

The Predictive Role of Teaching Styles on Omani Students' Mathematics Motivation

Said Aldhafri¹ & Marwa Alrajhi²

¹ Director of Student Counseling Center, College of Education, Sultan Qaboos University, Muscat, Oman

² College of Education, Sultan Qaboos University, Muscat, Oman

Correspondence: Said Aldhafri, Student Counseling Center, Sultan Qaboos University, Muscat, P.O. Box 39, P.C. 123, Oman. Tel: 968-9989-9847. E-mail: aldhafri@squ.edu.om

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Abstract

The current study explored the effects of two teaching styles, authoritative and authoritarian, on students' mathematics motivation. The two motivational constructs examined were intrinsic and extrinsic motivation. Data were collected from 425 Omani 8th grade students (males = 202/females = 223, mean age = 13.44, *SD* = 0.79). Through two questionnaires, students reported their perceptions of their math teachers' teaching styles, and their own motivational orientation towards mathematics. Multiple regression models were used to analyze the data. The findings suggest the two teaching styles play a role in predicting students' mathematics motivation. An authoritative teaching style seems to be the better predictor of the two motivational constructs, when compared with an authoritarian style. Eighteen percent of the variance was accounted for in the intrinsic motivation model, compared with only five percent in the extrinsic motivation model. The educational and cultural contexts were discussed in relation to the research results.

Keywords: 8th graders, mathematics motivation, teaching styles, Oman, Arab

1. Introduction

Motivation is a significant factor in students' academic lives; it affects their classroom behavior, and as a result, future success. Motivated behavior is defined by Santrock (2009, p. 460) as being, "energized, directed and sustained". Student behavior is influenced by two major kinds of motivation—namely, autonomous and controlled. Previous research shows that motivation positively contributes to mathematics achievement, for example, Matteson, Swarthout, and Reichwein (2011) found that mathematics teachers firmly believed in the importance of motivation on their students' performance. The researchers emphasized that, for the students to become life-long learners, educators need to develop their students' intrinsic motivation, and encourage them to learn for the sake of learning. Similarly, Stevens, Olivarez, Lan, and Runnels (2004) asserted that encouraging mathematics self-efficacy belief and motivation within students significantly contributes to their mathematics achievement. Hammouri (2004) mentions three specific motivational variables of self-perception of math importance, confidence in ability, and educational inspiration as all positively related to mathematics achievement. Other motivational variables such as self-concept regarding mathematics (Wilkins, 2004), self-regulated learning (Ispir, Ay, & Saygi, 2011), self-esteem, self-efficacy and teachers' teaching behavior (Pimta, Tayruakham, & Nuangchalerm, 2009), attitude towards math (Hammouri, 2004; Singh, Granville, & Dika, 2002) and academic engagement (Singh, Granville, & Dika, 2002) were all found to be strong predictors of mathematics outcomes.

Due to the importance of student motivation, a great deal of research has investigated how it develops. According to past studies, the most influential factors on students' motivation are family or social factors, school and peer interaction factors, and teachers and teaching styles. Teachers have a particularly significant impact on students' motivation either through their relationships with students (see, for example, Aldhafri & Al-Hadabi, in press; Wilson & Ryan, 2013), punishment and reinforcement techniques (see, for example, Ahmad, Said, & Khan, 2013; Wery & Thomson, 2013), strategies of teaching (see, for example, Colleen, 2013; Morgan, 2013) or teaching styles. Tuan (2012) stated that students perceived their teachers as the most influential factor in motivating them for their learning, and for this reason, students need their teachers to encourage them by applying different motivating techniques. The purpose of the current study is to examine the effects of

mathematics instructor teaching styles (authoritative and authoritarian) on students' mathematics motivation.

1.1 Teaching Styles

Several studies have documented the impact of teaching styles on students' school outcomes. Teacher styles play a significant role in shaping students' perceptions about the teacher and the class (Coldren & Hively, 2009; Walker, 2008). Many researchers have identified these styles as corresponding to those found in the parenting literature. Dever and Karabenick (2011) defined parenting styles according to Baumrind's two dimensions: responsiveness and demandingness. Responsiveness involves warmth, care, and meeting individual needs, while demandingness involves high expectations, strong behavioral control, and autonomy support. Based on these two dimensions, parenting styles were grouped into three categories: Authoritative parents are highly responsive and highly demanding; authoritarian parents are highly demanding but exhibit little responsiveness; and permissive parents are characterized as showing great deal of care (highly responsive) while placing minimal demands (low demandingness) (Baurmind, 1978, 1991; as cited in Walker, 2008). Baurmind stated that the presence of authoritative parents result in the, "most positive outcomes" both psychologically and academically. This view is shared by Dever and Karabenick (2011), who found that children who constantly had authoritative parents were intrinsically motivated, and high achieving in school. Similar findings were reported for parenting styles across different cultures, including the Arabic culture (Aldhafri, 2011; Assadi et al., 2007; Besharat et al., 2011; Cheung & McBride-Chang, 2008; Gonzalez, Holbein, & Quilter, 2002; Turner, Chadler, & Heffer, 2009).

Many researchers have stressed that the demandingness and responsiveness dimensions provide more effective results when they are presented together, than when either one is presented alone. Dever and Karabenick (2011), for example, examined the effects of the two characteristics of the authoritative teaching style (i.e. academic pressure/demandingness and teacher caring/responsiveness) on students' interest and achievement in mathematics. They found that academic pressure was highly positively related to students' interest in mathematics, regardless of their ethnicity; and this pressure also positively affected students' achievement gains. Wentzel (2002) stated that high expectation, which is a major part of demandingness, is positively associated with students' goals and interests.

However, demandingness may lead to negative outcomes when it exists without responsiveness, as is the case with authoritarian teachers. For instance, Walker (2008) indicated that the authoritarian teacher provides less support for students' autonomy by giving them limited opportunities for independent work, which leads to lower academic self-efficacy relative to students with an authoritative teacher. He adds that an unresponsive and highly demanding style may lead to both a greater use of self-handicapping behaviors, and lower social self-efficacy.

Similarly, responsiveness alone, as seen in permissive teachers, is not enough to produce positive academic outcomes. That is not to say it is unnecessary, and researchers have often highlighted the importance of caring in teacher-student relationships. For example, having studied authoritative schools that are exemplified by demandingness and responsiveness, Gill, Ashton, and Algina (2004) found that students' perception of school responsiveness was found to be positively associated with their engagement and internal control. Teachers have reported that students in general tend to put more effort into learning when they perceive that their teachers care about them (Muller, 2001). Furthermore, Domino (2009) stressed that when students perceive that their teachers care about them and their mathematics learning, they feel comfortable and free to ask questions. The students in this type of classroom experience a relaxed atmosphere that can enhance their learning through participation, and interaction with the teacher. Results from permissive classrooms, however, stress that despite the usefulness of teacher responsiveness in supporting students' engagement and in motivating them, demandingness is a vital element for learning; and according to Walker (2008) a teacher's responsive statements in the classroom may even weaken their teaching effectiveness.

As can be seen from the reviewed literature, there are many studies focusing on the effect teaching styles have on different school outcomes; however, there is a dearth of research which has examined the effects these styles have on student motivation, especially with regard to mathematics. Therefore, this research was conducted to fill this gap in the literature.

1.2 The Study Design and Context

The reason behind studying students' motivation in mathematics stems from the fact that this core subject has the potential to play a crucial role in nation development. It is fundamental in that it forms the basis of all dominant technology and industry. In his article, Clement (2003) stressed that, for three main reasons, improving mathematics ability in children should be equal in priority to improving reading. First of all, children are interested in mathematics from their early years; second, in our technologically infused lives, students lacking math literacy can be labeled with "second-class status"; and finally, learning literacy and reading are both

fostered by learning mathematics. In 2007, an event called *Engaging Math*, organized by the Engineering and Physical Sciences Research Council (EPSRC), and the Council for the Mathematical Sciences highlighted that as technology plays a major role in almost every part of modern society, mathematics is becoming essential. In actuality, for many challenges faced by graduates, using mathematics is the only way to find solutions (Anonymous, 2007).

The current study examines the connections between teacher styles and student mathematics motivation using an Omani sample population. The Omani culture is considered a collective culture that promotes conformity to authority (Hofstede, 2001; Triandis, 1989). This examination expands on recent research to understand student-teacher relationships in a different teaching context from that which is available in the western literature. Evidence of construct validity can be obtained for western based measures when used in other, non-western, cultures, such as the current Arabic culture. Examining teaching styles may allow development of a theoretical base for possible future interventions to promote specific teaching styles, in particular, ones that are found to support students' mathematics motivation.

The study examines the effects of mathematics teachers' teaching styles on students' autonomous, and controlled mathematics motivation; and investigates possible differences in the effects of three teaching styles, authoritative, authoritarian, and permissive, on students' motivation, while controlling for gender effects.

2. Method

2.1 Participants and Procedures

The sample consisted of 425 8th grade students from three school districts in the Sultanate of Oman. Females represented 52.5% of the total sample. The mean age of the participants was 13.44 ($SD = 0.791$). The students were informed that participation in the study was voluntary; that it did not have any bearing on their class grades; and that their teachers would not have access to the data. The participants were assured of confidentiality, and were asked not to write any identifying information. No teachers were present during data collection, which was carried out during class sessions by research assistants. All students who attended class on the day of data collection agreed to participate. Participants took approximately 40 minutes to complete the questionnaires.

2.2 Instruments

To examine the effects of teaching styles on student motivation, two instruments were utilized. In order to examine teaching styles, the researchers constructed the Students' Perceptions of Teaching Style Scale (SPTSS), which was based on the Arabic version of the Parenting Authority Questionnaire (APAQ) (Aldhafri et al., 2009; Buri, 1991). For measuring students' motivation, the Mathematics Motivation Scale (Jalal, Alsawaie, Alstartawi, Alghazo, & Tibi, 2012) was used after examining its appropriateness for the Omani school context. Descriptions of the two instruments follow.

2.2.1 The Teaching Style Scale (TSS)

Arising from the absence of a good measure of teaching styles in the Arabic context, the researchers consulted the available literature and constructed a new questionnaire that covers a wide range of teaching styles. As mentioned earlier, a review of the literature revealed a good conceptualization of teaching styles was found in the parenting styles research, where parenting styles were divided based into two domains: demandingness and responsiveness, as suggested in Baumrind's model. After reviewing the parenting literature, Aldhafri and his fellow researchers have concluded that this theoretical framework is best captured by Buri's Parenting Authority Questionnaire (PAQ) (Aldhafri et al., 2009; 2011; Alkharusi, Aldhafri, Kazem, Alzubiadi, & Al-Bahrani, 2011). The PAQ is a 5-point, 30-item measure that has three subscales: authoritative, authoritarian, and permissive. Each dimension was measured using 10 items. Consistent with the findings from different populations (Assadi et al., 2007; Dwairy, 2004; Gonzalez et al., 2002), Aldhafri and his colleagues reported adequate reliability and validity evidence for the three subscales measured in the PAQ. To get total scores, the 10 items for each subscale were summed, with higher scores indicating higher levels of each teaching style dimension measured.

Factor analysis of the (TSS) data did not support the 3-factor solution found in the parenting style literature. Neither an eigenvalue greater than one criterion, nor the scree plot supported the three factor solution. The first criterion yielded 9 unexplained factors and the scree plot supported a 2-factor solution. The scree plot results suggested that only authoritative and authoritarian teaching styles are well defined in the Omani context. Therefore, items related to the permissive style were excluded from further analysis. Using a cut score of 0.30 for factor loadings, nine items loaded as predicted in the authoritative scale, and seven items loaded in the authoritarian scale. One item was thus deleted from the authoritative scale (item 4) and three items were deleted from the authoritarian scale (items 1, 2 & 10). The first factor accounted for 13.28% of the variance, while the

second factor accounted for 7.56% of the variance. Item-total correlations were all significant and ranged between 0.46 and 0.60 for the authoritative scale. Similarly, item-total correlations for the authoritarian scale were all significant and ranged between 0.49 and 0.57. Cronbach's alphas of 0.73 and 0.58 were obtained for the authoritative and authoritarian subscales, respectively.

2.2.2 The Mathematics Motivational Scale

To measure students' mathematics motivation, the researchers used the Mathematics Motivation Scale (MMS) (Jalal et al., 2012). The MMS is a 44-item 5-point Likert scale that measures students' mathematics motivation based on self-determination theory. The MMS was developed using 1,481 responses of school students in the United Arab Emirates. Initially Jalal et al. (2012) developed an initial item pool; examined the correspondence between the items and each motivation subscale; checked the administration instructions; and examined the final version for validity and reliability. The researchers reported adequate evidence for internal consistency, content validity, and structure validity (See Jalal et al., 2012, for more validity-related information).

The MMS was constructed based on five theoretical subscales: amotivation, external regulation, introjected regulation, identified regulation, and intrinsic motivation. Participants rated their mathematics motivation across the five Likert responses. To obtain a total score for each subscale, items scores were summed, so that high scores reflect high levels of mathematics motivation. Using exploratory factor analysis, Jalal et al. (2012) did not find support for the five theoretical subscales. Rather, the data suggested the presence of only four subscales, with identified regulation motivation not emerging as a factor. Before using the MMS data for analyses, factor analyses were run using the MMS Omani data. Evidence was found for a two-factor solution representing intrinsic motivation and extrinsic motivation, both of which were used in the current analyses. The two factors explained 22.62% and 12.89% of the variance, respectively. Item loadings of the intrinsic motivation factor were 0.40 or above and loadings of the extrinsic motivation scale were 0.32 or above. Item-total correlations for the intrinsic motivation scale ranged between 0.34 and 0.65, while they ranged between 0.29 and 0.75 for the extrinsic motivation scale. All correlations were significant. Internal consistency coefficients for the two scales showed good reliability evidences ($\alpha = 0.92$, $\alpha = 0.85$, respectively).

3. Results

3.1 Preliminary Analysis

Prior to data analysis, the study variables were screened for outliers and normality. There was no concern about deviation from normality. Descriptive statistics of the study variables are presented in Table 1. Students were found to most likely agree that their teachers use both authoritative and authoritarian teaching styles. In terms of their motivation, the students rated themselves as highly intrinsically motivated with low levels of extrinsic motivation.

Table 1. Means, standard deviations, and the one sample t-test on the study variables (N = 425)

Variable	M	SD	t
Authoritative Teachers	3.25	0.72	7.33***
Authoritarian Teachers	3.04	0.72	1.24
Mathematics Intrinsic Motivation	4.00	0.68	30.46***
Mathematics External Motivation	2.40	0.81	15.16***

*** $p < .001$.

Table 2 represents an examination of zero-order correlations of the study variables. There were moderately significant positive correlations between authoritative teaching style and students' intrinsic mathematics motivation, and a weak significant negative correlation with students' extrinsic mathematics motivation. Authoritarian teaching style had a significant, but weak positive correlation with extrinsic motivation, while its correlation with intrinsic motivation was not significant. No correlation was found between the two teaching styles whereas a significant, but weak negative correlation was obtained between the two types of motivation. Variation in the zero-order correlations among the four variables provides validity evidence for the study measures.

Table 2. Zero-Order correlations for the study variables (N = 425)

Variable	Authoritative Teachers	Authoritarian Teachers	Intrinsic Motivation	External Motivation
Authoritative Teachers	–			
Authoritarian Teachers	0.03	–		
Intrinsic Motivation	0.41**	0.06	–	
External Motivation	-0.17**	0.10*	-0.21**	–

* $p < .05$. ** $p < .01$.

3.2 The Regression Models

Two separate standard multiple regressions were used to examine the predictive value of teaching styles on students' mathematics motivation. In the first regression equation, students' intrinsic mathematics motivation represented the outcome variable, while the two teaching styles acted as predictors. In the second regression equation, the two teaching styles were used to predict students' mathematics extrinsic motivation. Because gender differences were found in the four study variables (not shown here), gender effects were controlled for in both regression equations. Even though the authoritarian teaching style did not correlate significantly with the students' mathematics intrinsic motivation, the authoritarian style was included in the equation to control for any possible interaction effect.

Table 3. Multiple regression models: predicting students' intrinsic and extrinsic mathematics motivation (N = 425)

Model	B	S.E.	β	t	Sig.	R2
Mathematics Intrinsic Motivation						
Gender	-0.09	0.06	-0.06	-1.46	.143	
Authoritative Teaching	0.37	0.04	0.39	8.50	.000**	
Authoritarian Teaching	0.06	0.04	0.06	1.40	.160	0.18
Mathematics Extrinsic Motivation						
Gender	0.12	0.08	0.07	1.52	.128	
Authoritative Teaching	-0.17	0.05	-0.15	-3.02	.003**	
Authoritarian Teaching	0.10	0.05	0.09	2.00	.046*	0.05

Note. For Mathematics Intrinsic Motivation, $R^2 = 0.183$, $\Delta R^2 = 0.177$; For Mathematics Extrinsic Motivation, $R^2 = 0.048$, $\Delta R^2 = 0.041$; * $p < .05$. ** $p < .01$.

As shown in Table 3, the first regression model revealed that the authoritative teaching style ($t = 8.50$, $p < 0.001$) was the only significant predictor of students' mathematics intrinsic motivation while authoritarian teaching style and gender did not reach significance. This model explained 18% of the variance in the students' mathematics intrinsic motivation. This amount of explained variance can be considered a medium effect (Cohen, 1988).

The second model dealt with students' mathematics extrinsic motivation as a dependent variable. Similarly, authoritative teaching style, authoritarian teaching style, and gender were all entered into the equation. The results (as depicted in Table 3) show that both authoritative teaching style ($t = -3.02$, $p < 0.01$), and authoritarian teaching style ($t = 2.00$, $p < 0.05$) predicted extrinsic motivation. Gender was not a significant predictor when examined with the two teaching styles. The whole model, however, can be interpreted as having a small effect (Cohen, 1988), as it explains only 5% of the variance in the students' mathematics extrinsic motivation.

4. Discussion

The current study examined the effect mathematics teachers' teaching styles had on students' mathematics

motivation in the Omani context. The findings show some varied connections between different teaching styles and different types of students' motivation. Students' perceived Omani mathematics teachers to adopt authoritative teaching styles more than authoritarian teaching styles. Teachers who are both highly responsive and highly demanding are referred to as having authoritative teaching styles. In such classes, students feel that; teachers trust them; provide supportive comments; like all students; ensure an autonomous-supportive learning environment; and establish clear rules and regulations (Coldren & Hively, 2009; Walker, 2008). The results of the current study also suggest that Omani teachers use authoritarian teaching styles, though less often than authoritative ones. The use of authoritarian styles is expected to be present more in collective cultures that value conformity to authority as is the case with Oman (Triandis, 1989). The ongoing professional development programs that the Omani Ministry of Education has implemented all over the country may explain the high use of authoritative styles, and the limited use of authoritarian ones.

In terms of motivation, the findings of this study show that Omani students are intrinsically motivated to learn mathematics. According to Stevens et al. (2004) this intrinsic motivation is an important component of students' success in mathematics achievement; and life-time learning is more likely to be fostered in an environment that focuses on intrinsic motivation (Matteson et al., 2011). Another factor involved in student's motivation to learn mathematics emerges from extrinsic resources such as pleasing teachers or parents, avoiding failure, or being embarrassed. The negative relationship between the two motivational orientations suggest that, promoting students' intrinsic mathematics motivation may help in decreasing their extrinsic motivation, and thus improve students' learning processes. As explained below, authoritative teachers are more able to promote students' intrinsic motivation than authoritarian teachers.

The findings of the study support the existence of an effect of teaching styles on students' mathematics motivation. The utilizing of an authoritative teaching style can explain a fair percentage of variation in students' intrinsic motivation. Authoritative teachers are believed to build a trusted environment where students' feelings, emotions, and opinions are considered; needs are fulfilled; expectations are clear, mistakes are admitted; doors are open for questions, and regulations are discussed before implementation. As a result, students start to value, enjoy and perhaps even love learning mathematics. Students are motivated to learn mathematics so they can learn new things, explore innovative methods, compete with themselves, develop different skills, and feel distinguished in their performance. These motivational aspects were found to produce positive learning outcomes and to enhance students' development and well-being (Barker, Clark, Crowl, & Carlson, 2009; Davis, Gabelman, & Wingfield, 2011; Walker, 2009).

Even though the effects of authoritative teaching styles on students' extrinsic motivation for mathematics were low, the presence of a significant negative relationship suggests that teachers who provide care and warmth in relationships, along with high expectations for students' performance, may help in decreasing students' dependence on extrinsic motivation when studying mathematics. This negative relationship may be explained as a result of the positive influence of teachers' authoritative styles on students' intrinsic motivation; with the negative correlation between the two motivational orientations signaling that when students develop intrinsic motivation toward learning mathematics, they become less dependent on extrinsic motivation. Earlier research, such as that done by Lepper, Corpus, and Iyengar (2005) supports the negative connection between these two motivational orientations.

Authoritarian teaching styles did not show effects on students' intrinsic motivation and had only marginal effects on increasing students' extrinsic motivation ($\beta = 0.97, p = 0.046$). This implies that teachers are advised to limit the use of authoritarian teaching styles as they do not promote student interest and intrinsic mathematics motivation. In addition, these styles may develop a learner's tendency to rely on extrinsic motivation, which does not stimulate a love of mathematics, and cannot guarantee life-long interest in mathematics.

The positive effects of the authoritative teaching style are in line with the documented positive effects of an authoritative parenting style on a student's wellbeing (Aldhafri, 2011; Assadi et al., 2007; Besharat et al., 2011; Cheung et al., 2008; Driscoll, Russell, & Crockett, 2008; Dwairy, 2004; Gonzalez et al., 2002; Turner et al., 2009). On the other hand, the effects of the authoritarian teaching style on increasing an undesirable motivational orientation (extrinsic motivation) can be understood in line with the negative adolescents' outcomes that were reported as a result of the authoritarian parenting styles (Barry, Dunlap, Lochman, & Wells, 2009; Driscoll et al., 2008; Gonzalez et al., 2002). This correspondence between the findings in the parents and teachers literature indicates that authoritative styles in parenting and teaching are more likely to produce positive students' outcomes while the authoritarian styles tend to result in negative students' outcomes.

This pattern of connections between math teachers' teaching styles and students' motivational orientations needs

to be examined across different cultures. The existing literature on parenting styles suggests that, especially for the authoritarian parenting style, culture is a vital contextual factor that may shift the effects on adolescents' outcomes from being negative to be positive or vice versa (K. Chan & S. Chan, 2009; Chao, 1994; Chen & Luster, 2002; Cheung et al., 2008; Hill, 1995).

5. Conclusion

To conclude, taking the two regression models findings together, students who perceived their teachers to be authoritative tend to have higher levels of intrinsic motivation toward mathematics and lower levels of extrinsic motivation towards mathematics. In contrast, students who perceived their teachers to be authoritarian were more likely to show higher levels of extrinsic motivation. Their intrinsic motivation, however, did not seem to be influenced by their perceptions of their teachers being authoritarian.

Based on these findings, authoritative teaching practices among teachers need to be promoted in order to develop students' intrinsic motivation and to minimize levels of extrinsic motivation. To enable this, teacher education programs should carefully select teaching methods and course materials. They would be well served by choosing ones that foster positive attitudes in pre-service teachers towards implementing strategies for the promotion of students' intrinsic motivation. In addition, in-service training programs may contribute to the development of teachers' abilities to structure the learning environment around intrinsic motivation.

Future research may examine the connections between teaching styles and students' outcomes while considering possible mediational factors, particularly students' personal attributes that were found to interact with environmental variables in affecting students' outcomes (Hannum & Dvorak, 2004; Meunier et al., 2011; Smith & College, 2007). Other related factors that may influence students' outcomes (including their motivation) include cultural values, peer pressure, and parental involvement (e.g., Lee, Daniels, & Kissinger, 2006; Smith & College, 2007).

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References

- Ahmad, I., Said, H., & Khan, F. (2013). Effects of corporal punishment on students' motivation and classroom learning. *Review of European Studies*, 5(4), 130-134. <http://dx.doi.org/10.5539/res.v5n4p130>
- Aldhafri, S. (2011). Self-efficacy and physical self-concept as mediators of parenting influence on adolescents' adjustment and wellbeing. *Journal of Psychology in Africa*, 21(4), 511-520.
- Aldhafri, S., & Al-Hadabi, A. (in press). Alaqat almualim-altalib wa dafaiat altaalom lada talibat alsofof (5-11) be sultanate Oman [Teacher-Student Relationship and Motivation to Learn for Female Students From Grades (5-11) in the Sultanate of Oman]. *Journal of Psychological and Educational Sciences*.
- Aldhafri, S., Kazem, A., Alzubiadi, A., Yousif, Y., Al-Bahrani, M., & Alkharusi, H. (2009). Developmental aspects for Omani adolescents (12-18 years): Piloting instruments and Initial Findings. *International Yearbook on Teacher Education* (pp. 165-175), *Proceedings of the 54th International Council on Education for Teaching (ICET) World Assembly*, Muscat, Oman.
- Aldhafri, S., Kazem, A., Alzubiadi, A., Yousif, Y., Al-Bahrani, M., & Alkharusi, H. (2011). Anmat altansheah alwalediah Ida attolab alomanien (assofof 7 ela 12) waalaqtuha bba'dh alawamel aldimoghraphiah [Parenting styles as perceived by Omani children (classes 7 to 12) and their relationships with some demographic variables]. *The International Journal for Educational Research*, 29, 1-26.
- Alkharusi, H., Aldhafri, S., Kazem, A., Alzubiadi, A., & Al-Bahrani, M. (2011). Development and validation of a short version of the Parental Authority Questionnaire. *Social Behavior and Personality*, 39, 1193-1208. <http://dx.doi.org/10.2224/sbp.2011.39.9.1193>
- Anonymous. (2007). Engaging maths: The importance of maths for innovation. *Strategic Direction*, 23(11), 36-38. <http://dx.doi.org/10.1108/02580540710832960>
- Assadi, S., Zokaie, N., Kaviani, H., Mohammadi, M., Ghaeli, P., Gohari, M., & van de Vijver, F. (2007). Effect of sociocultural context and parenting style on scholastic achievement among Iranian adolescents. *Social Development*, 16(1), 169-180. <http://dx.doi.org/10.1111/j.1467-9507.2007.00377.x>
- Barker, J., Clark, T., Crowl, A., & Carlson, J. (2009). The influence of authoritative teaching on children's school adjustment: Are children with behavioral problems differentially affected. *School Psychology International*,

- 30, 374. <http://dx.doi.org/10.1177/0143034309106945>
- Barry, T., Dunlap, S., Lochman, J., & Wells, K. (2009). Inconsistent discipline as a mediator between maternal distress and aggression in boys. *Child & Family Behavior Therapy, 31*, 1-19. <http://dx.doi.org/10.1080/07317100802701186>
- Besharat, M., Azizi, K., & Poursharifi, I. (2011). The relationship between parenting styles and children's academic achievement in a sample of Iranian families. *Procedia Social and Behavioral Sciences, 15*, 1280-1283. <http://dx.doi.org/10.1016/j.sbspro.2011.03.277>
- Buri, J. (1991). Parental Authority Questionnaire. *Journal of Personality Assessment, 57*(1), 110-119. http://dx.doi.org/10.1207/s15327752jpa5701_13
- Chan, K., & Chan, S. (2009). Emotional autonomy and perceived parenting styles: Relational analysis in the Hong Kong cultural context. *Asia Pacific Educational Review, 10*, 433-443. <http://dx.doi.org/10.1007/s12564-009-9050-z>
- Chao, R. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*(4), 1111-1119. <http://dx.doi.org/10.2307/1131308>
- Chen, F., & Luster, T. (2002). Factors related to parenting practices in Taiwan. *Early Child Development and Care, 172*, 413-430. <http://dx.doi.org/10.1080/03004430214549>
- Cheung, C., & McBirde-Chang, C. (2008). Relations of perceived maternal parenting style, practices and learning motivation to academic components in Chinese children. *Merrill-Palmer Quarterly, 54*(1), 1-22. <http://dx.doi.org/10.1353/mpq.2008.0011>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Coldren, J., & Hively, J. (2009). Interpersonal teaching style and student impression formation. *College Teaching, 57*(2), 93-98. <http://dx.doi.org/10.3200/CTCH.57.2.93-98>
- Colleen, M. (2013). Motivating students for content mastery. *Journal of Family and Consumer Sciences, 105*(2), 38-40.
- Davis, H., Gabelman, M., & Wingfield, R. (2011). "She let us be smart:" Low-income African American first grade students' understanding of teacher closeness and influence. *Journal of Classroom Interaction, 46*(1), 4-16.
- Dever, B., & Karabenick, S. (2011). Is authoritative teaching beneficial for all students? A multi-level model of the effects of teaching style on interest and achievement. *School Psychology Quarterly, 26*(2), 131-144. <http://dx.doi.org/10.1037/a0022985>
- Domino, J. (2009). Teachers' influences on students' attitudes towards mathematics. *Research and Teaching in Developmental Education, 26*(1), 32-54.
- Driscoll, A., Russell, S., & Crockett, L. (2008). Parenting styles and youth well-being across immigrant generations. *Journal of Family Issues, 29*(2), 185-209. <http://dx.doi.org/10.1177/0192513X07307843>
- Dwairy, M. (2004). Parenting styles and mental health of Palestinian-Arab adolescents in Israel. *Transcultural Psychiatry, 41*(2), 233-252. <http://dx.doi.org/10.1177/1363461504043566>
- Gill, M., Ashton, P., & Algina, J. (2004). Authoritative schools: A test of a model to resolve the school effectiveness debate. *Contemporary Educational Psychology, 29*, 389-409. <http://dx.doi.org/10.1016/j.cedpsych.2003.10.002>
- Gonzalez, A., Holbein, M., & Quilter, S. (2002). High school students' goal orientations and their relationship to perceived parenting styles. *Contemporary Educational Psychology, 27*, 450-470. <http://dx.doi.org/10.1006/ceps.2001.1104>
- Hammouri, H. (2004). Attitudinal and motivational variables related to mathematics achievement in Jordan: Findings from the Third International Mathematics and Science Study (TIMSS). *Educational Research, 46*(3), 241-257. <http://dx.doi.org/10.1080/0013188042000277313>
- Hannum, J., & Dvorak, D. (2004). Effects of family conflict, divorce, and attachment patterns on the psychological distress and social adjustment of college freshmen. *Journal of College Student Development, 45*(1), 27-42. <http://dx.doi.org/10.1353/csd.2004.0008>

- Hill, N. (1995). The relationship between family environment and parenting style: A preliminary study of African American families. *Journal of Black Psychology*, 21(4), 408-423. <http://dx.doi.org/10.1177/00957984950214007>
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.
- Ispir, O., Ay, Z., & Saygi, E. (2011). Higher achiever students' self-regulated learning strategies, motivation towards mathematics and their thinking style. *Education and Science*, 36(162), 235-246.
- Jalal, H., Alsawaie, O., Alsartawi, A., Alghazo, I., & Tibi, S. (2012). Developing Mathematics Motivation Scale for the United Arab Emirates. *Journal of Educational & Psychological Studies*, 6(3), 1-11.
- Lee, S., Daniels, M., & Kissinger, D. (2006). Parental influences on adolescent adjustment: Parenting styles versus parenting practices. *The Family Journal: Counseling and Therapy for Couples and Families*, 14(3), 253-259. <http://dx.doi.org/10.1177/1066480706287654>
- Lepper, M., Corpus, J., & Iyengar, S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology*, 97(2), 184-196. <http://dx.doi.org/10.1037/0022-0663.97.2.184>
- Matteson, S., Swarthout, M., Reichwein, L. (2011). Student Motivation: Perspectives from mathematics teachers. *Action in Teacher Education*, 33(3), 283-297. <http://dx.doi.org/10.1080/01626620.2011.592123>
- Meunier, J., Roskam, I., Stievenart, M., Moortele, G., Browne, D., & Kumar, A. (2011). Externalizing behavior trajectories: The role of parenting, sibling relationships and child personality. *Journal of Applied Developmental Psychology*, 32, 20-33. <http://dx.doi.org/10.1016/j.appdev.2010.09.006>
- Morgan, S. (2013). Motivating students—Carrot or stick? *Veterinary Nursing Journal*, 28(2), 63-65. <http://dx.doi.org/10.1111/vnj.12006>
- Muller, C. (2001). The role of caring in the teacher-student relationship for at-risk students. *Sociological Inquiry*, 71(2), 55-241. <http://dx.doi.org/10.1111/j.1475-682X.2001.tb01110.x>
- Pimta, S., Tayruakham, S., & Nuangchalerm, P. (2009). Factors influencing problem solving ability of sixth grade students. *Journal of Social Sciences*, 5(4), 381-385. <http://dx.doi.org/10.3844/jssp.2009.381.385>
- Santrock, J. (2009). *Educational Psychology: A tool for effective teaching*. New York: McGraw-Hill.
- Singh, K., Granville, M., & Dika, S. (2002). Mathematics and science achievement: Effect of motivation, interest, and academic engagement. *The Journal of Educational research*, 95(6), 323-332. <http://dx.doi.org/10.1080/00220670209596607>
- Smith, G., & College, D. (2007). *Parenting effects on self-efficacy and self-esteem in late adolescence and how those factors impact adjustment to college*. Paper presented at the annual meeting of the Eastern Psychological Association, Philadelphia, PA.
- Stevens, T., Olivarez, A., Lan, W., & Runnels, M. (2004). Role of mathematics self-efficacy and motivation in mathematics performance across ethnicity. *The Journal of Educational Research*, 97(4), 208-221. <http://dx.doi.org/10.3200/JOER.97.4.208-222>
- Triandis, H. (1989). The self and social behavior in differing cultural contexts. *Psychological Review*, 9, 506-520. <http://dx.doi.org/10.1037/0033-295X.96.3.506>
- Tuan, L. (2012). An empirical research into EFL learners' motivation. *Theory and Practice in Language Studies*, 2(3), 430-439. <http://dx.doi.org/10.4304/tpsls.2.3.430-439>
- Turner, E., Chadler, M., & Heffer, R. (2009). The influence of parenting styles, achievement motivation and self-efficacy on academic performance in college students. *Journal of College Student Development*, 50(3), 337-346. <http://dx.doi.org/10.1353/csd.0.0073>
- Walker, J. (2008). Looking at teacher practices through the lens of parenting style. *The Journal of Experimental Education*, 72(2), 218-240. <http://dx.doi.org/10.3200/JEXE.76.2.218-240>
- Walker, J. (2009). Authoritative classroom management: How control and nurturance work together. *Theory Into Practice*, 48, 122-129.
- Wentzel, K. (2002). Are effective teachers like good parents? Teaching styles and student adjustment in early adolescence. *Child Development*, 73(1), 287-301. <http://dx.doi.org/10.1111/1467-8624.00406>

- Wery, J., & Thomson, M. (2013). Motivational strategies to enhance effective learning in teaching struggling students. *Support for Learning, 28*(3), 103-108. <http://dx.doi.org/10.1111/1467-9604.12027>
- Wilkins, J. (2004). Mathematics and science self-concept: An international investigation. *The Journal of Experimental Education, 72*(4), 331-346. <http://dx.doi.org/10.3200/JEXE.72.4.331-346>
- Wilson, J., & Ryan, R. (2013). Professor-student rapport scale: Six items predict student outcomes. *Teaching of Psychology, 40*, 130-133. <http://dx.doi.org/10.1177/0098628312475033>

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