of males provide more home activities at the high school level compared to the parents of females (Sui-Chu & Williams, 1996). This study, focused as it is on male high school students, is consistent with what has found in western studies examining male students.

There is no doubt that student attitudes toward education in general are positively influenced by parental attitudes. However, studies focusing on this topic show that attitude of students toward school and school learning were related to parents' attitude about education, but due to the limitations of the studies, there is little information connecting parents' educational practices on their children's science attitudes and performance (George & Kaplan, 1998). Educators have not yet resolved whether parental attitudes toward science education could stand alone in affecting student's science education whether they are linked to other factors such as parents' educational involvement (Alrehaly, 2011).

Historically, all types of parental educational involvement have been reported to have a great influence on students' science and math achievement outcomes (Keeves, 1975). A list of parental practices has been established as positive factors affecting student attitudes and achievements in science. These include homework support, provision of books and/or library facilities, and a well–prepared home environment that provides study equipment such as dictionaries and computers (Keeves, 1975; Schilbeci, 1989; George & Kaplan, 1995). Some studies even include parental style, which includes variables related to the parent–student relationship beyond school: controlling homework hours, television hours, allowed shows, extracurricular activities, and time spent with peers (Cooper, Harris, Jorgianne, Robinson & Erika, 2006).

In the literature, parental interactions with their children have been found to influence the way these children think about their surrounding environment and the way they approach, interpret and solve different problems (Callanan & Oakes, 1992; Gleason & Schauble, 2000). Hence we can understand why parent–child interactions have been found to be a factor influencing students' psychological development and academic achievement. Nevertheless, the

types of parental practices influencing students' educational outcomes, either positively or negatively, is still arguable. Importantly, we do not know the extent to which parental influence holds steady across population groups or is exchangeable from one culture to another. This study investigates the educational effects of the way that Saudi Arabian parents and children interact in terms of choice of science career path.

The result of this study provides a valuable overview about what parents may provide for their children with in order to help them to achieve the best in their education. It emphasizes the importance of parental involvement in the parent–school program. School-parent conferences and other forms of communication between parents and their children's schools have been found to positively influence children's psychological development and academic outcomes (Spaine, 1995).

These study participants' perceptions about their parents style was mixed, even across parental educational levels. While a cluster of participants' parents were reported as autonomy supporters, others were reported as utilizing higher levels of psychological control, no matter what the parental educational level. The sum of this kind of inconsistent pattern of relationship is that no significant relationship between the type of parental control and student science achievement was found. Also there is an echo that parental level of education has nothing to do to with the relationship between the adolescent participants and their parents. Science education programs and organizations endorse creativity as primary a student characteristic necessary for future scientists, and emphasize that all schools and parents should encourage it (AAAS, 1995 & NSTA, 2003). This research fails to demonstrate significant impact for some of the parent-adolescent interaction practices in the Saudi Arabian context. Nevertheless, the home educational environment and atmosphere, which are related to self determination and self

esteem, influences not only the students' academic achievements but also students' overall psychological development. This is particularly pertinent to students who are similar in culture and age to this study's participants. For this reason, further investigation of education in the Saudi Arabian system is needed.

Conclusion

This study explored parents' attitudes toward science education and education practices which may influence their teenagers' science outcomes. The sample for this study was drawn from students in science–based colleges (e.g. medicine, engineering, and natural science) at Jazan University in the southern part of Saudi Arabia. The findings showed that parents attitude toward science education is an important vehicle that enhances student achievements, though attitude alone is not enough to grant outstanding achievement. It should join with parental involvement. Significant differences were reported by participants between parents with relatively higher education levels compared to those with lower levels of education. In other words, participants reported that college graduate parents (or higher) had a more positive attitude toward science education than parents with relatively lower levels of education. All other parental practices were found not to have an operational effect on student academic achievement. Parental attitudes and educational involvement were found to be good predictors of students' academic achievements. However, it is interesting to note that specific variables related to parenting practices such as parental control, structure and autonomy support did not appear to influence student achievement nor were they good predictors of student achievement in this sample.

This is an interesting finding. Studies in Southeast Asia reported parents' educational style as a major factor influencing students' educational success childhood and in adolescence. Saudi Arabian families and Southeast Asian families share many parent-adolescent relationship aspects. The current study proposed that, similarly to Southeast Asia, Saudi Arabian students will be positively influenced by their parents' educational style, but the results of this research show the opposite. Failing to find a connection between parental education style and student science achievement does not mean that the relationship does not exist. This must be the subject of further investigation. It may be that the participants failed to report their parents' educational behaviour independently. Saudi Arabian society is conservative, and it is not an accepted practice for students to express their perceptions of their parents' practices in public. There are also other possibilities. For example, the study participants are adolescent Saudi Arabian males. They are proud, and like adolescents in many cultures, struggling to become independent of parents. No matter what the level secrecy of this study, participants may feel ashamed to report themselves as being controlled, even when that control was exerted by parents. Another possibility is that, in the opinion of the researcher, education does not have the same significance in Saudi Arabian culture as it does in other Asian nations. Certainly, in Saudi Arabia, while parents support their children's educational achievements, they equally emphasize other cultural aspects such as family loyalty and support.

Out of this research several findings relevant to educational theory and practice have emerged. First, is that parental educational involvement and practices of this sample in Saudi Arabia have outcomes different than found in other Asian nations. Second, it is accepted that parental attitude toward science education is positively associated with active educational involvement (Alrehaly, 2011), but this study did not find that to be the case in Saudi Arabia.

Some study participants reported parents with a positive attitude toward science education, but no active involvement in that education. Third, participants reported no differences in students' science achievements or choice of science as a major that could be attributed to parental education level. These results suggest that, in Saudi Arabia, level of parental involvement in science education and/or students' independent effort is more important than either positive attitude or level of parental education. Finally, regardless of the similarities between Saudi Arabian and Asian nations in some cultural aspects and in education spending, it seems that the value of education tends to be more important to Southeast Asian families than it is to Saudi Arabian families. This may be related to the level of competition present in each society, or it may be related to parental practices that have developed over time in each culture. These factors are deserving of further study.

Recommendations for Future Research

The current research investigates male students' perceptions of the importance of parental practices on science education outcomes. It is recommended that this study be expanded to address the educational outcomes for Saudi Arabian females. Female education has been largely excluded from the Arabic educational literature. This may be the result of cultural issues such as the differences in treatment between boys and girls within the family, but it is more likely the result of widespread practices that limit female exposure to outside attention. Nevertheless, Saudi females do receive education, and we do not know whether the influence of parental practices is the same for females or whether there may be different conclusions when compared to males.

It is also recommended that this study be repeated by utilizing a mixed-method approach, with interviews used to confirm participant responses. This would reduce the possibility of errors that can be attributed to sampling bias or inaccurate responses. Interviews with study participants ensure the accuracy of responses, but have the added advantage of allowing extrapolation and investigation of unusual answers. Out of this methodology it is possible that factors affecting educational outcomes that have not been investigated may emerge. It may also be that interviews are an effective method to address such issues as the impact of adolescence on survey responses.

The study should be expanded to different educational institutions throughout Saudi Arabia. The country is large, and it does have a largely homogenous society, however, each region has its own cultural preferences and practices. It may be important to determine whether the effect of parental practices on science education remains constant across the country. It is possible that such an investigation of the effect of parental practices on science education in different regions of the country may reveal different findings and/or interpretations. One possible geographic variable may be city of student origin.

There would be distinct utility in focusing a similar research project on investigating this topic using a different set of variables. Future studies may exclude parent–child interactions from the structure and examine the impact of variables such as student conduct reports or teachers' annual reports. It is appropriate to investigate attitude toward science in general, and science educational involvement using such variables. It would be useful that this study be expanded to address the perceptions of parents. This study used student perceptions of their parents' attitudes toward science education, educational involvement and educational style practices. It may be that parents' responses to a similar questionnaire may differ. We do not know what parents believe is their most important contribution or influence on student achievements in the sciences.

In general education in Saudi Arabia has made a great deal of progress in recent years. This research, and its suggestions for further research presented here are intended to assist both educators and parents regarding the most salient elements of parental educational practices, both parents and educators need to know which specific actions they may take will yield the greatest benefit for their children. Saudi Arabian's parents and educators, in specific, need to understand the importance of communication between the schools and students' houses to help students in Saudi Arabia to achieve the highest possible school outcomes. For the future of our nation, this research works as a reminder that academic success of students will be maximized when parents and teachers work together as partners. It is not out of the realm of possibility that, in the future, Saudi Arabian students will be present at the top in science and math achievement in international comparative studies such as TIMMS.

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APPENDICES

Appendix 1

Informed Consent

Male Saudi Arabian freshmen science majors' at Jazan University:
Their perceptions of the impact of their parents' practices on their science achievements

This research is to determine whether parents' attitude toward science influences their children's achievement in science or not, and the affect of other dimensions of parents' practices that influence students' achievement. University aged students will be asked to respond to a questionnaire. There are no risks anticipated with this project. The questionnaire that will be filled out presents no risk to the participants other than that would normally occur in the course of involvement in the school experience. The benefits of this research attempt to determine whether parents' attitude toward science alone or combined with parental other practices has an influence on students' achievement in science. Another potential benefit is that knowledge of parental influence may help other parents with knowing what might work to influence their children's achievement in science. Your decision to participate in this study is completely voluntary and you will be free to stop participation at any time until this survey is submitted. Thus, you retain the right to withdraw your consent at any time during the project until the questionnaire is submitted. In that case your data would not be recorded in the project data. There would be no negative consequences for this decision. All information will be kept confidential to the extent allowed by law. All data will be collected using a predefined system of unique identifiers that protect the participant's identities. At the end of the semester all consent forms will be destroyed to protect the identities of the participants.

You may contact me or my University dissertation advisor, if you have questions about this study or would like to know the results of the study. I have also listed the contact information for the Institutional Review Board Compliance Officer, who oversees all research conducted through the University of Arkansas.

Researcher	**Faculty Advisor**	**IRB Compliance Officer**
Essa Alrehaly	Michael Wavering	Ro Windwalker
	wavering@uark.edu	irb@uark.edu
	+1479-575-4283	OZAR 120 Hall
		University of Arkansas
		Fayetteville, AR
		+1479-575-3845

I understand the purpose of the study, the procedures to be used, the potential risks and benefits, how confidentiality will be maintained, as well as the option to withdraw from the study at any time. The researcher has answered all of my questions regarding the study and believe I understand what is involved. My completion of the questionnaire indicates my agreement to participate in this study.

Appendix 2

UNIVERSITY OF ARKANSAS
THE YOU OF A

120 Ozark Hall • Fayetteville, Arkansas 72701 • (479) 575-2208 • (479) 575-3846 (FAX)
Email: irb@uark.edu

Research Support and Sponsored Programs
Institutional Review Board

April 4, 2011

MEMORANDUM

TO:	Essa Alrehaly Michael Wavering
FROM:	Ro Windwalker IRB Coordinator
RE:	PROJECT CONTINUATION
IRB Protocol #:	10-03-560
Protocol Title:	*Male Saudi Science Majors' Perceptions of their Parents' Practices' Impact on their Science Achievement*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Previous Approval Period:	Start Date: 04/14/2010 Expiration Date: 04/13/2011
New Expiration Date:	04/13/2012

Your request to extend the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the IRB approved form "Request for Continuation." Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

If you have questions or need any assistance from the IRB, please contact me at 120 Ozark Hall, 5-2208, or irb@uark.edu.

Appendix 3

Male Saudi Arabian freshmen science majors at Jazan University: Their perceptions of the impact of their parents' practices on their science achievements.

Fall, 2011

Dear student,

I understand that it is not easy to report your parents' practices, but be sure that all information obtained in this study will be kept in strict confidence and will not be shared with anyone, including the school. Also your name will not be used in any research report. I'm asking for this information because it helps me to track the relationship between parents' practices and students' outcomes. Please select the choice that best matches your parents. Your answer will help families worldwide to determine the impact of parents' daily actions and students' outcomes. Thank you for helping me out

Section I: Please indicate whether you agree or not based on 5 points scale

From strongly agree (5)  strongly don't agree (1)

An Example: **My parents like music**	strongly agree **5**	agree **4**	not sure (3)	don't agree **2**	strong don't agree **1**
1 -My parents make sure that I have a quiet place to study.	5	4	3	2	1
2- My parents treat me as a friend	5	4	3	2	1
3- My parents tell me that my misbehavior shames the whole family.	5	4	3	2	1
4- My parents limit my going out with friends.	5	4	3	2	1
5- My parents limit time devoted to sport activities.	5	4	3	2	1
6- My parents teach me to behave properly towards them and others.	5	4	3	2	1
7- My parents tell me that I have to do well in school	5	4	3	2	1
8- My parents keep clear rules at home that I must obey.	5	4	3	2	1
9- My parents limit my time in entertainment (e.g. TV, video games)	5	4	3	2	1
10-My parents make it clear that there is no misbehaving at school.	5	4	3	2	1

11- My parents show disappointment with me when I misbehave.	5 4 3 2 1
12- My parents repeat their high expectations regarding my future.	5 4 3 2 1
13- My parents attend my participation in school activities.	5 4 3 2 1
14- My parents join me in voluntary community projects.	5 4 3 2 1
15-My parents contact the school promptly to resolve any problem that happened to me at school.	5 4 3 2 1
16- My parents have given me guidelines about appropriate behavior at school.	5 4 3 2 1
17- My parents expect me to resolve my problems with friends on my own.	5 4 3 2 1
18- My parents do not allow me to question their authority	5 4 3 2 1
19-My parents attend parent-teacher meeting	5 4 3 2 1
20-. My parents enjoy watching science shows on TV.	5 4 3 2 1

21-My parents have given me non- text books about science to read	5 4 3 2 1
22- My parents require me to check with them before making a decision about my school work.	5 4 3 2 1
23-My parents enjoy reading about science (e.g. books, articles).	5 4 3 2 1
24- My parents allow me to make decisions about when I work on my homework.	5 4 3 2 1
25- My parents tell me the reason to follow school rules.	5 4 3 2 1
26- My parents ask my permission before checking my homework.	5 4 3 2 1
27- My parents tell me to study independently.	5 4 3 2 1
28- My parents encourage me to resolve Problems at school on my own.	5 4 3 2 1
29- My parents have a discussion with me before deciding whether or not to punish me for misbehaving.	5 4 3 2 1
30- My parents want me to major in science.	5 4 3 2 1
31- My parents have given me suggestions about how to follow expectations from school.	5 4 3 2 1

32- My parents participate at my school (e.g., fundraising, classroom helper).	5 4 3 2 1
33-My parents are concern about environmental issues (e.g. climate change, population).	5 4 3 2 1
34- My parents enjoy discuss science with their friends	5 4 3 2 1
35- My parents are keep asking about my science grades more than other subjects.	5 4 3 2 1
36- My parents are very clear about how they respond to my misbehavior at school	5 4 3 2 1
37- My parents make decisions about how long I can play with my friends.	5 4 3 2 1
38- My parents encourage me to act independently at school.	5 4 3 2 1
39- My parents make sure that I understand the rules of the school.	5 4 3 2 1
40- My parents give me leeway for making mistakes at school.	5 4 3 2 1
41- My parents expect me to obey my school's rules without question it.	5 4 3 2 1

Section II: Please read carefully and check appropriate box

An Example:

My parents go to the theatre

☐ always ☐ often ☐ sometimes ☐ rarely ☐ never

42- My parents take me to natural places for educational purposes (e.g., museums, Science exhibits, natural sits, zoo, field trip).

☐ Always ☐ often ☐ sometimes ☐ rarely ☐ never

43- My parents talk to me about why natural events occur.

☐ Always ☐ often ☐ sometimes ☐ rarely ☐ never

44- My parents attend school events (e.g. teacher meetings, workshops, science exhibits, fundraising) .

☐ Always ☐ often ☐ sometimes ☐ rarely ☐ never

45 - My parents help me with my homework.

☐ Always ☐ often ☐ sometimes ☐ rarely ☐ never

Section III: Please read carefully and check appropriate box

46- My parents call or email my teacher to check my academic performance

☐ Once a week. ☐ twice a month ☐ once a month ☐ twice a semester ☐ never

47- My parents check science assignments about

☐ Every day ☐ twice a week ☐ once a week ☐ twice a month ☐ never

48- My parents make sure that I read

☐ Every day ☐ twice a week ☐ once a week ☐ twice a month ☐ never

49- I work with a paid tutor to help with study (e. g. math and science, and tests).

☐ Every day ☐ twice a week ☐ once a week ☐ twice a month ☐ never

50- My parents ask me to inform them about my day in school.

☐ Every day ☐ twice a week ☐ once a week ☐ twice a month ☐ never

Section IV: Please read carefully and check appropriate box

51- Who is most of time help you with schooling issues?

☐ My father ☐ My mother ☐ someone else

52-My percentage grades for high school diploma

☐ 90-100 ☐ 89-80 ☐ 79-70 ☐ 69-60 ☐ below 60

53- My science grades for last years in high school.

☐ 90-100 ☐ 89-80 ☐ 79- 70 ☐ 69-60 ☐ below 60

Appendix 4

عزيزي الطالب:

أنا عيسى بن دخيل الرحيلي المبتعث من جامعة جازان لنيل درجة الدكتوراه في مناهج وطرق تدريس العلوم من جامعة أركنسو في أمريكا. دراستي تتمحور حول *المعاملة الوالدية وعلاقتها بالتحصيل الدراسي في المواد العلمية لدى عينة من طلاب جامعة جازان* **، لذا أنني أرجو منك التعاون معي في الاستجابة على الاستبيان المرفق علما بأن:**

- **مشاركتك اختياريةً، واجاباتك على هذا الاستبيان تتضمن موافقتك الطوعية على المشاركة في هذه الدراسة.**
- **اجاباتك ستكون سرية و سوف تستخدم لأغراض الدراسة العلمية فقط.**
- **بل وأكثر من ذلك سوف تحفظ في مكان أمن وتعنوّن مسبقا برمز خاص يجعل من المستحيل التعرف على الشخص المجيب على الاستبيان.**
- **بل أن الباحث نفسه الذي سوف يكتفي بتحليل البيانات لن يكون بمقدوره التعرف على أصحاب الأستجابات في حالة عدم كتابة الأسماء. لذلك أرجومنك التأكد من عدم كتابة اسمك أو اي معلومات غير مطلوبة على الاستمارة.**
- **كما يجب التنويه أن لك الحق برفض المشاركة في الدراسة أو الانسحاب منها في أي وقت تشاء مع العلم أن قرارك بالانسحاب في حال حدوثه لايترتب عليه أي عقوبة أونتائج سلبية.**

انني أتوقع منك مساعدتي في التعامل بجدية مع هذا الاستبيان الذي سيستخدمه الباحث في دراسته لنيل درجة الدكتوراه.

مع شكري وتقديري،، وأطيب التمنيات.

الباحث

خريف 2011

- **القسم الأول: (بيانات أولية)**

عزيزي الطالب في هذا القسم من الاستبيان الرجاء تعبئة البيانات المطلوبة بدقة مع الشكر لتعاونك.

- التخصص :.....

- النسبة المئوية في المواد العلمية في الثانوية العامة..... النسبة المئوية في الثانوية العامة.....

- من يساعدك عادةً علي شؤونك المدرسية؟

☐ أ ☐ شخص ☐

- ما المستوى التعليمي للأبيك وأمك؟

☐ **الأب**	☐ **الأم**
◯ الابتدائية أوأقل	◯ الابتدائية أوأقل
◯ المتوسطة	◯ المتوسطة
◯ الثانوية العامة	◯ الثانوية العامة
◯ الجامعة	◯ الجامعة
◯ ماجستير أوأكثر	◯ ماجستير أوأكثر

القسم الثاني

هذا القسم يتضمن 40 عبارة فقط، وهي تتمحور حول تعامل والديك مع بعض المسائل الدراسية أثناء دراستك في المرحلة الثانوية بشكل عام، والمواد العلمية(رياضيات، فيزياء، كيمياء، أحياء، جيولوجيا) بشكل خاص. من فضلك اقرأ كل عبارة بدقة، ثم اختر فيما كانت العبارة تنطبق عليك أو لا تنطبق. وذلك بوضع علامة (X) في الخيار الذي تراه مناسبا لك.

- **قبل أن تبدأ، إليك هذا المثال التوضيحي:**

العبارة	الخيارات				
	تنطبق بشدة	تنطبق	محايد	لا تنطبق	لا تنطبق بشدة
• **والديّ (أو أحدهما) يهتمان بقراءة الصحف اليومية.**		X			

- إذا كان لديك اي سؤال أو استفسار قبل البدء في الاستجابة ، الرجاء تفضل الآن بالسؤال.
- مع كل الشكر، ابدأ في الاستجابة.

م	العبارة	تنطبق بشدة	تنطبق	تنطبق إلى حد ما	لا تنطق	لا تنطبق بشدة
1	والديّ(أو أحدهما) يحرصان على توفير جو هادئ لي للدراسة					
2	والديّ(أو أحدهما) يعاملا ني كصديق.					
3	والديّ(أو أحدهما) يوضحان لي ان سوء سلوكي قد يسئ لسمعة العائلة ككل.					
4	في ايام الدراسة، والديّ (أو أحدهما) يسمحان لي بالذهاب مع اصدقائي لوقت محدد.					
5	في أيام الدراسة، والديّ (أو أحدهما) يسمحان لي بمزاولة الرياضة لوقت محدود.					
6	والديّ(أو أحدهما) علماني كيف أتصرف معهما ومع الأخرين باحترام.					

7	والديّ(أو أحدهما)يطالباني بالتفوق الأكاديمي.					
8	والديّ(أو أحدهما) أكدا بوضوح على أهمية اتباع تعليماتهما بدقة.					
9	في أيام الدراسة،والديّ (أو أحدهما) يسمحان لي بوقت محدود لمتابعة و لعب برامج التسلية.					
10	والديّ (أو أحدهما)لايسامحني علي سوء سلوكي في المدرسة.					
11	والدي(أو أحدهما) يمتعضان من سوء سلوكي في المدرسة.					
12	والديّ(أو أحدهما) يذكراني باستمرار بأهمية التفوق في المدرسة.					
13	والديّ(أو أحدهما) يحرصا ن علي حضور الأنشطة المدرسية التي أشارك فيها.					
14	والديّ(أو أحدهما) يتواصلان بسرعه مع ادارة المدرسة لحل اي مشكلة قد تحدث لي في المدرسة.					
15	والديّ(أو أحدهما) اعطياني توجيه مسبق للتصرفات المقبولة في المدرسة.					
16	والديّ(أو أحدهما) يتوقعان مني حل مشاكلي مع زملائي بنفسي.					
17	والديّ(أو أحدهما) لايتوقعان مني اي مناقشة لقرارتهما بشأني.					
18	والديّ(أو أحدهما) يحضران مجالس الاباء بانتظام.					
19	والديّ(أو أحدهما) يشجعاني على التصرف باستقلالية في المدرسة.					

20	والديّ (أو أحدهما) حريصان على معرفتي التامة بجميع القواعد والأنظمة المدرسية.					
21	والديّ(أو أحدهما) يتفهمان بعض تصرفاتي الخاطئة في المدرسة.					
22	والديّ(أو أحدهما) يتوقعان التزامي التام لجميع الأنظمة المدرسية وبدون مناقشة.					
23	والديّ (أو أحدهما) يتحاوران معي قبل اتخاذ القرار بشأن معاقبتي من عدمه.					
24	والديّ(أو أحدهما) يرغبان في أن اتخصص في أحد التخصصات العلمية.					
25	والديّ (أو أحدهما) قدما لي نصائح تساعدني على النجاح في المدرسة.					
26	والديّ (أو أحدهما) يشاركان في الا نشطة المدراسية.					
27	والديّ (أو أحدهما) قلقان بشأن كل ما يهدد البيئة.					
28	والديّ (أو أحدهما) يستمتعان بمناقشة المواضيع العلمية مع أصدقائهم.					
29	والديّ (أو أحدهما) دائما ما يسألاني عن درجاتي في مقرارت المواد العلمية أكثر من سؤالهم عن درجات المواد الأخرى.					
30	والديّ (أو أحدهما) لا يتسامحان فيما يخص سوء سلوكي في المدرسة.					
31	والديّ (أو أحدهما) وحدهما من يتخذ القرار بشأن الوقت الذي أقضيه مع زملائي .					
32	والديّ (أو أحدهما) يحبان متابعة الأفلام العلمية الوثائقية في التلفاز.					
33	والديّ (أو أحدهما) يعطياني من حين الي اَخر بعض					

	الكتب العلمية لقرأتها.					
34	والديّ (أو أحدهما) يتوقعان مني الاستئذان قبل اتخاذي اي قرار يتعلق بأعمالي المدرسية.					
35	والديّ (أو أحدهما) قارئان جيدان لما يكتب في العلوم من كتب و مقالات.					
36	والديّ (أو أحدهما) اعطياني حرية القرار في كيفية عمل واجباتي المدرسية.					
37	والديّ (أو أحدهما) علماني أ همية احترام القوانين المدرسية.					
38	والديّ (أو أحدهما) يسألني الأذن قبل متابعة ما كتب لي في دفاتر الواجبات المدرسية .					
39	والديّ (أو أحدهما) يطالباني بالدراسة باستقلالية(بدون مساعدة من أحد).					
40	والديّ (أو أحدهما) يشجعاني على حل مشكلاتي المدرسية بمفردي.					

القسم الثالث

م	العبارة	يحدث دائماً	غالباً	احياناً	نادراً	لم يحدث قط
1	والديّ (أو أحدهما) يحرصان على متابعة حليّ لواجبات المواد العلمية.					
2	والديّ (أو أحدهما) يحرصان على أن أقرأ.					
3	والديّ (أو أحدهما) يحرصان على أن أذاكر المواد العلمية بمساعدة مدرس خصوصي.					
4	والديّ (أو أحدهما) يسألاني عن ادائي في المدرسة.					

5	والديّ (أو أحدهما) يتواصلان مع المدرسة للسؤال عن تحصيلي الدراسي.					
6	والديّ (أو أحدهما) يحرصان على اصطحابي إلي المعارض العلمية.					
7	والديّ (أو أحدهما) يتحدثان معي عن الأخبار العلمية.					
8	والديّ (أو أحدهما) يحرصان على حضور الانشطة المدرسية التي أشارك فيها.					
9	والديّ (أو أحدهما) يساعداني في حل واجباتي المدرسية.					

كل الشكر والتقدير لكم،، مع أطيب الأمنيات بالنجاح وتحقيق أهدافكم العلمية.

Appendix 5

Kingdom of Saudi Arabia
Ministry of Higher Education
Jazan University
Preparatory Year Deanship

المملكة العربية السعودية
وزارة التعليم العالي
جامعة جازان
عمادة السنة التحضيرية

إلى من يهمه الأمر

فنفيدكم علماً بانه قد خاطبنا المبتعث عيسى دخيل الرحيلي المبتعث لدراسة الدكتوراه من جامعة جازان إلى جامعة اركانساس راغباً تمكينه من تطبيق بحث الدكتوراه على طلاب كلية العلوم المستويات الأولى في جامعة جازان , وعليه فلا مانع لدينا من تمكينه من القيام بذلك والحرص على مساعدته وتحصيل ما يتطلب لإكمال مهمته .

والله يرعاكم،،،

عميد السنة التحضيرية

د. بركات بن حمود مكرمي

عمادة السنة التحضيرية
Deanship of the preparatory year

الرقم: ..... التاريخ: ..... المرفقات: .....

المملكة العربية السعودية - جازان - ص.ب: ١١٤ - هاتف: ٠٧٣٢٣٠٠٢٨ - ٣٢٣٢٨٠٠ - ٠٧٣٢٣٠٠٢٩
K. S. A.- Jazan - P.o. Box.:114 - Tel : 073230028 - 3232800 - 073230029 - www.jazan.edu.sa

Appendix 6

Gmail - a permission for using your survey https://mail.google.com/mail/?ui=2&ik=95360e4f1e&view=pt&q=oo..

Essa Al <essaal@gmail.com>

a permission for using your survey

Fri, Mar 5, 2010 at 6:33 PM

You have my permission to use the parenting scale. Let me know what I can do to help. Good luck with your dissertation.

Denise