Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.1 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Nurcan KAHRAMAN and Semra SUNGUR-VURAL

[1]Çanakkale Onsekiz Mart University, Faculty of Education, Department of Elementary Education, Çanakkale, TURKEY

[2]Middle East Technical University, Faculty of Education, Department of Elementary Education, Ankara TURKEY

E-mail: nurcan.kahraman@gmail.com; ssungur@metu.edu.tr

Contents

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.2 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
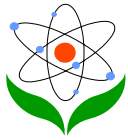An investigation on students' personal achievement goals and perceived parents' goal emphases in science
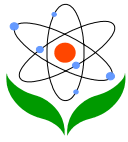
Abstract

This study examined students' personal achievement goals and their perceived parents' goal emphases in science. A total of 295 seventh-grade students completed the Achievement Goal Questionnaire and the Perceived Parent Goal Emphases Scale. Hierarchical multiple regression analyses showed an interaction between perceived parents' mastery approach goal emphasis and perceived parents' performance approach goal emphasis on students' adoption of mastery approach goals in science. Besides that perceived performance approach goal emphasis significantly predicted students' performance approach goals.

Keywords: Achievement goals; parents goal emphasis; science education; multiple goals

Introduction

Achievement motivation explains how people energize and direct their behavior to a work or task to realize their goals (Elliot, 1999).Achievement motivation explores the incentives of people while attaining a task, or setting a goal with two components: mastery-performance orientation and approach- avoidance (Fryer& Elliot, 2007). The first orientation, mastery-performance motivation, suggests that people can have different reasons while attaining a task. While some people can focus on improving their knowledge or skills, others can focus on comparing their ability with their peers. The second orientation, approach-avoidance motivation, suggests that there are two types of motives that make people direct their energy to behavior. Approach motivation, refers to being motivated to strive a positive possibility such as a success, whereas avoidance motivation refers to being motivated to avoid a negative possibility, such as a failure (Elliot& Shledon, 1997; Elliot, 1999). Combining these two orientations, researchers (Elliot& Harackiewicz, 1996; Elliot & Church, 1997; Elliot& McGregor, 2001) developed the current version of achievement goal theory. Accordingly, they offered 2×2 form of achievement goals namely, mastery approach, mastery avoidance, performance approach, and performance avoidance goals.

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.3 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science
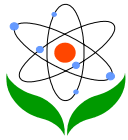
Relevant literature suggests that there is a need for examining the relationship between achievement goals and socio-cultural factors like familial influences (Maehr, 2001). According to this point of view, people's experiences in their surroundings can lead them to adapt any kind of achievement goals (Nicholls, 1989; Anderman & Maehr, 1994; Kaplan & Maehr, 2002; Friedel, Cortina, Turner and Midgley, 2007). In line with these ideas, the overarching aim of this study is to investigate whether perceptions of parents' approach goals, both mastery approach and performance approach goals, direct students to adopt approach goals in science classes, or vice versa.

History of Achievement Goal Theory

Achievement goal theory was proposed in the late 1970's and early 1980's (Elliot& Harackiewicz, 1996) to explain the reasons for achievement behaviors. Accordingly, achievement goal theorists focused their attention to determine why students engage in a task and why they want to succeed. Early research based on this theory suggested two kinds of achievement goals namely, mastery goals and performance goals. While mastery goals focus on self-improvement, learning and understanding, performance goals focus on demonstrating ability, or comparing one's skills to others (Elliot& Harackiewicz, 1996; Elliot & Church, 1997; Pintrich, 2000; Linnenbrink& Pintrich, 2002; Pintrich, Conley & Kemper, 2003). At the beginning, these goals were proposed as approach oriented version of achievement motivation. While researchers named the focus on improving knowledge, or learning new things as mastery goals, they named the focus on getting the highest score or being a top student as performance goals. Later, researchers considered the second motive of achievement motivation namely, avoidance orientation. They asserted that people can adopt achievement goals not only to acquire positive stimuli, but also to avoid negative stimuli. For instance, while some students study their lessons to avoid the possibility of not learning, or not understanding the whole the subject, the others can study to avoid being the worst student, or looking stupid (Elliot & Church, 1997; Pintrich, 2000; Linnenbrink& Pintrich, 2002; Pintrich & Schunk, 2002 Pintrich, Conley& Kemper, 2003).

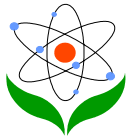Although avoidance goals can be effective in some situations, they are mostly aimed to keep the existing situation, not to develop better ones. Since they only focus on avoiding failure, students with avoidance goals can miss some opportunities to be successful. In contrast, students with approach goals are aimed to improve the situation. Additionally, since they focus on positive opportunities,

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.4 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

they are not likely to experience negative feelings like worry, or anxiety, than students with avoidance goals (Elliot, 2006). Besides, in general, approach goals are found be linked to adaptive outcomes such as better cognitive engagement, actual achievement and positive affect.

However, research on avoidance goal climates has had difficulty in making the approach-avoidance split (Murayama & Elliot, 2009) and because of the high correlation between approach and avoidance goals, some researchers defend that approach and avoidance goals cannot be differentiated (Roeser, 2004; Urdan, 2004a; Roeser, Peck, & Nasir, 2006; Urdan& Mestas, 2006). In addition, although some researchers suggested approach-avoidance distinction for achievement goals (both performance goals and mastery goals) (Elliot & McGregor, 2001), other researchers suggested that achievement goals may have different meanings for different cultures (Urdan, 2004b; Urdan& Mestas, 2006) because there is a variety of reasons for a student to adopt, achievement goals. Thus, it is not clear how students adopt the goals. In view of aforementioned reasons, this study decided not to focus on avoidance goals. In other words, this study aims at examining approach goals in an attempt to ultimately improve students' achievement behaviors.

Nowadays, goal researchers begun to approach the theory from a different standpoint and suggested that individuals can adopt multiple goals simultaneously (Barron & Harackiewicz, 2000; Linnenbrink & Pintrich, 2000; Pintrich, 1999). However, in many studies mastery goals and performance goals are examined separately, ignoring the possible simultaneous existence of them (Midgley et al., 2001). However, as pointed out by Barron and Harackiewicz (2001) there may be several advantages of examining achievement goals from multiple goals perspective. Indeed, Barron and Harackiewicz identified advantages of investigating multiple goals in four patterns. An additive pattern suggests that mastery and performance goals can have positive effects on achievement related outcomes. Supporting this idea, Wolters et al. (1996) demonstrated that not only mastery goals but also performance goals have positive influence on students' cognition. An interactive goal pattern suggests that apart from the independent effects, the interaction effect of mastery and performance goals can have positive effects on an achievement outcome. A specialized goal pattern suggests that mastery goals and performance goals have specialized effects on different outcomes. For instance, while mastery goals can have positive effects on students' interest, performance goals can have positive effects on students' performance

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.5 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science
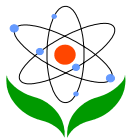
(Harachiewicz, Barron, Pintrich, Elliot & Thrash, 2002). A selective goal pattern suggests that mastery or performance goals can be better in different situations. Accordingly, if students adopt both of the goals, they can focus on the most suitable one in a specific situation. Because, the previous research overlooked the examination of multiple goals and their consequences (Harachiewicz, Barron, Pintrich, Elliot & Thrash, 2002) and thus there is a need for further investigations from multiple goals perspective, the present study seeks to explore the achievement goals mainly based on the interactive goal pattern proposed by Barron and Harackiewicz (2001).

Perceived parent achievement goal emphasis

Parental influences on students' academic performance and motivation has been a popular subject among researchers for many years. In fact, up to the present, considerable research was conducted to examine parental influences such as parenting style, educational level, or parental involvement on student achievement (Frome& Eccles, 1998), strategy use (Hoover-Dempsey, Bassler& Burow, 1995) and motivation (Gonzalez-DeHass, Willems,& Holbein, 2005). On the other hand, with the introduction of achievement goal theory, the goals that parents emphasize to their children become another interesting, but relatively neglected subject among researchers. The theory suggests that parents can emphasize either mastery approach goals, by focusing on improving knowledge, skills, or abilities, or performance approach goals, by focusing on showing abilities to others. The importance of the goals that parents emphasize to their children become more obvious when it is considered that students regard their parents' attitudes and opinions about students' abilities more than their own past performances (Eccles-Parsons, Adler and Kaczala, 1982).
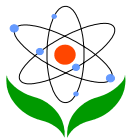
Friedel, Hruda, and Midgley (2001) examined the relationship between students' perceptions about their parents' achievement goals and their personal achievement goals in mathematics. According to the results, students adopt mastery goals when they think their parents emphasize mastery goals. Similarly, when parents' emphasize performance goals, students also tend to adopt performance goals. Moreover, Gonida, Kiosseoglou and Voulala (2007) investigated the relationship between students' perceptions about their parents' achievement goals and students' personal achievement goals. Findings suggested that students' mastery goals were predicted by mastery goals that parents emphasize and students' performance goals were predicted by performance goals that parents emphasize. In another study, the

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.6 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

same researchers, Gonida, Voulala, and Kiosseoglou (2009) investigated how perceived parent goals emphasis affects students' adoption of achievement goals. The results of the study indicated that students' perceptions of their parents' goals were one of the predictor of students' achievement goals. Namely, if students think that their parents want them to improve their skills, they tend to adopt mastery goals. In the same manner, if students think that their parents want them to demonstrate themselves, they tend to adopt performance goals, both approach and avoidance goals.

At this point, it is worth mentioning that the interactive goal pattern was also suggested at the contextual level (Linnenbrink & Pintrich, 2001; Linnenbrink, 2005). According to this view, students can perceive messages that emphasize both the importance of self-improvement and the relative success among peers from the people in their socio cultural environment (Linnenbrink, 2005; Turner, et. all, 2002; Turner, Meyer, Midgley, & Patrick, 2003). To be able to make suggestions to create a much effective socio-cultural environment in terms of perceived goal emphases, there is a need for taking the possible interaction effects of perceived goal emphases in socio-cultural contexts into account (Linnenbrink, 2005). For example, Turner et al. (2002) reported that emphasizing both mastery approach goals, and performance approach goals can be more facilitative than emphasizing only mastery goals. Similarly, Barron and Harackiewicz' study (2001) revealed that emphasizing the combination of mastery and performance approach goals are more facilitative for students. Besides, the researchers reported that the effectiveness of the environments that emphasize multiple goals become superior in the absence of the awareness about personal goals. Moreover, Linnenbrink (2005) investigated the relation between contextual goals and achievement related outcomes such as help seeking, cognitive engagement, and achievement. According to the results, the most adaptive contextual goal form involves the simultaneous emphases of both mastery approach and performance approach goals. Based on these findings, the researchers in this research area recommended that socio cultural environment should focus on both learning and mastering new skills and competition for it. The point to consider here is that the competition should be about learning and mastering not ability. (Linnenbrink, 2005).
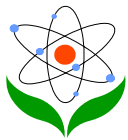
Although achievement goal theory highlight the importance of the goals emphasized by social cultural context, there are a few studies about the relationship between perceptions about parents achievement goals and students' personal achievement goals (Kim, Schallert& Kim, 2010). Considering the fact that

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.7 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

achievement goals are significantly related to a variety of affective, cognitive, and behavioral outcomes (Pintrich & Schunk, 2002), there is a need for investigating the factors which are suggested to be significantly linked to achievement goals. Such studies can provide clues to help students adopt achievement goals facilitative to their learning. Accordingly, this study aims at examining students' personal achievement goals in relation to perceived parents' goal emphases using interactive goal pattern approach (Barron & Harackiewicz, 2001). Because adoption of achievement goals can change from domain to domain, (Barron & Harackiewicz, 2000), the study was also narrow down and focused specifically on science with an ultimate aim of improving science education. Indeed, Chen and Pajares (2010) suggested that formative years' of students' academic careers should be examined to keep them in the field of science and technology. Because ample research has demonstrated that students' achievement goals are related to their learning and achievement (Huang, 2012), students' decision to attend science-related majors in the university and their career choices can be influenced by their achievement goals. In addition, in today's world, one of the main goals of science education is to develop scientifically literate individuals who understands and reflects on scientific knowledge and explanations,   actively involves in science and produces scientific evidences. National Academy of Sciences' Committee on Science Engineering, and Public Policy (2001) also suggests that in order to support the workforce in science, technology, engineering and mathematics such habits of minds should be nurtured in K-8 education.   Considering the fact that deeper understanding of scientific knowledge and the effort put forth while engaging in a science activity are to be related to students' goals (Paulick, Watermann, & Nückles, 2013; Sideridis & Kaplan, 2011), there is a need for science educators to investigate the factors related to the reasons for students' achievement behaviors in science classes to help them adopt adaptive goals in their learning.

In line with the abovementioned literature and propositions, the current study aims at addressing the following research questions:

1. How well perceived parents' mastery and performance approach goals emphases predict students' personal achievement goals (personal mastery and performance approach goals) in science?

2. Is there an interaction between perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis on students' personal achievement goals?

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.8 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Method

Participants

Participants of the study were two hundred ninety five (144 girls and 151 boys), 7th grade elementary school students. They were from families with mostly 2 children. Although majority of students' mothers were unemployed (82.5%), majority of students' fathers were employed (83%). More than half of the students' mothers (53.7%), graduated from primary education while majority of students' fathers (74. 4%) graduated from high school and lowers. Nearly three quarters of students (73.7%) had reading materials less than 100 at their homes.
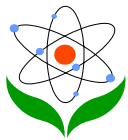
Instruments

The Achievement Goal Questionnaire (AGQ)
The Achievement Goal Questionnaire (AGQ), a 5-point Likert scale ranging from strongly disagree to strongly agree, was used to assess students' achievement goals . The instrument was developed by Elliot and McGregor (2001) and adopted into Turkish by Senler and Sungur (2007) .The AGQ assesses students' achievement goals according to the 2X2 framework of achievement goal theory. It assesses mastery approach goals with three items (e.g. "It is important for me to understand the content of this course as thoroughly as possible"), and performance approach goals with three (e.g. "It is important for me to do better than other students"). The coefficient alpha values were found to be .70 for the mastery approach goals, and .64 for the performance approach goals.

Perceived Parent Goal Emphases Scale (PPGES)
Perceived Parent Goal Emphases Scale is a self-report instrument developed by Friedel, Cortina, Turner and Midgley (2007). It is a five point Likert scale ranging from strongly disagree to strongly agree. The questionnaire was designed to assess students' perceptions about their parents' goal emphases. It consists of 11 items in two sub-scales: mastery approach goals with six items (e.g. "My parents want me to understand science concepts, not just do the work"), and performance approach goals with four items (.e.g. "My parents would like me to show others that I am good at science")

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.9 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science
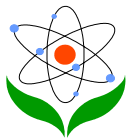
The scale was translated and adapted to Turkish by the authors of the current study. The translated instrument was examined by two instructors from science education department to confirm its content validity. Besides that, the grammar structure of the translation was examined by one expert from an academic writing center located in a large university. The instrument was pilot tested with 201 7th grade elementary students, (104 boys and 97 girls) and confirmatory factor analyses were conducted to validate the factor structure for Turkish sample. The coefficient alpha values were found to be .70 for the perceived parent mastery approach goals, and .64 for the perceived parent performance approach goals. The sub scales and their reliability coefficients for the current study were summarized in Table 1.

Results

Descriptive Statistics

In this study all descriptive statistical analyses were obtained using the Statistical Package for Social Sciences (SPSS) software.

Descriptive statistics were used to investigate the 7th grade elementary students' profiles about their achievement goals and their perceptions about their parents' achievement goals in science classes. On a five point scale, the mean scores suggested that students have high levels of both mastery and performance approach goals in science classes indicating that they tend to study for science classes for the reasons of learning and understanding as well as showing their science abilities to others and performing better than the classmates. On the other hand, their perceived parents' goal emphases appeared to be moderate. This finding implied that parents' goal emphases were not highly salient to students for their science classes. The means, and standard deviations, of each of the variables were presented in Table 1.
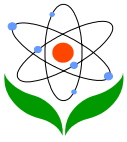
Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.10 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Table 1. Descriptive statistics

	M	*SD*	*α*
Mastery approach goals	4.52	.58	.70
Performance approach goals	4.37	.69	.64
Perceived parent mastery approach goal emphasis	3.94	.79	.70
Perceived parent performance approach goal emphasis	3.80	.79	.64

Examination of the Students' Personal Achievement Goals in relation to Perceived Parents' Achievement Goals

A hierarchical multiple regression analysis was conducted to examine how well students' perceptions about their parents' mastery approach and performance approach goal emphases predict their personal mastery approach goals in science and to determine whether there is an interaction between perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis on students' adoption of mastery approach goals. In the analysis, perceived parents' goal emphases were entered simultaneously in the first block and then the interaction term is entered in the second block. In order to assess the statistical significance of the interaction, the change in R2 was evaluated (see Table 2). The results showed that student' perceptions of their parents' mastery approach goals and performance approach goals were significantly related their adoption of mastery approach goals in science (F (2, 292) = 11. 41, p= .000). The sample multiple correlation coefficient was .27, indicating that perceived parent goal emphases accounted for approximately 7.3 % of the variance in the personal mastery approach goals. After interaction was also included, the model as a whole explained about 9.8 % of the variance (R = .31). The change in R2 associated with introducing the interaction into the model was statistically significant (ΔR2 = .025, , ΔF(1,291)= 8.11, p = .005) revealing that interaction between perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis was significant. In order to describe this interaction, the values at one standard deviation below the mean and at one standard deviation above the mean for perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis were calculated. The values at one standard deviation below the mean indicated low parents' goal emphases and

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.11 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

the values at one standard deviation above the mean indicated high parents' goal emphases. Then, students' adoption of mastery approach goals was predicted for each combination of low and high values using the regression equation obtained after introduction of interaction term (see Table 2). After that, the nature of the interaction was presented using obtained values in Figure 1. As shown in the figure, students who perceive low parent mastery approach goal emphasis, adopt personal mastery approach goals at lower levels regardless of whether they also perceive a low or high performance approach goal emphases from their parents. On the other hand, students who perceive high parent mastery approach goal emphasis and high performance approach goal emphasis adopt personal mastery approach goals at the highest levels. Overall, inspection of the interaction given in the figure revealed that students perceiving high parent mastery approach goal emphasis are more likely to have personal mastery approach goals at higher levels.
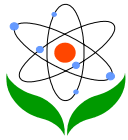
Table 2. Summary of Hierarchical Regression Analysis for Student Mastery Approach Goals

	Student Mastery Approach Goal			
Predictor Variable	B	SE	β	sr2
Block1				
Constant	3.80	.20		
PPMAGE	.21	.05	.28**	.067
PPPAGE	-.02	.05	-.03	.001
Block 2				
Constant	2.03	.65		
PPMAGE	.67	.17	.90**	.05
PPPAGE	.48	.18	.65**	.02
PPMAGE *PPPAGE	-.13	.05	-1.09**	,03

Note.

PPMAGE: Perceived parent mastery approach goal emphasis;

PPPAGE: Perceived parent performance approach goal emphasis

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.12 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science
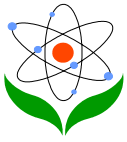
The second hierarchical regression analysis was conducted to examine how well students' perceptions about their parents' approach goals, both mastery approach and performance approach goals predict their personal performance approach goals in science. and to determine whether there is an interaction between perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis on students' adoption of performance approach goals. In the analysis, perceived parents' goal emphases were entered simultaneously in the first block and then the interaction term is entered in the second block. The results showed that student' perceptions of their parents' mastery approach goals and performance approach goals were significantly related their adoption of performance approach goals in science ($F_{(2, 292)} = 12. 19$, $p = .000$). The sample multiple correlation coefficient was .28, indicating that perceived parent goal emphases accounted for approximately 7.7 % of the variance in the personal performance approach goals. After interaction was also included, the model as a whole still explained 7.7 % of the variance ($R = .28$). The change in R^2 associated with introducing the interaction into the model was not statistically significant ($\Delta R^2 = .000$, $\Delta F_{(1,291)} = .002$, $p = .960$). Because that interaction between perceived parent mastery approach goals emphasis and perceived parent performance approach goals emphasis was not found to be significant, the results obtained only for the first block was interpreted (Weinberg & Abramowitz, 2008). Examination of the coefficients displayed in Table 3 revealed that perceived parent performance approach goal emphasis made a statistically significant contribution to the prediction of students' adoption of performance approach goals in science ($\beta = .25$, $p < 0.05$), while perceived parent mastery approach goal emphasis failed to achieve significance ($\beta = .02$, $p > 0.05$). Squared semi partial correlations displayed in Table 3 indicated that perceived parent performance approach goals accounted for 6 % of the variance in students' personal approach goals.

Table 3. Summary of Hierarchical Regression Analysis for Student Performance Approach Goals

Predictor Variable	Student Performance Approach Goal			
	B	*SE*	*β*	*sr2*
Block1				
Constant	3.38	.23		
PPMAGE	.03	.05	.03	.001

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.13 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

PPPAGE	.23	.05	.26**	.060
Block 2				
Constant	3.42	.78		
PPMAGE	.02	.20	.02	.000
PPPAGE	.22	.22	.25	.003
PPMAGE *PPPAGE	.00	.05	.02	.000

Note.

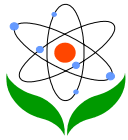PPMAGE: Perceived parent mastery approach goal emphasis;

PPPAGE: Perceived parent performance approach goal emphasis
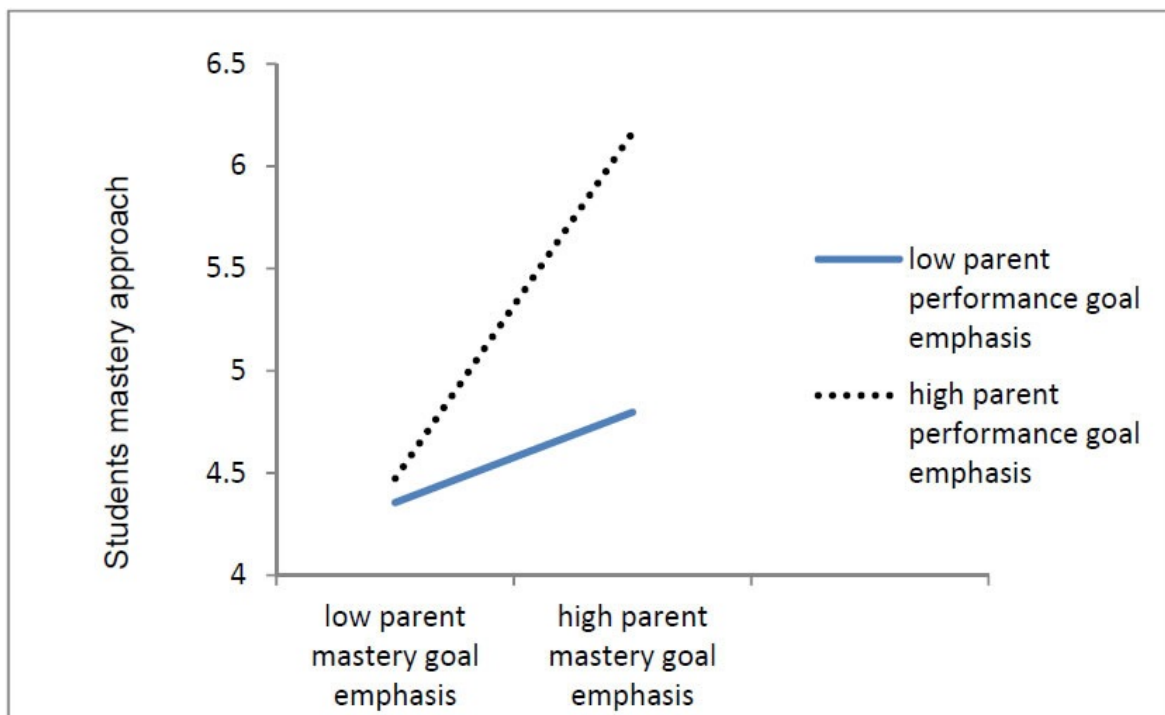
Figure 1. Plot of the interaction between perceived parent goal emphases on student mastery approach goal
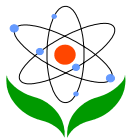
Discussion

The purpose of the present study was to investigate the relationships between personal approach goals and students' perceptions about their parents' achievement goals in science. Firstly, we investigated the relationship between perceived parents' mastery and performance approach goals emphases and students' personal

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.14 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

achievement goals. The results suggested an interaction between perceived parents' mastery approach goal emphasis and perceived parents' performance approach goal emphasis on students' adoption of mastery approach goals. This finding implied that students who perceive high parent mastery approach goal emphasis and high performance approach goal emphasis tend to adopt personal mastery approach goals at the highest levels. In other words, students who think that self-improvement in science is important for their parents, as well as demonstrating their ability to other people, tend to study for learning new things, or improving their knowledge in science. This finding is consistent with the related literature suggesting that high mastery/high performance approach contextual goals are more facilitative for students and related to positive outcomes (Barron & Harackiewicz, 2001; Elliot & Church, 1997; Linnenbrink, 2005; Turner, Meyer, Midgley,& Patrick, 2003).

Considering the influence of perceived parents' emphasized goals on students' performance approach goals, the results indicated that students tend to adopt performance approach goals if they think that being a top student is important for their parents. Consistent with the previous research, the findings suggest that home environment has an important role in terms of students' personal achievement goals in science. Parents can direct students to adopt either mastery approach goals by focusing on learning new things and improving knowledge or performance approach goals by comparing their children with peers in science classes (Friedel, Hruda,& Midgley, 2001; Gonida, Voulala, & Kiosseoglou, 2009; Kim, Schallert & Kim, 2010).
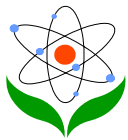
Overall, the results suggest that parents have an important role in seventh grade students' reasons for engaging in science activities and tasks. Even though the influence of peers is expected to be stronger for this age group (Midgley, Feldlaufer, & Eccles, 1989), the significant relationship found between parents' and students goal emphasis may have important educational implications: According to the results, students who perceive achievement goals from their parents at higher levels are more likely to adopt mastery approach goals. Therefore it is suggest that perceived parent approach goals emphases should be at high levels. To be able to achieve this, parents can engage in more dialogue with their children about their schooling and academic goals in science classes. They can emphasize to their children that demonstrating a good performance and getting high grades as well as showing progress and learning the course material deeply in science is important. At this point it may be essential that parents encourage their children to achieve

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.15 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

good grades and become a good student mainly through self-improvement rather than making normative comparisons about abilities. Accordingly, they should show efforts to create a mastery approach oriented home environment by focusing on their children's self-improvement in science. They should encourage their children to study in an attempt to learn and understand science concepts rather than just getting good grades without meaningful learning. Besides, because competition for improvement but not for performance is helpful for students, parents can encourage their children to compete with their peers to learning new thing and, improving their skills in science (Linnenbrink, 2005). In order to achieve this end, programs can be developed to increase parents' awareness about importance of students' personal achievement goals in their academic performance and to help parents create home environments conducive to development of mastery approach goals which are significantly linked to adaptive outcomes such as higher levels of metacognitive awareness and deeper processing of information (Elliot & McGregor, 2001; Pintrich, 2000). In addition, because perceived parents' goals emphases are found to be significant predictors of students' personal achievement goals in science, it is important to consider teachers' goal emphases in science classes. Indeed, relevant literature demonstrated that students' personal achievement goals are influenced by perceived teachers goal emphases (Kaplan & Maehr, 1999; Middleton, Gheen, Hruda, Middletone, & Midgley, 2000; Roeser, Midgley, & Urdan, 1996). Accordingly, future studies can examine how students' personal achievement goals, perceived parents' goals emphasis, and perceived teacher goal emphasis interact with each other. Such studies can shed light into what happens if there is conflict in parents' and teachers' goal emphases.

Limitations and Recommendations for Future Research

There are some limitations of the present study that need to be addressed in future studies: Firstly, it is a cross sectional study, therefore the observed relationships, do not imply cause and effect relationships. Secondly, this study examined the relationships between students' personal achievement goals and their perceived parents' goal emphasis only in science domain. Additionally, participants of the study were restricted to 7th grade Turkish students. So, there is a need for future studies in different domains and in different cultures in order to demonstrate generalizability of the current findings. Besides, longitudinal studies can be conducted to determine whether the observed relationships show some differences across ages and to examine possible cause and effect relations. Accordingly, further studies can examine how interaction between perceived parents' goal emphases and

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.16 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science
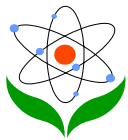
personal achievement goals in science at different grade levels influences students' career choices and academic majors in their future. In addition such longitudinal studies can shed light into the interactive goal patterns more conducive to the development of scientifically literate individuals who poses a deep understanding of scientific knowledge, interpret and reflect on the scientific knowledge and produce scientific evidences by actively engaging in science activities and problems. Finally, this study relies only on self-report data. Thus, it is suggested that both quantitative and qualitative data are collected in future studies to validate the findings of the present study.
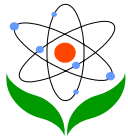
References

Anderman, E.M., & Maehr, M.L. (1994). Motivation and schooling in the middle grades. Review of Educational Research, 64, 287-309.

Barron, K.E., & Harackiewicz, J.,M. (2000), Achievement goals and optimal motivation: a multiple goals approach C. Sansone, J.M. Harackiewicz (Eds.), Intrinsic and extrinsic motivation: the search for optimal motivation and performance, Academic Press, San Diego, CA, pp. 229–254.

Barron, K. E.,& Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. Journal of Personality and Social Psychology, 80, 706–722.

Chen, J.A. & Pajares, F. (2010). Implicit theories of ability of Grade 6 science students: Relation to epistemological beliefs and academic motivation, and achievement in science. Contemporary Educational Psychology, 35, 75-87.

Eccles-Parsons, J., Adler, T. F., & Kaczala, C. M. Socialization of Achievement Attitudes and Beliefs: Parental Influences. Child Development, 53, 310-321.

Elliot, A., J.& Harackiewicz, J., M. (1996). Approach and avoidance achievement goals and intrinsic motivation: a mediational analysis. Journal of Personality and Social Psycology, 70 , 461-475.

Elliot, A.J.& Church, M.A. (1997). A hierarchical model of approach and avoidance achievement motivation. Journal of Personality and Social Psychology, 72, 218-232

Elliot, A.J., & Sheldon, K.M. (1997). Avoidance achievement motivation: A personal goals analysis. Journal of Personality and Social Psychology, 73, 171-185.

Eliot, A.J. (1999). Approach and avoidance motivation and achievement goals. Educational Psychologist, 34.169-189

Elliot, A.J., & McGregor, H.A. (2001). A 2X2 achievement goal framework. Journal of Personality and Social Psychology, 80, 501–519.

Eliot, A.J.& Thrash, T.M. (2001). Achievement goals and hierarchical of achievement motivation. Educational Psychology Review, 13,139-156

Elliot, A., J.,& McGredor, H., A. (2001). A 2*2 Achievement goal framework. journal of personality and social psycology, 80 , 50-519.

Elliot, A.J. (2006). The Hierarchical model of approach avoidance motivation. Motivation and Emotion, 30, 111-116.

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.17 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
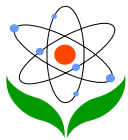An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Fraenkel, J. R., & Wallen, N. E. (2006). How to Design and Evaluate Research in Education. New York, USA: McGrawhill, Inc.

Friedel, J. M., Cortina, K. S., Turner, J. C., & Midgley, C. (2007). Achievement goals, efficacy beliefs and coping strategies in mathematics: The roles of perceived parent and teacher goal emphases. Contemporary Educational Psychology, 32(3), 434-458.

Friedel, J., Hruda, L., & Midgley, C. (2001, April). When children limit their own learning: the relation between perceived parent achievement goals and children's use of avoidance behaviors. Paper presented at the annual meeting of the American Educational Research Association, Seattle WA.

Frome, P. M., & Eccles, J. S. (1998). Parents' influence on children's achievement-related perceptions. Journal of Personality and Social Psychology, 74(2), 435–452.

Fryer, J. W. & Elliot, A. J. (2007). Stability and change in achievement goals. Journal of Educational Psychology, 99 (4), 700- 714.

Gheen, M. H., Hruda. L. Z., Middleton, M. J., & Midgley, C. (2000, April). Using goal orientation theory to examine the transition from middle to high school. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Gonida, E. N., Kiosseoglou, G., Voulala, K. (2007). Perceptions of parental goals and their contribution to student achievement goal orientation and engagement in the classroom: Grade-level differences across adolescence. European Journal of Psychology of Education, XXII(1), 23-39.

Gonida, E. N., Voulala, K., & Kiosseoglou, G. (2009). Students' achievement goal orientations and their behavioral and emotional engagement: Co-examining the role of perceived school goal structures and parent goals during adolescence. Learning and Individual Differences, 19 (1), 53-60.

Gonzalez-DeHass, A.R., Willems, P., & Doan Holbein, M. (2005) Examining the relationship between parent involvement and student motivation. Educational Psychology Review, 17(2), 99-123.

Harackiewicz, J. M., & Linnenbrink, E. A. (2005). Multiple achievement goals and multiple pathways for learning: The agenda and impact of Paul R. Pintrich. Educational Psychologist, 40, 75-84.

Harackiewicz, J.M., Barron K.E., Pintrich, P.R., & Elliot, A.J.& Thrash, T.M. (2002). Revision of achievement goal theory: Necessary and illuminating. Journal of Educational Psychology, 94(3), 638-645.

Hoover-Dempsey, K. V., Bassler, O. C., & Burow, R. (1995). Parents' reported involvement in students' homework: Strategies and practices. Elementary School Journal, 95, 435–450.

Huang, C. (2012). Discriminant and criterion-related validity of achievement goals in predicting academic achievement: A meta-analysis. Journal of Educational Psychology, 104, 48-73.

Kaplan, A., & Maehr, M. L. (2002). Adolescents' achievement goals: Situating motivation in sociocultural contexts. In F. Pajares & T. Urdan (Eds.), Academic motivation of adolescents (pp. 125-167). Greenwich, CT: Information Age Publishing.

Kim, J., Schallert, D. L. & Kim, M. (2010). An Integrative Cultural View of Achievement Motivation: Parental and Classroom Predictors of Children's Goal Orientations When Learning Mathematics in Korea. Journal of Educational Psychology, 102 (2), 418-437.

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.18 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Linnenbrink, E. A. (2005). The dilemma of performance-approach goals: The use of multiple goal contexts to promote students' motivation and learning. Journal of Educational Psychology, 97, 197–213.

Linnenbrink E. A. & Pintrich, P. R. (2000). Multiple pathways to learning and achievement: The role of goal orientation in fostering adaptive motivation, affect, and cognition. In C. Sansone & J. M. Harackiewicz (Eds.), Intrinsic and Extrinsic Motivation; The search for optimal motivation and performance (pp. 195-227). New York: Academic Press.

Linnenbrink, E.A. & Pintrich P.R. (2002). Achievement goal theory and affect: An asymetric bidirectional model. Educational Psychologist, 37(2), 69-78.

Linnenbrink, E. A., & Pintrich, P. R. (2001). Multiple goals, multiple contexts: The dynamic interplay between personal goals and contextual goal stresses. In S. Volet and S. Jarvela (Eds.), Motivation in learning contexts: Theoretical advances and methodological implications (pp. 251-269). The Netherlands: Pergamon Press.

Maehr, M. L. (2001). Goal Theory Is Not Dead—Not Yet, Anyway: A Reflection on the Special Issue. Educational Psychology Review, Vol. 13 (2), 177- 185.

Midgley, C., Feldlaufer, H., Eccles, J. (1989). Student/Teacher Relations and Attitudes Toward Mathematics Before and After the Transition to Junior High School. Child Development, 60, 981-992.

Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost? Journal Educational Psychology, 93, 77-86.

Murayama, K. & Elliot, A. J. (2009). The joint influence of personal achievement goals and classroom goal structures on achievement-relevant outcomes. Journal of Educational Psychology, 101 (2). 432- 447.

National Academy of Sciences (2011). Expending underrepresented minority participation: America's science and technology talent at the crossroads. Washington, DC: National Academy Press.

Nichols, J. G. (1989). The competitive ethos and democratic education. Cambridge: Harvard University Press.

Urdan, T.C., & Maehr, M.L. (1995). Beyond a two-goal theory of motivation and achievement: A case for social goals. Review of Educational Research, 65 (3), 213-243.

Paulick, I., Watermann, R., & Nückles, M. (2013). Achievement goals and school achievement: The transition to different school tracks in secondary school. Contemporary Educational Psychology, 38, 75-86.

Pintrich P., Smith D., Garcia T., & McKeachie W. (1991). A Manual for the Use of the Motivated Strategies for Learning Questionnaire. Technical Report 91-B-004. The Regents of The University of Michigan.

Pintrich, P.R. (2000). An achievement goal theory perspective on issues in motivation terminology, theory and research. Contemporary Educational Pyschology,25,92-104.

Printrich, P.,,R.,.& Schunk, D., H. (2002). Motivation in education: theory, research and applications. Ohio: Merrill Prentice Hall.

Pintrich, P. R., Conley, A., & Kemper, T.M. (2003). Current issues in achievement goal theory and research. International Journal of Educational Research, 39, 319-337.

Roeser, R. W. (2004). Competing schools of thought in achievement goal theory? In P. R. Pintrich & M. L. Maehr (Eds.), Advances in Motivation and Achievement: Vol. 13.

Asia-Pacific Forum on Science Learning and Teaching, Volume 13, Issue 2, Article 2, p.19 (Dec., 2012)
Nurcan KAHRAMAN and Semra SUNGUR-VURAL
An investigation on students' personal achievement goals and perceived parents' goal emphases in science

Motivating students, improving schools: The legacy of Carol Midgley (pp. 265–299). Oxford, England: Elsevier.

Roeser, R. W., Peck, S. C., & Nasir, N. S. (2006). Self and identity processes in school motivation, learning, and achievement. In P. A. Alexander & P. H. Winne (Eds.), Handbook of educational psychology.

Senler, B., & Sungur,S. (2007, November) Hedef yonelimi anketinin Turkce'ye cevrilmesi ve adaptasyonu [Translation and adaptation of achievement goals questionnaire to Turkish]. Paper presented at 1. Ulusal Ilkogretim Kongresi, Ankara, Turkey

Sideridis, G.D., & Kaplan, A. (2011). Achievement goals and persistence across tasks: The roles of failures and success. The Journal of Experimental Education, 79, 429-451.

Tuominen-Soini, H., Salmela-Aro, K., & Niemivirta, M. (2012). Achievement goal orientations and academic well-being across the transition to upper secondary education. Learning and Individual Differences, in press.

Turner, J. C., Meyer, D. K., Midgely, C., & Patrick, H. (2003). Teacher discourse and sixth graders' reported affect and achievement behaviors in two high-mastery/high-performance mathematics classrooms. Elementary School Journal, 103, 357–382.

Turner, J. C., Midgley, C., Meyer, D. K., Gheen, M., Anderman, E., Kang, Y., & Patrick, H. (2002). The classroom environment and students' reports of avoidance behaviors in mathematics: A multi-method study. Journal of Educational Psychology, 94, 88–106.

Urdan, T. (2004a). Can achievement goal theory guide school reform? In P. R. Pintrich & M. L. Maehr (Eds.), Advances in Motivation and Achievement: Vol. 13. Motivating students, improving schools: The legacy of Carol Midgley (pp. 361–392). Oxford, England: Elsevier.

Urdan, T. (2004b). Predictors of academic self-handicapping and achievement: Examining achievement goals, classroom goal structures, and culture. Journal of Educational Psychology, 96, 251-264.

Urdan, T., & Mestas, M. (2006). The goals behind performance goals. Journal of Educational Psychology, 98, 354–365.

Weinberg, S.L., & Abramowitz, S. K. (2008). Statistics using SPSS: An integrative approach 2nd ed. Cambridge University Press, NY.

Wolters, C. A., Yu, S. L., & Pintrich, P. R. (1996). The relation between goal orientation and students' motivational beliefs and self-regulated learning. Learning and Individual Differences, 8, 211–238.